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Page 1
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                    IN THE CIRCUIT COURT
                 TWENTIETH JUDICIAL CIRCUIT
                 ST. CLAIR COUNTY, ILLINOIS
2
 3
     DIANA HOFFMANN, individually and as
 4
     Independent Administrator of the
     Estate of THOMAS R. HOFFMANN,
 5
     Deceased, et al.,
                       Plaintiffs,
 6
                                               ) Case No.:
                                               ) 17-L-517
 7
     v.
 8
     SYNGENTA CROP PROTECTION, LLC, et al.,
                       Defendants.
 9
10
                            February 25, 2020
11
                            8:59 a.m.
12
13
14
               VIDEO DEPOSITION of DR. PHILIP
15
     BOTHAM, held at the offices of Kirkland &
16
     Ellis LLP, located at 30 St. Mary Axe, London
17
     EC3A 8AF, United Kingdom, before
18
     Chanelle Malliff, Accredited Court Reporter
19
     of the United Kingdom and Europe.
20
21
                      CONFIDENTIAL
22
23
24
25
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	Page 2
APPEARANCES	
2 3 Attorneys for the Plaintiff:	Exhibit 8 Document "Paraquat and
KOREIN TILLERY, LLC	Conning, K. Fletcher, A.A.B.
4 One U.S. Bank Plaza	3 Swan [Bates SYNG-PQ-00531061
505 N. 7th Street, Suite 3600	to 65]
5 St. Louis, MO 63101	Exhibit 9 Publication in the
(314) 241-4844	5 journal Toxicology entitled
6 By: Stephen M. Tillery	"The tissue distribution of
stillery@koreintillery.com	6 the bipyridylium herbicides
7 John Craig	diquat and paraquat in rats 7 and mice (Bates
jcraig@koreintillery.com	7 and mice [Bates SYNG-PO-01980124 to 135]
8 Rosemarie Fiorillo	8
rfiorillo@koreintillery,com	Exhibit 10 1974 report of a study175
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0 650 California Street, 26th Floor	titled "Evidence for 10 energy-dependent accumulation
San Francisco, CA 94108	of paraquat into rat lung"
1 (415) 981-7210	11 Bates SYNG-PQ-02122207 to
By: Michael A. Kelly	2122208]
2 mkelly@walkuplawoffice.com	12 Fubility 11 December 6th and inc. 170
3	Exhibit 11 Document file ending178  13 with letter from A Calderbank,
Attorneys for the Defendants and Witness:	19 December 1975 Bates
KIRKLAND & ELLIS LLP	14 CUSA-00088724 to 89086]
5 1301 Pennsylvania Avenue, N.W.	15 Exhibit 12 Notes on discussions
Washington, D.C. 20004 5 (202) 389-5267	with Chevron, March 28, 29, 16 1974 [SYNG-PO-13119252 TO
By: Ragen Naresh	16 1974 [SYNG-PQ-13119252 TO 13119255]
ragan.naresh@kirkland.com	17
Tagar.batesi@kfikiald.com	Exhibit 13 Notes of a Meeting held189
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190 Carondelet Plaza, Suite 600	Exhibit 14 Document file with top
St. Louis, MO 63105	20 document correspondence from J
(314) 480-1927	Kent Riegel, Regulatory
By: Joseph C. Orlet	21 Affairs Dept. [Bates
joseph.orlet@huschblackwell.com	CUSA-00189736 to 190043]
Also Present:	Exhibit 15 Paraquat poisoning201
Nicole Graham, paralegal, Korein Tillery	23 incident report, dated 5
Mark Smith, in-house, Syngenta	October 1973 [Bates
Joseph Viner, Videographer, Veritext	24 CUSA-00205396; CUSA-002067cut of D
voospa valet, valeographet, vertext	CUSA-002067cut off]
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	2 SYNG-PQ-04263689]
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	by F.B. Bronkhorst, J.M. van
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Exhibit 3 Syngenta Defendants'	Exhibit 19 File, "Study Title:
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Exhibit 3 Syngenta Defendants'	Exhibit 19 File, "Study Title:
Disclosure related to February 25, 2020 and March 2, 2020 depositions  Exhibit 4 US Patent dated Feb 21,	Exhibit 19 File, "Study Title:

Page 6 Page 8 1 PROCEEDINGS 1 in the United Kingdom. 2 THE VIDEOGRAPHER: Good morning. We are Q. What is your business address? 3 going on the record at 8:59 a.m. on February 25, 2020. A. Jealott's Hill, International Research Centre 4 This is media unit one of the video recorded deposition 4 of Syngenta, Bracknell in Berkshire. 5 of Philip Botham in the matter of Diana Hoffmann et al Q. What is Jealott's Hill? 6 versus Syngenta LLC et al filed in the Circuit Court, A. Jealott's Hill is a research park, and 7 Twentieth Judicial Circuit, St. Claire County, 7 Syngenta is the sole occupant of that research park. 8 Illinois. This deposition is being held at Kirkland & Q. How long has that facility been in existence? 9 Ellis, 30 St Mary Axe, London, United Kingdom. A. 90 years. My name is Joseph Viner from Veritext. I'm 10 Q. What is your employment history before you 11 the videographer. The court reporter today is 11 were first employed by a Syngenta entity? 12 Chanelle Malliff from the firm Veritext. A. I joined what is a Syngenta entity back in 13 Will the court reporter please swear in the 13 1980. Prior to that I had two years post-doctoral 14 witness. 14 research at the University of Hull, which followed my 15 PHILIP BOTHAM 15 PhD which I obtained at the University of Hull. 16 having been sworn testified as follows: Q. And what was the name of the entity, the MR. TILLERY: And before we begin, this is 17 predecessor entity of Syngenta that you first joined? A. It was ICI. 18 Steve Tillery on behalf of the plaintiffs, announcing 18 Q. Was there a specific entity of ICI or just 19 19 that the parties have reached an agreement stipulation 20 that there is no requirement for strict compliance with 20 ICI Limited? 21 Illinois Supreme Court Rule 206 and the reading by the 21 A. It was ICI Limited in the United Kingdom, and 22 the specific part of ICI that I joined was called the 22 videographer for that compliance, is that correct, for 23 central toxicology laboratory. 23 Syngenta entities? MR. NARESH: Ragan Naresh, on behalf of Q. Have you worked for an ICI/Syngenta related 25 Syngenta. That is fine, with the understanding that 25 entities your entire career? Page 9 Page 7 1 this deposition complies with both the Illinois rules A. Apart from those two years of post-doctoral 1 2 as well as the California rules of civil procedure. 2 research, yes. MR. TILLERY: And we do stipulate to that as Q. Did you have any connection with paraquat 4 prior to joining a Syngenta entity? 4 well. A. No, I did not. MR. ORLET: Yes, that's fine on behalf of 6 Chevron with the same stipulation. O. And when you joined Syngenta what was the MR. TILLERY: For the record, I'll note that 7 first year that you had a connection with paraquat? A. I would imagine that would be in the early 8 this is a deposition of an adverse party or agent taken 9 in a representative capacity, so I'll be conducting in 9 '90s. I mean, I can't give you an exact date but when 10 accordance with section 2-1102 of the Illinois Code of 10 I became familiar with some of the research work that 11 Civil Procedure, 735 ILCS 5/2-1102. 11 some of my colleagues were doing at that time. 12 EXAMINATION BY MR. TILLERY: Q. Can you take me through your career in terms 13 of jobs and responsibilities at Syngenta? And when O. Good morning, sir. 14 I say "Syngenta", I mean any of the predecessor 14 A. Good morning. Q. My name is Steve Tillery. I'll be asking you 15 entities like ICI. 16 questions on behalf of Plaintiffs. If you don't 16 A. So starting with in 1980 when I joined? 17 have -- sorry, excuse me. If you have questions or 17 Q. Correct. A. So in 1980 I was employed at the central 18 problems with any of my inquiries of you, if you'd stop 18 19 me and clarify, so I can make sure that you understand 19 toxicology laboratory as an expert in actually in 20 allergy because I had some expertise in that kind of 20 my question. 21 A. Okay. 21 disease and at that point in time ICI had a number of 22 Q. For the record, can you state your name? 22 issues associated with people becoming allergic to what 23 they were using or producing in manufacturing plants. 23 A. Dr. Philip Botham. 24 Q. And what is your home address? 24 But over the next three to four years I started to

3 (Pages 6 - 9)

25 broaden my expertise into other areas of toxicology.

A. 255 St. Leonard's Road, Windsor in Berkshire

25

- 1 And in the 1990s, in 1991 to be specific, I was
- 2 appointed to be what we called a section head, a leader
- 3 of a significant number of people in the organization,
- 4 in the central toxicology laboratory who were looking
- 5 again across a broad range of toxicology issues, mainly
- 6 doing regulatory toxicology. So I'd moved away from
- 7 the research toxicology I was originally doing.
- 8 Q. What is regulatory toxicology?
- 9 A. Regulatory toxicology is -- are the studies
- 10 and the assessments that we need to conduct in order to
- 11 register or re-register our products with regulatory
- 12 authorities around the world.
- 13 Q. Before you go further -- and pardon me for
- 14 interrupting -- can you describe the CTL facility?
- 5 A. Of course, yes. CTL is, or was, a laboratory
- 16 where toxicology studies were conducted. So it
- 17 comprised a large number of laboratories and also
- 18 animal facilities, animal -- laboratory animal
- 19 facilities, because laboratory animals are required for
- 20 many of those regulatory toxicology studies I was
- 21 describing.
- 22 It had approximately 300 employees, and their
- 23 experience was across the whole range of scientific
- 24 disciplines that are needed in toxicology.
- 25 And it started on that site in the late 1950s

1 animals. They were brought in from in some cases from

Page 12

- 2 another facility at the same site. In other cases they
- 3 were brought on to site from animal suppliers. We
- 4 housed those animals whilst we were conducting the
- 5 regulatory toxicology tests in specific animal
- 6 environments. And we're talking here about rats, mice,
- guinea pigs and dogs.
- Q. And how many different laboratory or
- 9 scientific facilities has Syngenta or its predecessors
- 10 had besides CTL?
- 11 A. The other main facility is the one where I'm
- 12 working now, which is at Jealott's Hill. That had a
- 13 laboratories to conduct another branch of regulatory
- 14 safety studies that need to be conducted which is
- 15 environmental safety. Again around about 2007 as part
- 16 of that same decision those laboratories were closed
- 17 and so much of what we now have in Jealott's Hill is
- 18 not laboratory accommodation.
- 19 Q. You indicated that the way Syngenta did
- 20 toxicology changed, and that led to CTL closing?
- 21 A. That's correct.
- 22 O. What was the way that CTL -- strike that.
- 23 What was the way that Syngenta did business that
- 24 altered -- that caused CTL to close; explain that to
- 25 me?

Page 11

- 1 but eventually closed when a decision was taken to
- 2 change the way in which we did our toxicology, starting
- 3 in 2007. That was when we announced the closure and
- 4 that's when I moved actually from that laboratory down
- 5 to where I currently am in Jealott's Hill.
- 6 Q. Now when you were at CTL how many scientists
- 7 were there?
- 8 A. If you want to describe scientists as people
- 9 who had, for example, higher education qualifications,
- 10 PhDs and so on, at the time of those 300 or so
- 11 employees that I talked about around about 75 to 80 of
- 12 those people had PhDs. A significant number more,
- 13 I can't give you an exact number, would have first
- 14 degree, BSc Bachelor of Science degrees. Others would
- 15 have technical qualifications, laboratory animal and
- 16 husbandry qualifications, for example.
- 17 Q. And how many different laboratories? You
- 18 said there were multiple laboratories.
- 19 A. Mm-hmm.
- 20 O. How many?
- 21 A. I couldn't give you an exact number but we
- 22 would be talking about 20 to 30 I would estimate.
- 23 Q. And you had an entire laboratory animal
- 24 production facility there, right?
- A. We didn't produce, i.e. we didn't breed our

Page 13

2 to actually meet with the increasing challenges that

A. The decision was that we wanted to enable us

- 3 regulatory toxicology and also the toxicology that we
- 4 wanted to do as part of our research invention of
- 5 finding new chemicals, new pesticides, that that was
- 6 changing and required us to get access to an even wider
- 7 area of -- to wider areas of science. Science was
- 8 progressing and moving on and we realized that the best
- 9 way we could do that was to outsource our practical
- 10 safety studies, our toxicology studies and our
- 11 environmental safety studies to a number of different
- 12 research organizations outside the company. So they
- 13 became partners and suppliers of our toxicology
- 14 environmental safety.
- 15 Q. You basically out-sourced a lot of the
- 16 science?
- 17 A. It was basically an outsourcing strategy;
- 18 correct.
- 19 Q. Would you continue on with your jobs,
- 20 assignments and responsibilities?
- 21 A. Okay, so I've reached the point of the early
- 22 1990s where I'd taken on leadership responsibilities
- 23 within toxicology, specifically regulatory toxicology.
- 24 During the 1990s up until the formation of Syngenta in 25 the year 2000 I had several different leadership roles

4 (Pages 10 - 13)

- 1 at CTL at the Central Toxicology Laboratory. They were
- 2 mostly in regulatory toxicology. I also did a spell
- 3 back in research toxicology, so leading the
- 4 investigative toxicology team, for example. Then in
- 5 the year 2000 when we formed Syngenta, between then and
- 6 2007 when I moved down to Jealott's Hill, it was a
- 7 similar pattern of having two or three different
- 8 leadership roles. Then of a product safety
- 9 organization as we were then describing it, which
- 10 included staff not just at CTL but also elsewhere in
- 11 this new Syngenta organization. That included people
- 12 in Switzerland and also North America.
- 13 And then in 2007 moved down to Jealott's
- 14 Hill. I was initially appointed to be the European
- 15 head of human safety, specifically toxicology in human
- 16 safety. Then product safety European head, which meant
- 17 both the human safety and the environmental safety.
- 18 And then in 2013 I was appointed to be global head of
- 19 product safety for Syngenta, which meant that I had
- 20 112 6 4 11 11 14 11
- 20 responsibility for teams around the world as it were
- 21 involved in that discipline.
- Q. Moving back to CTL for a moment. Was there
- 23 any concern over finances, that is saving money by
- 24 outsourcing as opposed to keeping that laboratory open?
- 25 MR. NARESH: I'll object to scope. Go ahead.
  - Page 15
  - A. The cost of doing our work was clearly one
- 2 factor. It was not actually the most important factor.
- 3 BY MR. TILLERY:
- 4 Q. But it was a factor?
- 5 A. But it was one factor.
- 6 Q. Thank you. When did you start working with
- 7 paraquat?
- 8 A. I first had, if you like, a clear and formal
- 9 role with paraquat in 2008 when I joined the paraquat
- 10 health scientist team.
- 11 Q. But you knew about it before then, didn't
- 12 you?
- 13 A. Obviously, yes, I'd been not only aware but
- 14 I was responsible for in my leadership role for other
- 15 scientists who were directly involved with paraquat but
- 16 I was still -- I had indirect involvement. My direct
- 17 involvement started in 2008.
- 18 Q. Including supervision of some of the
- 19 scientists who had direct involvement?
- 20 A. That is correct.
- 21 Q. When would that have started?
- 22 A. So not in 1991, because the team I was
- 23 leading then was not involved in that activity, but
- 24 later in the 1990s/early 2000s that would have included
- 25 such people.

- ere 1 Q. Do you understand that you're testifying
  - 2 today as a corporate designee of Syngenta AG and
  - 3 Syngenta Crop Protection LLC?
  - A. I do.
  - O. Can we agree to refer to both Syngenta AG and
  - 6 Syngenta Crop Protection LLC as "Syngenta" for purposes
  - 7 of this deposition?
  - A. I'm fine with that.
  - 9 O. Okay. What do you understand your role to be
  - 10 here as a corporate designee for Syngenta?
  - 11 A. To help --
  - 12 MR. NARESH: To the extent you can answer
  - 13 without divulging privileged communications,
  - 14 communications you and I have had about legal issues,
  - 15 please feel free to answer.
  - 16 A. I believe that I'm here to answer a number of
  - 17 specific questions regarding the company's work on the
  - 18 safety of paraquat.
  - 19 BY MR. TILLERY:
  - 20 O. You understand Syngenta's designated you to
  - 21 testify for them on certain topics?
  - 22 A. I do.

24

1

- 23 Q. Now if we can mark these.
  - (Exhibit 1 marked for identification.)
- 25 (Exhibit 2 marked for identification.)

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Page 16

- Have you seen Exhibits 1 and 2 before, sir?
- 2 A. I'm not sure that I've seen specifically this
- 3 document.
- 4 Q. But if you look at the Topics sections in the
- 5 back. Have you looked at those topics before?
- 6 A. Yes as you get towards the back, so I agree,
- 7 so under Appendix 2 I can see some familiarity of the
- 8 document I've seen before.
- 9 Q. So you were given the topics, right?
- 10 A. Yes. Yes.
- 11 Q. So can we refer to those as the designated
- 12 topics throughout this deposition?
- 13 A. Yes. Now that I've seen that this is the
- 14 topics that I've seen previously, that is fine.
- 15 MR. NARESH: So to be clear, Dr. Botham is
- 16 not testifying with respect to all the topics.
- 17 MR. TILLERY: Correct. And if you want to
- 18 announce on the record the ones, but otherwise we can
- 19 I think by agreement from your notice and answer to us
- 20 we have an understanding as to which topics.
- MR. NARESH: That's fine. Just so we're on 22 the same page that it's not every topic in here.
- 23 BY MR. TILLERY:
- 24 Q. Right. Do you understand that in testifying
- 25 for Syngenta on the designated topics, you're required

5 (Pages 14 - 17)

Page 18

- 1 to answer not based on the information known or
- 2 available to you personally but also based on
- 3 information known or reasonably available to Syngenta?
- 4 A. Yes.
- 5 Q. And did you take that into account when you
- 6 were preparing to testify on the designated topics?
- A. Yes.
- 8 Q. Are you prepared today to testify for
- 9 Syngenta on the designated topics based on information
- 10 known or reasonably available to Syngenta?
- 11 A. I am.
- 12 Q. Do you believe your preparation has given you
- 13 sufficient information to testify for Syngenta on each
- 14 of the designated topics that you've been designated to
- 15 speak to?
- 16 A. As far as is practical. There is clearly a
- 17 lot of information and it may be that I don't have
- 18 absolutely all of that at my immediate fingertips.
- 19 Q. Other than in conversations with your
- 20 attorneys representing you here, can you describe for
- 21 me what you did to prepare for this deposition?
- 22 A. So to clarify, you're saying other than
- 23 conversations I've had with attorneys?
- 24 Q. You can tell me you had conversations with
- 25 attorneys but not the specific content of those
- Page 19

- 1 conversations.
- A. Indeed.
- 3 Q. So what did you do to prepare?
- 4 A. So I have reminded myself of many of the
- 5 activities that have taken place over the period in
- 6 which we have been conducting our research on paraquat,
- 7 and specifically on the alleged association with
- 8 Parkinson's disease. So I've refreshed my memory of
- 9 that, reading appropriate documents and papers which in
- 10 some cases were brought back to me by my attorneys, in
- 11 other cases documents which I already had in my
- 12 possession in our company files.
- 13 Q. And how many hours have you spent reminding
- 14 yourself of these events?
- 15 A. Well, this has been an activity that has
- 16 really been mostly in the last two to three weeks and
- 17 I wouldn't have an exact count of the number of hours
- 18 but certainly most work days during the last two to
- 19 three weeks I've been spending a significant amount of 20 time.
- 21 Q. Was there anything new to you?
- 22 A. There were certainly some aspects because the
- 23 areas that you wish to explore today were so broad
- 24 there were some areas where I never had any direct
- 25 involvement in the past and therefore some of the

- 1 information, some of the documents were -- I don't
- 2 recall having seen previously. But the majority I did,
- 3 I had seen before.
- 4 Q. And these documents are stored at Syngenta as
- 5 well, aren't they?
- A. They are.
- Q. And how is that that they're stored?
- 8 A. Do you mean in what manner are they stored?
- 9 Q. Yes. In other words, for a person at your
- 10 level in the company, you have access to most of those
- 11 documents?
- 12 A. I do have access. They are in some cases
- 13 stored electronically, and in other cases there are
- 14 paper copies which are stored in various archives.
- 15 Q. And as you move in and out of different
- 16 projects to educate yourself of projects, you might
- 17 look at those for historical reference as well; is that
- 18 correct?
- 19 A. That is correct, yes.
- 20 Q. So would you agree that none of the topics
- 21 that you understand you are to address today provide a
- 22 problem for you to speak to? You're able to answer all
- 23 of them?
- A. I'm able to answer all of them and I think
- 25 I would be able to answer some better than others

Page 21

- 1 because that familiarity. So clearly there's a range
- 2 of in-built knowledge across all of those topics.
- 3 Q. How did you familiarize yourself with matters
- 4 concerning ICI preceding your employment there?
- 5 A. Most of the pre-1980 work was -- in fact all
- 6 of the pre-1980 work on paraguat was not related to
- 7 Parkinson's disease, so it was related to other
- 8 toxicology issues regarding paraquat so that I was not
- 9 I felt, relevant to what we were discussing today.
- 10 Q. When was the first time that you understood
- 11 that there was a claim being made of a connection
- 12 between paraguat and Parkinson's disease?
- 13 A. I don't recall exactly the year but at some
- 14 point after I joined the paraquat health science team
- 15 in 2008 then that potential was certainly made evident
- 16 to us.
- 17 Q. So it would have been 2008 do you think or 18 after that period?
- 19 A. At some point after 2008.
- 20 O. After 2008?
- 21 A. Yes. Yes.
- 22 Q. How did you familiarize yourself with ICI
- 23 work on neurotoxicity?
- A. Through my own knowledge of what had been
- 25 done during the time when I had that responsibility

\_\_\_\_

- 1 from 2008 together with reading the appropriate
- 2 documentation that we've been talking about which was a
- 3 mixture of internal reports, publications and other
- 4 correspondence and information that was shared.
- Q. How did you familiarize yourself with ICI's
- 6 work in terms of neurotoxicity of paraquat prior to
- 7 1980?
- 8 A. I don't believe that there was any work of
- 9 significance prior to 1980 on neurotoxicity. There
- 10 were certainly one or two early research studies but
- 11 they were really -- this was not a main part of our
- 12 activity. That came later on.
- 13 Q. But whether there was or there wasn't, you're
- 14 able to answer those questions today?
- 15 A. Yes.
- 16 Q. Correct?
- 17 A. Yes.
- 18 Q. You have to say "yes" or "no" on the record.
- 19 A. Yes.
- 20 Q. Have you given a deposition before?
- 21 A. I have not.
- 22 Q. Have you testified at a trial or hearing
- 23 before?
- 24 A. I have not.
- Q. Do you understand that in testifying for

- 1 preparing?
- A. Yes, I did, yes.
- Q. Were you aware that the matters on which you

Page 24

- 4 would be required to testify for Syngenta on the
- 5 designated topics would include the knowledge and
- 6 actions with respect to paraquat of Syngenta AG's
- 7 predecessors in the paraquat business including
- 8 AstraZeneca Plc, Zeneca Group Plc, Imperial Chemical
- 9 Industries Plc, Imperial Chemical Industries Limited,
- 10 and their subsidiaries?
- 11 A. Yes.
- 12 Q. And you're prepared to testify on the
- 13 designated topics about the knowledge and actions with
- 14 respect to paraquat of all of those entities?
- 15 A. Yes.
- 16 Q. If I refer to Syngenta AG's -- strike that.
- 17 If I refer to Syngenta AG's predecessors will you
- 18 understand that to mean with respect to the paraquat
- 19 business AstraZeneca Plc, Zeneca group Plc, Imperial
- 20 Chemical Industries Plc, Imperial Chemical Industries
- 21 Limited and their subsidiaries?
- 22 A. Yes.
- 23 Q. Now in preparing to testify for Syngenta AG
- 24 and Syngenta Crop Protection LLC, were you aware that
- 25 the matters on which you would be required to testify

- 1 Syngenta on the designated topics the matters on which
- 2 you're required to testify are not limited to the
- 3 period since the formation of Syngenta but cover the
- 4 entire period of time from the discovery of the
- 5 herbicidal effect of paraquat in the 1950s through the
- 6 present time?
- A. Yes.
- 8 Q. Did you take that into account when you were
- 9 preparing?
- 10 A. As I said, I didn't focus as much on the
- 11 period really prior to the late 1980s, early 1990s.
- 12 Q. I will assure you you're going to get a lot
- 13 of questions for me -- strike that. You're going to
- 14 get a lot of questions today from me that precede 1980.
- 15 So are you prepared to answer those?
- 16 A. Well I'm prepared to see if I am able to
- 17 answer them.
- 18 Q. Do you understand that in testifying for
- 19 Syngenta on the designated topics, the matters on which
- 20 you're required to testify are not limited to the
- 21 knowledge and actions of Syngenta but also include the
- 22 knowledge and actions with respect to paraquat of their
- 23 corporate predecessors?
- 24 A. Yes.
- 25 Q. You took that into account when you were

- Page 25
- 1 would would include the knowledge and actions with 2 respect to Zeneca AG Products Inc., Zeneca Inc., ICI
- 3 Americas Inc., ICI United States Inc. and ICI America
- 4 Inc.?
- 5 A. Yes.
- 6 Q. And are you prepared to testify with respect
- 7 to that understanding?
- 8 A. Yes.
- 9 Q. And again, if I later refer to Syngenta AG's
- 10 predecessors, will you understand that to mean with
- 11 respect to their paraquat business Zeneca AG Products
- 12 Inc., Zeneca Inc., ICI Americas Inc., ICI United States
- 13 Inc. and ICI America Inc.?
- 14 MR. NARESH: Stephen, I think you misspoke.
- 15 I think you asked about Syngenta AG and meant to ask --
- 16 BY MR. TILLERY:
- 17 Q. Yes, I'm Sorry, I did. Thank you very much,
- 18 I'm going to correct it. I'll withdraw that question,
- 19 sir.
- 20 If I later refer to Syngenta Crop Protection
- 21 LLC's predecessors, will you understand that to mean
- 22 with respect to their paraquat business Zeneca AG
- 23 Products Inc., Zeneca Inc., ICI Americas Inc.,
- 24 ICI United States Inc., and ICI America Inc.?
- 25 A. Yes.

- 1 Q. And you're ready to do that as well?
- 2 A. Yes.
- 3 Q. What documents or data was available to you
- 4 personally to help you prepare for the deposition?
- A. A wide range of documents of the sort that
- 6 I mentioned earlier. So the publications, reports.
- 7 correspondence, and other related matters.
- 8 Q. And was that included within what you refer
- 9 to as your reliance group of documents?
- 10 A. Could you expand on what you mean by the
- 11 reliance --
- 12 Q. Yes. What that means is that your counsel
- 13 gave to us, roughly one week ago today, a group of
- 14 documents that were listed as responsive to our request
- 15 for information on which you were to rely in answering
- 16 my questions.
- 17 A. Yes. Yes, I believe that those were the
- 18 documents that --
- 19 Q. You picked those out?
- 20 A. Yes. Yes.
- 21 Q. And you did that by looking at those
- 22 documents and making decisions that those were relevant
- 23 to your information, education to answer questions
- 24 about the designated topics?
- 25 A. I did, but also with discussions with my
- Page 27
- 1 attorneys to also guide me on particularly what might
- 2 be appropriate to answer the specific questions that
- 3 may arise.
- 4 Q. So they may have added some as well is what
- 5 you're saying?
- 6 A. They certainly directed me to some of the
- 7 documents which may have been more useful.
- 8 Q. Understood. Did you talk to anybody else
- 9 besides lawyers in preparing for the deposition?
- 10 A. I talked to one particular colleague,
- 11 Andy Cook who is the regulatory manager for paraquat
- 12 with whom I've worked closely for many years.
- 13 Q. And what is his employment as Syngenta?
- 14 A. He is also at Jealott's Hill. He is the
- 15 global regulatory manager for paraquat.
- 16 Q. Did you speak to anyone else?
- 17 A. Not specifically about this topic, these
- 18 topics and the process that we're undergoing today.
- 19 I talk to other colleagues regularly as part of my
- 20 normal duties of leading the paraquat health science
- 21 team. That process has continued, so I have spoken to
- 22 other colleagues about paraquat, but that was part of
- 23 my normal business.
- 24 Q. What did you speak specifically to Mr. Cook
- 25 about?

- Page 26
  - 1 A. To engage with him in some of the areas where
  - 2 I had not had that direct interaction myself. So there
  - 3 were certain aspects of the work that had been
  - 4 conducted on for example understanding exposure to
  - 5 paraquat where Andy Cook had more background, if. you
  - 6 wish, in that area.
  - Q. And where did those conversations take place?
  - A. In a room in Jealott's Hill.
  - 9 Q. And for how long did you discuss these topics
  - 10 with Mr. Cook?
  - 11 A. Just a few hours.
  - 12 Q. Did you speak to anyone else besides lawyers
  - 13 and Mr. Cook?
  - 14 A. Not about the process that we are talking
  - 15 about now. Just, as I said, about normal business
  - 16 regarding me leading the paraquat health science team.
  - 17 O. Did you speak to anybody in America for
  - 18 example, any of the scientists from Syngenta Crop
  - 19 Protection employees in America?
  - 20 A. So I've certainly had a -- have been on a
  - 21 phone call where a Syngenta U.S.A. employee has again
  - 22 been providing some input to the process, not directly
  - 23 to me, and this would be Monty Dixon.
  - 24 Q. Did you speak with any, let's refer to them
  - 25 as outside scientists? Do you know what I mean when
- rage 2:

- 1 I use that word "outside"? What does it mean for you,
- 2 just to make sure we're on the same page.
- 3 A. I assume you mean collaborators or suppliers?
- 4 Q. A person who collaborates with you who isn't
- 5 an employee of Syngenta?
- A. During this process of preparation I have not
- 7 spoken as far as I remember to any external
- 8 collaborators or similar people.
- 9 Q. How about retired Syngenta employees or ICI 10 employees?
- 11 A. I have spoken to some external retired --
- 12 sorry, some retired Syngenta employees but not in the
- 13 last few weeks.
- 14 Q. Okay. Well about these topics?
- 15 A. Again, this would be a part of our normal
- 16 business where we sometimes confer with ex-employees
- 17 who have had experience and expertise working with 18 paraquat.
- 19 Q. Who are those people?
- 20 A. Professor Lewis Smith for example. Dr. Nick
- 21 Sturgess. But I've not had discussions with either of
- 22 those two individuals for several months.
- 23 Q. Did you talk about any of the related topics,
- 24 whether or not they came to you in the form of a
- 25 deposition notice but at least the subject matter with

- 1 either Dr. Smith or Dr. Sturgess in the last two years?
- A. Yes, indeed, I've had conversations with them
- 3 in the last two years about paraquat and its safety
- 4 studies.
- O. And are they affiliated with the company now?
- A. No. Dr. Sturgess is not affiliated.
- 7 Professor Smith does have, though, a consultancy
- 8 contract.
- Q. With Syngenta?
- A. With Syngenta.
- O. So he's still connected to the company? 11
- A. In that sense, yes.
- Q. And can you explain that consultancy contract 13
- A. It is a contract that where we -- it asks
- 16 that we are able to consult with Dr. Smith on aspects
- 17 related to paraguat toxicity. It's a fairly broad
- 18 remit. But the number of consultations that we've had
- 19 with Dr. Smith over the last year or two has been
- 20 relatively small.
- Q. What does that mean, "relatively small"?
- 22 A. Perhaps it may be only two or three times in
- 23 the last year or two from my recollection.
- Q. What about Dr. Sturgess, how many times have
- 25 you talked to him?

- 1 discussing that aspect with Dr. Smith.
  - Q. What about Dr. Sturgess?
  - A. With Dr. Sturgess it was, and this is not as
  - 4 clear in my mind, that was mostly to do with ensuring
  - 5 that we knew where some of his historic information was

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- 6 so that we had got that properly archived. So it was
- 7 simply to make sure that we had recovered and had
- 8 available the information that he specifically had in
- 9 his files. We didn't discuss any specific science
- 10 matter if you wish.
- Q. Have you talked to Dr. Louise Marks?
- 12 A. I have.
- Q. When did you talk to her recently? 13
- A. I talked to her in the last two to three 14
- 15 months when she let us know that she had been contacted
- 16 by yourself or by your colleagues and that was -- there
- 17 were two or three phone calls with her when I was
- 18 trying to make sure that she had a little background as
- 19 to how those contacts, where they came from, what the
- 20 purpose of them was.
- 21 Q. How many conversations have you had with
- 22 Dr. Louise Marks? And let's say in the last year.
- 23 A. I would say no more than four.
  - Q. Okay, how long did these conversations last?
- 25 A. No more than 15 minutes.

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- Q. And did she have specific questions? 1
  - A. She was asking some -- for some clarification
  - 3 of what the process was that she was being asked to
  - 4 consider taking part in in terms of deposition.
  - Q. When was the last time Louise Marks was
  - 6 employed by Syngenta under any capacity, either a
  - 7 direct employment or by contract?
  - 8 MR. NARESH: I object on foundation. If you
  - 9 know, please go ahead and answer.
  - 10 A. I believe that she left Syngenta around 2006.
  - 11 BY MR. TILLERY:
  - Q. Was that the last time she had a financial
  - 13 connection to Syngenta either as an employee or as an
  - 14 independent contractor?
  - MR. NARESH: Same objection. 15
  - A. She did act for us at a time after that in
  - 17 helping us with our understanding of a particular
  - 18 technique, the technique of stereology because of the
  - 19 experience that she'd had when she was doing other

  - 20 research. I don't recall if we did that under a
  - 21 consultancy contract but we certainly had that one
  - 22 occasion when we reconnected with her specifically on
  - 23 the technology of stereology.
  - 24 BY MR. TILLERY:
  - Q. Did you consider her to be the leading

24

2

A. I have not spoken to Dr. Sturgess from memory

- 2 for at least a year. But in the previous year I would
- 3 have spoken to him, in the period shortly after he
- 4 left.
- Q. When did he leave? 5
- A. I believe that that was 2018. 6
- Q. And what were the conversations about
- 8 paraquat that you had with Dr. Sturgess or Dr. Smith?
- A. They were largely conversations of clarifying
- 10 on some of the issues and work that they were, if you
- 11 like, more familiar with than either Andy Cook or
- 12 myself were. So it was to check some details of the 13 work.
- 14 O. What details were those? There has to be
- 15 something you were thinking about? You went to a
- 16 phone, picked it up, called them, you had a question in
- 17 mind. What was it?
- A. In the case of Dr. Smith the conversations
- 19 have actually been in recent times more around other
- 20 issues related to paraquat safety and some of the
- 21 history of how we developed paraquat as a product, as a
- 22 formulated product, and how we were making sure that we
- 23 make best efforts to what we call safen that product 24 because it's one of the other issues with paraquat of
- 25 course is that it is acutely toxic, and so we were

Page 34 Page 36 1 scientist in your group on stereology? 1 studies, didn't you? A. At the time of her work in the period of 2002 2 A. Yes, I did. Yes. 3 to 2006 she certainly became the most knowledgeable 3 Q. Actually you were probably a head of that at 4 person about stereology within the company but there 4 that point, head of that division? 5 were certainly other experts outside of the company who A. I was one of the senior leaders in that 6 organization. I didn't directly at that time manage 6 had greater knowledge than Louise. Q. And did you avail yourselves of the expertise 7 the team that Dr. Marks was in but obviously I had 8 of those outside scientists in stereology? 8 indirect understanding of the team. 9 A. We did. 9 Q. Who do you report to in the company today? 10 10 Q. And who are they? A. To Mr. David French. 11 A. They would include -- this is not an 11 Q. And what is his role at the company? 12 exclusive list -- Professor Neingaard from Scandinavia 12 A. He is the head of global regulatory and 13 University. And Dr. Mark Butt who was from ToxPath, 13 product safety. 14 one of our contract research organizations who provided 14 Q. And how many people report to you? 15 his knowledge of stereology. And Dr. Jeff Wolff from 15 A. None. 16 another contract research organization who also had 16 Q. I thought you said you supervised sections? 17 experience in that area. And we also consulted with 17 A. I did until -- I didn't probably finish my CV 18 people at the Parkinson's Institute in North America. 18 correctly. So in 2017 I decided to step down from 19 O. Which institute? 19 being global head of product safety, and from 2017 20 A. The Parkinson's Institute. 20 until today I'm actually principal science adviser 21 Q. And where is that? 21 which is a stand-alone role. 22 A. That is in California. 22 Q. And what is the job or duty responsibility of 23 Q. Sunnyvale? 23 principal science adviser to Syngenta? 24 A. Yes. 24 A. It is specifically providing advice on 25 Q. And that would be Dr. Dino DiMonte? 25 science matters, whatever -- wherever I can to the Page 35 Page 37 A. That's correct. 1 product safety organization. 2 Q. When you had these conversations with Q. And what specific entity are you employed by? 3 Dr. Marks, were you discussing her work at Syngenta? 3 A. I'm employed by Syngenta Limited in the U.K. A. In the conversations recently? 4 Q. And who employs David French? 5 5 MR. NARESH: Objection: foundation. If you A. We did have a brief conversations about the 6 6 know. 7 work that she did on one of the calls that I referred 7 A. He reports to Syngenta AG. 8 to, yes. 8 BY MR, TILLERY: 9 Q. Which call, when? Q. Is he on the Syngenta executive committee? A. Well I think I said that there were probably 10 A. He is not. 11 four calls and it would be either on the first or the 11 Q. Are there any other people you talked to in 12 second call that we had a conversation about the work 12 preparation for this deposition other than lawyers that 13 that she did when she was with us. 13 you haven't told me about? 14 Q. And you've said repeatedly that it was "we". 14 A. I did have a brief conversation this morning 15 Who else was on the call besides you and Dr. Marks? 15 with Dr. Clive Campbell who was here in the offices A. When I say "we" it was myself and Dr. Marks. 16 today. That's the only other person I can recall, 17 Q. Was there anybody else on the call? 17 Q. You spoke to him just today? 18 A. There was nobody else on those calls. 18 A. Yes. 19 Q. And she told you about her work at Syngenta? 19 Q. When you told me about your conversations 20 A. She certainly spent a little bit of the time 20 with Louise Marks you indicated that she asked you 21 on one call talking to me about her work at --21 about the process. What did you tell her? 22 Q. You were familiar with it though anyway, 22 A. I told her as much as I knew, which is what 23 weren't you? 23 I had been informed of by my lawyers, by my attorneys, 24 A. I had familiarity with it, yes. 24 and that there was not necessarily an obligation for 25 Q. And you had familiarity with all of her 25 her to take part in the process. So as I understood it

10 (Pages 34 - 37)

- 1 at the time of me having those conversations she had,
- 2 if you wish, a choice as to whether she would take part
- 3 in the process. That was my understanding at the time.
- 4 Q. And you told her what in response to that?
- 5 A. I told her that she should give that some
- 6 thought and decide what she would like to do.
- 7 Q. And what did she tell you she was going to 8 do?
- 9 A. Initially she didn't decide what she wanted
- 10 to do. So this is why -- one reason why there was more
- 11 than one phone call. So in the last phone call by that
- 12 time she had decided that she did wish to come forward
- 13 and to describe her research work.
- 14 O. Did anyone ask you to contact her?
- 15 A. I was asked to certainly on one occasion to
- 16 contact her, yes.
- 17 Q. Who asked you to contact her?
- 18 A. That was something that one of my attorneys,
- 19 my internal --
- Q. One of the lawyers asked you to reach out to
- 21 her?
- 22 A. Yes.
- Q. Who was it?
- 24 A. I think that was Mark Smith.
- 25 Q. When was it that you contacted her the first
  - Page 39
- 1 time?
- 2 A. I don't have a date in my head I'm afraid.
- 3 Q. Have we now covered everybody that you spoke
- 4 to in preparation for this deposition?
- 5 A. As far as my memory will allow, yes.
- 6 (Exhibit 3 marked for identification.)
- 7 Q. Please take a look at Exhibit 3, sir. Tell
- 8 me if you can identify it?
- 9 A. Okay.
- 10 Q. This is the disclosure that was given to us
- 11 last week, I'll represent that to you, by your counsel,
- 12 okay. Take a look at the first page and you see the
- 13 designated topics?
- 14 A. Yes.
- 15 Q. "For the February 25, 2020 deposition,
- 16 Philip Botham will cover topics 31(a)-(c), (e)-(g),
- 17 (k), (n)-(o); 32-35; 36(a), (c)-(i), (k)-(n); 37-39;
- 18 53-58; 61-62; and 63 (except for EPA) ..."
- 19 Do you see that?
- 20 A. Yes, I do.
- 21 Q. And you're prepared to testify on those
- 22 topics?
- 23 A. Yes.
- 24 Q. The document contains a number of designated
- 25 documents. Unfortunately for you they don't describe

- 1 them, they just have Syngenta Bates range numbers. Do
- 2 these include the documents that you selected for
- 3 purposes of reliance for these deposition topics?
- 4 A. So you're referring to that list of --
- 5 Q. Yes.
- 6 A. I don't obviously, just with having numbers,
- 7 I can't relate to what they are specifically.
- Q. But it's your understanding that you gave
- 9 these documents to counsel as documents that you relied
- 10 on, they gave some as well and provided them, and this
- 11 list would include the documents you relied upon, as
- 12 far as you understand?
- 13 A. Well I guess I have to accept what you say.
- 14 I mean, I don't understand the designation of these
- 15 documents of the numbers. I take it that you're
- 16 telling me that they refer to the documents that I have
- 17 been looking at with my attorneys over recent weeks.
- 18 Q. The Syngenta numbers, the SYN numbers, are
- 19 Bates range numbers for documents that were produced to
- 20 us in discovery.
- 21 A. Okay.
- 22 Q. I'll represent that to you.
- 23 A. Okay.
- Q. Okay. And these refer to those specific
- 25 Bates range numbers. That's all we were given.
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- 1 A. Yes.
- Q. We then go back to a database, so for
- 3 documents supplied to us in discovery, and pull those
- 4 documents out. Now I know you don't have a specific
- 5 reference to documents here at this point but as far as
- 6 you know it was your intention that the documents you
- 7 relied upon be included along with this compliance?
- 8 A. That certainly is my understanding, yes.
- 9 Q. All right. Thank you. Has Syngenta ever
- 10 intentionally withheld information about the
- 11 neurotoxicity of paraquat?
- 12 A. I don't believe that it has.
- 13 Q. Okay. And you certainly researched that
- 14 question, didn't you?
- 15 A. Yes.
- 16 Q. And you've never found evidence of that,
- 17 right?
- 18 A. I have not found evidence that suggests that
- 19 we have deliberately withheld information, certainly
- 20 not. We have always made sure that any information
- 21 that we provide has been based on the best scientific
- 22 opinion of the information.
- 23 Q. And have you strived to be transparent in
- 24 your scientific endeavors about paraquat?
- 25 A. We have certainly done so and I think that

11 (Pages 38 - 41)

1 our publication record and our interaction with2 regulatory authorities illustrates that.

Q. Does that include, that specific answer to myquestion, the corporate predecessors of Syngenta as

5 well?

6 A. Yes.

7 Q. Is paraquat the active ingredient not a

8 formulated product a chemical compound?

9 A. Paraquat is as the active ingredient is a 10 chemical compound.

11 Q. Paraquat is a synthetic chemical compound,

12 meaning it's man-made; correct?

13 A. That is correct.

14 Q. It doesn't exist in nature but has to be made

15 in a laboratory or a chemical manufacturing plant;

16 correct?

17 A. That is correct.

18 Q. Is paraquat also known as paraquat

19 dichloride?

20 A. That is the salt of paraquat, yes.

21 Q. Are methyl viologen dichloride and methyl

22 viologen also names that are used to refer to paraquat?

23 A. I don't remember if that's the case.

24 Q. Do you know what viologen means, do you know

25 what that is?

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1 A. No.

2 Q. Is your background in chemistry?

3 A. It is not.

4 Q. What is it?

5 A. My PhD was in biochemistry and then my

6 post-doctoral research took me into immunology.

7 Q. So you have a PhD in biochemistry?

8 A. Yes.

Q. Okay. Is paraquat a type of compound that

10 chemists call a salt?

11 A. Paraquat dichloride is a salt.

12 Q. A salt is a chemical compound composed of one

13 or more cations and one or more anions; correct?

14 A. Correct.

15 Q. Is a cation an atom or a group of atoms

16 called a molecule with a net positive electric charge?

MR. NARESH: Object to the form.

18 A. It is, yes.

19 BY MR. TILLERY:

20 Q. And an anion is an atom or molecule with a

21 net negative electric charge; correct?

22 MR. NARESH: Same objection.

23 A. It is.

24 MR. TILLERY: What was your --

25 MR. NARESH: Form.

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1 MR. TILLERY: You know counsel, it was taken

2 under 1102.

3 MR. NARESH: I understand.

4 MR. TILLERY: So you're aware of that.

5 BY MR. TILLERY:

6 Q. In a salt do the charges contributed by the

7 cations and anions balance out such that the salt has a

8 net charge of zero, or no net charge?

9 MR. NARESH: Same objection. Can I just --

10 I don't mean to interrupt your flow. Can I have a

11 standing objection to this line?

12 MR. TILLERY; Absolutely, Just for the

13 record, though, it is taken under 2-1102.

14 MR. NARESH: I'm just cognizant of the fact

15 that we're taking it under two jurisdiction rules at

16 the same time so I don't want to make --

17 MR. TILLERY: Then I'll agree to a continuing

18 objection on that ground.

19 BY MR. TILLERY:

Q. Would you read back the question, please, or

21 do you want me to restate it? Let me start over. Is a

22 cation an atom or a group of atoms -- sorry. And an

23 anion is an atom or molecule with a net negative

24 charge?

25 A. That's right.

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1 Q. In a salt do the charges contributed by the

2 cations and anions balance out such that the salt has a

3 net charge of zero, or no net charge?

4 A. If you have got in the case of paraquat the

5 dichloride then that would be the case, yes.

6 Q. A table salt is a chemical salt composed of

7 one sodium cation with a charge of positive 1 or plus

8 1, and one chloride anion with a charge of negative

9 1 or minus 1, which together net out to zero or no net

10 charge on the molecule as a whole. Is that a correct

11 statement?

12 A. That's correct.

13 Q. When we talk about an atom or molecule having

14 a charge of 1 or 2, whether positive or negative, we're

15 talking about the strength of the charge; correct?

16 A. Yes. Yes.

17 Q. And the charge of negative 1 isn't less than

18 but it's the opposite of a charge of positive 1 like

19 the negative and positive into a magnet; correct?

20 A. That's right.

21 Q. A paraquat molecule has 1 cation and two

22 anions, doesn't it?

23 A. Yes.

Q. Does the cation in a paraquat molecule, the

25 paraquat in paraquat dichloride have a charge of plus

CONFIDENTIAL		
Page 46	Page 48	
1 2?	1 no.	
2 A. Yes.	2 Q. Were paraquat's herbicidal properties first	
3 Q. Is the paraquat in paraquat dichloride	3 discovered in 1955?	
4 sometimes referred to as paraquat cation or paraquat	4 MR. NARESH: Steve, are you changing topics?	
5 di-cation?	5 MR. TILLERY: We're going through it	
6 A. Yes.	6 chronologically. There will be back and forth on the	
7 Q. Does the "di" in di-cation refer to the	7 topics.	
8 charge of 2?	8 MR. NARESH: Can we take a quick break?	
9 A. Yes.	9 MR. TILLERY: Sure.	
Q. For simplicity sake, can we agree when we us	e 10 MR. NARESH: 5 minutes?	
11 the term "paraquat cation" today, we're referring to	11 THE VIDEOGRAPHER: Going off the record. The	
12 the paraquat di-cation that has a charge of plus 2?	12 time is 10:04.	
13 A. Yes.	13 (Break taken.)	
Q. In addition to 1 paraquat cation does	14 THE VIDEOGRAPHER: Back on the record. The	
15 paraquat have 2 chloride anions?	15 time is 10:15 a.m.	
16 A. That's right.	16 BY MR. TILLERY:	
17 Q. The 2 chloride anions are the dichloride part	17 Q. Are you ready, sir?	
18 of paraquat dichloride; correct?	18 A. I am.	
19 A. Correct.	19 Q. Were paraquat's herbicidal properties	
Q. Does each of the chloride ions have a charge	20 discovered in 1955 as far as you know?	
21 of minus 1?	21 A. That's what I remember, yes.	
22 A. Yes.	22 Q. That discovery was made by scientists in	
-	23 England at Jealott's Hill laboratories of Imperial	
Q. So paraquat dichloride, or paraquat as we're referring to it, is composed of 1 paraquat cation with	24 Chemical Industries Limited; correct?	
25 a charge of plus 2 and 2 chloride ions each with a	25 A. That is correct.	
<ol> <li>charge of minus 1 which together net out to zero or no</li> <li>net charge on the molecule as a whole?</li> <li>A. That's correct.</li> </ol>	1 Q. Imperial Chemical Industries Limited is a 2 mouthful. Can I refer to it as "ICI" which we've been 3 using up until this time of the dep?	
4 Q. Have I got that right?	4 A. I'm fine with that.	
5 A. You have.	5 Q. You'll know what I mean which I say "ICI"?	
6 Q. Is paraquat a solid at room temperature?	6 A. I will.	
7 A.: You know I don't know the answer to that	7 Q. Is saying that paraquat has herbicidal	
8 question.	8 properties just a fancy way of saying that paraquat car	
9 Q. I'll give you the answer. It's yes.	9 kill plants?	
10 A. I thought it was.	10 A. Yes, that's right, yes.	
11 Q. You agree with that?	11 Q. In April 1956 did ICI apply in Great Britain	
12 A. Yes.	12 for a patent on the use of paraquat as a herbicide?	
13 Q. Is paraquat, like table salt, a crystalline	13 A. I have no knowledge of that.	
14 solid?	14 Q. That's something you didn't research?	
15 A. I don't know.	15 A. No.	
16 Q. Is paraquat, like table salt, highly soluble	16 Q. Didn't talk to anybody?	
17 in water?	17 A. No.	
18 A. Yes.	18 Q. Let me show you Exhibit 4.	
<ol> <li>Q. Water dissolves paraquat by breaking the</li> </ol>	19 (Exhibit 4 marked for identification.)	
20 ionic bonds between the paraquat cation and the two	20 And in 1961 ICI was awarded a United States	
21 chloride anions; correct?	21 patent of the use of paraquat as a herbicide, wasn't	
22 A. I think that's correct.	22 it, by reference to Exhibit 4?	
Q. You would agree you don't have any reason	23 A. This looks to be what that says.	
24 to disagree?	Q. Okay. Exhibit 4 is U.S. patent reference number US 2,972,528. And it has a patent number of	

1 2,972,528; correct?

- 2 A. I'm not familiar with patent numbers but
- 3 I see that number here.
- Q. Is that dated February 21, 1961?
- 5 A. It is.
- Q. And the patent is titled "Dipyridyl
- 7 Derivatives and Herbicidal Methods in Compositions
- 8 Containing the Same"; correct?
- A. Correct.
- 10 Q. And the inventors assigned that patent to
- 11 Imperial Chemical Industries Limited --
- 12 A. Correct.
- 13 Q. -- London, right?
- 14 A. (Deponent nods).
- 15 That's the company that you started your job
- 16 with?
- 17 A. Yes.
- 18 Q. Did you know any of these inventors?
- 19 A. No.
- 20 Q. Had you ever heard of any of them?
- 21 A. If they are the people in dark type at the
- 22 beginning of this document --
- 23 Q. Yes, correct.
- 24 A. -- then no, I don't, no.
- 25 Q. And this U.S. patent, claimed priority to the

O. You're the principal scientific adviser in

- 2 your job, you're the former head of the paraquat
- 3 division and you can't tell me if you can answer that 4 question?
- A. I'm a principal science adviser in product
- 6 safety, which is not the same as being a principal
- 7 science adviser on all aspects regarding paraquat,
- 8 including its chemistry.
- Q. Well let me ask you something. Do you think 10 as the head of the scientific division on product
- 11 safety for a product you'd want to know everything
- 12 about the chemical aspects of that product?
- 13 A. First of all you used the term "division" and
- 14 there is no such thing as a division as you describe
- 15 it. So I was heading the health science research team,
- 16 which is specifically about the safety of paraquat. 17 And I did not at any time get into the history or the
- 18 detailed chemistry of paraguat and its invention.
- 19 Q. In that job or responsibility did you think
- 20 it might be necessary to understand the detailed
- 21 chemistry of the product to know how it works?
- MR. NARESH: Object to the scope. 22
- 23 A. The important thing was for me to understand
- 24 what it's mechanism of action is.
- 25 BY MR. TILLERY:

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- 1 Q. You mean redox cycling? A. I do.
  - 3 And you'd consider yourself an expert in that
  - 4 area?

2

- 5 A. I'm not an expert of redox cycling. I talk
- 6 to people who are more expert and understand that it is
- 7 that redox cycling that leads to its effect.
- 8 Q. Let's say it this way. Can you answer my
- 9 questions on redox cycling?
- 10 A. It depends how detail they become.
- 11 Q. So in other words when it gets to a point
- 12 where you don't want to answer my question, you're
- 13 going to tell me you don't know the answer; right?
- 14 MR. NARESH: Objection: argumentative.
- 15 A. No, I'm not going to do that. I will not
- 16 necessarily know the answer to the questions.
- 17 BY MR. TILLERY:
- Q. All right, let's put it this way. Will you
- 19 do your best in this deposition to try to answer all my
- 20 questions if they're in the realm of areas that you
- 21 prepared for and you should have knowledge of?
- 22 A. Well I think you're suggesting that I should
- 23 have perhaps more knowledge of the chemistry than 24 I actually do.
- Q. Do you have a PhD in biochemistry?

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- 1 date of a patent application in Great Britain dated
- 2 April 4, 1956, didn't it?
- 3 A. Yes.
- Q. I'd like to direct your attention to the
- 5 first page, left column, third paragraph, where it says
- 6 "We are aware". Do you see that?
- 7 A. Yes.
- Q. "We are aware that certain of the compounds
- 9 of the above stated formula are known compounds for
- 10 example 4,4'-dipyridyl dimethiodide,
- 11 dimethochloride ..."
- 12 Do you see that one?
- 13 A. Yes.
- Q. Okay. Is 4,4'-dipyridyl dimethochloride 14
- 15 another name for paraquat dichloride?
- A. I don't know. I'm not such a deep technical
- 17 expert in the chemistry to be able to answer that 18 question.
- Q. Do you have any reason to dispute the 19
- 21 A. I have no reason to dispute it.
- 22 Q. Just so we're clear, you've been designated
- 23 to talk about these topics about a chemical, primarily
- 24 paraquat; right?
- A. Hm-hmm.

20 statement I made?

\_\_\_\_

Page 54

- 1 A. Yes. That is not the same as chemistry, so.
- 2 Q. It has the word "chemistry" in there though,
- 3 biochemistry, so you studied some chemistry, didn't you
- 4 to get your PhD?
- 5 A. Really I think in terms of the kind of
- 6 chemistry that we're talking about here, the answer is:
- 7 no.
- 8 Q. The statement in that, if you go back to that
- 9 patent -- sorry, strike that. If you go back to that
- 10 patent on Exhibit 4, the statement in the patent that
- 11 paraquat was a "known compound". Do you see that?
- 12 A. Could you just clarify where this is, please?
- 13 Q. Where I directed you. Okay?
- 14 A. Yes. Yes okay, I'm on that paragraph.
- 15 Q. Means it wasn't a new compound created from
- 16 scratch; is that correct?
- 17 A. That's my understanding of what's written
- 18 there.
- 19 Q. Doesn't the patent describe separately the
- 20 known compounds mentioned in the left column, and some
- 21 new compounds that are mentioned in the right column,
- 22 second paragraph from the bottom, if you look at that?
- 23 MR. NARESH: Objection: scope.
- 24 BY MR. TILLERY:
- 25 Q. See the thing where it says:

- 1 question?
  - A. No.
  - Q. Are you aware of any documents at Syngenta

Page 56

Page 57

- 4 that would help you answer that question?
- A. Not off the top of my head, no.
- 6 Q. Let me ask you, are you aware of any other
- 7 person at Syngenta who could tell us when it was first
- 8 synthesized?
- 9 A. I would have to give that some thought as to
- 10 whether there were people in our chemistry department
- 11 who may be able to do that.
- 12 Q. Does Syngenta have a library?
- 13 A. Not a physical library, no.
- 14 Q. It has one electronically, right?
- 15 A. Yes.
- 16 Q. And it's massive, isn't it?
- 17 A. I would -- yes it is, yes.
- 18 Q. And you have access to it?
- 19 A. I have access to some aspects of it, yes, not
- 20 all.
- 21 Q. The science part of it?
- 22 A. Sure.
- 23 Q. Did you consult that library to answer these
- 24 questions?
- 25 A. I did not consult with regard to the specific

#### Page 55

- 1 "Thus according to a further feature of the
- 2 invention we provide new compounds" of the formula?
- 3 A. Yes, I see that.
- 4 BY MR. TILLERY:
- 5 O. That reads:
- 6 "Thus according to a further feature of the
- 7 invention we provide new compounds ..."
- 8 Followed by a formula.
- 9 A. Yes.
- 10 Q. Paraquat was first synthesized, meaning made,
- 11 in a laboratory in the 19 -- sorry, in the 1880s,
- 12 wasn't it?
- 13 A. I don't know.
- 14 MR. NARESH: Objection to scope.
- 15 BY MR. TILLERY:
- 16 Q. In preparing to testify for Syngenta on the
- 17 designated topics, did you make any attempt to obtain
- 18 information that would answer that question?
- 19 A. No.
- 20 O. Did you search any documents or data to --
- 21 that was available to you for information that might
- 22 answer that question?
- 23 A. No.
- 24 Q. Did you ask anybody for information,
- 25 documents or data that might help you answer that

- 1 questions that you're now addressing.
- Q. Paraquat in its chemical properties had been
- 3 known to the scientific community for decades before
- 4 ICI began investigating its potential for use as a
- 5 herbicide; is that correct?
- 6 MR. NARESH: Objection to scope.
- 7 A. I'm not able to answer that question
- 8 accurately.
- 9 BY MR. TILLERY:
- 10 Q. You just don't know the answer?
- 11 A. I just don't know, no.
- 12 Q. Do you know of anybody at Syngenta who could
- 13 answer it?
- 14 A. Not off the top of my head. I would have to
- 15 give that some thought.
- O. Well, would you be able to answer this
- 17 question. Chemists knew of paraquat and its chemical
- 18 properties long before the 1950s?
- 19 MR. NARESH: Objection to scope.
- 20 A. Could you -- what was the specific question
- 21 for me there?
- 22 BY MR. TILLERY:
- 23 Q. Chemists knew about paraquat and its chemical
- 24 properties long before the mid-1950s, didn't they?
- A. Well that's evident, yes, yes.

15 (Pages 54 - 57)

Page 58 Page 60 1 Q. Biological chemists knew it too? 1 here, then it would be probably 1,000 or 2,000. 2 A. I don't know. Q. 2,000 chemists and you were the person they 3 Q. Did plant biologists know that? 3 selected to answer my questions about chemistry. So 4 A. I don't know. 4 you have 2,000 of you, and how many PhDs? 5 Q. Did animal biologists know that? A. I couldn't answer that question. 6 A. I don't know. Q. And you're telling me that you can't answer 7 Q. Plant physiologists? 7 these questions, right? 8 A. I don't know. A. I was given no preparation or indication that Q. For what purposes did scientists use paraquat 9 I needed to get into the detail of the chemistry of 10 before ICI began investigating its potential as a 10 paraquat. 11 herbicide? 11 Q. So you know the lawsuit has been going on two 12 MR. NARESH: Objection to scope. 12 years or so, two and a half years. And have you read 13 A. I don't know. 13 the complaint? 14 BY MR. TILLERY: 14 A. Yes. 15 Q. Were you aware that scientists had used 15 Q. Okay. You know that we went through in great 16 paraquat to catalyze the formation of reactive oxygen 16 detail the chemical properties of paraguat in the 17 species before ICI began investigating its potential 17 complaint, didn't we? 18 for use as a herbicide? 18 A. Yes. 19 MR. NARESH: Objection to scope. 19 Q. You read about the redox cycling, you read 20 A. I only have some very broad and vague 20 about all the chemical principles, you understood that 21 recollections of people telling me about that kind of 21 this case involved those issues, didn't you? 22 history. 22 A. I certainly did, yeah. 23 BY MR. TILLERY: 23 Q. Before you got here today, didn't you? 24 Q. Go ahead and try to give us that answer? 24 A. Yes. 25 A. I'm not able to. It is so vague that I don't 25 Q. And yet you tell me you as the head of the Page 59 Page 61 1 think any answer would be useful. 1 science team globally cannot answer these preliminary 2 Q. What does the term "reactive oxygen species" 2 questions about chemistry? 3 mean? 3 MR. NARESH: Objection: argumentative. A. It means a generation of oxygen radicals 4 BY MR. TILLERY: 5 which have the potential to create biological damage. Q. Is that correct? Q. Do you know of the features of paraquat in A. Well that's correct because I don't have --7 terms of reactive oxygen species? 7 I was not involved in that history and a knowledge of Paraquat because of its redox cycling 8 that history was not in its entirety relevant to the 9 capability can in turn generate reactive oxygen 9 product safety issues that I was responsible for. 10 species. 10 Q. So you think because you don't know the Q. In what kinds of experiments did scientists 11 answer it's not relevant to product safety? 12 use paraquat to catalyze the formation of reactive A. No, I said that not all aspects that you're 13 oxygen species? 13 exploring with me, other than its mode of toxicity if 14 A. I don't know. 14 you like, its mode of action which includes what we Q. Do you know anybody at Syngenta -- the whole 15 15 were exploring a moment ago about reactive oxygen 16 operation, how many people are there: 28,000? 16 species. A. Today there are 28,000 in Syngenta. 17 17 Q. Let me ask you. When you're in the business 18 Q. And how many scientists? 18 of manufacturing a chemical like paraquat do you think 19 A. I couldn't give you a number. 19 it's the duty or obligation of the manufacturer and its 20 Q. Do you have an estimate? 20 global head of science research to understand every A. It depends how you define scientist. 21 21 facet of the chemical properties of that product? 22 Q. Well you make the definition and then answer 22 MR. NARESH: Objection to scope.

16 (Pages 58 - 61)

A. The company and its research group as a whole

24 did that. But individual scientists have pockets of

25 knowledge within that greater scope.

23

A. If you're talking about people who are in

25 chemistry for example, which may be most appropriate

23 it?

24

Page 62 Page 64 1 BY MR. TILLERY: 1 first recognized the redox cycling properties of Q. Do you even know if the answers to these 2 paraquat would be useful and important to you to 3 understand its safety? 3 questions I'm asking you right now relate to the health MR. NARESH: Objection to form and scope. 4 science aspects of paraquat? A. I know that its ability for example to cause A. It was never evident to me that it was 6 toxicity through the generation of reactive oxygen 6 important to go back into the history of how that was 7 species is pertinent to what we're talking about today. 7 first understood. We were using the knowledge of that 8 as part of our research, not the history of how that Q. Do you understand that what ICI knew about 9 the mode of action of the chemical -- strike that. 9 was discovered. Do you understand when ICI knew about the 10 BY MR. TILLERY: 11 mode of action of the chemical? Q. Let me just ask the questions a different 12 way. Because you're going to tell me you have no idea A. I don't know when, no. Q. Do you know the kinds of experiments 13 about the content of the study or this publication, 13 14 scientists used -- strike that. In what kind of 14 right? 15 experiments did scientists use paraquat as an oxidation 15 Correct. 16 reduction indicator before ICI began investigating its 16 Q. The first publication ever of paraquat in a 17 scientific journal or article in 1933 you have no idea 17 use as a herbicide? 18 about it, right? 18 MR. NARESH: Objection to scope. 19 A. No, I have not. A. I don't know that. 20 MR. NARESH: Objection to form. 20 BY MR. TILLERY: Q. Is oxidation reduction a type of chemical 21 BY MR. TILLERY: Q. And it's not in their library, or at least if 22 reaction? 23 it is in the Syngenta library you've never looked for 23 A. It is. 24 it? Q. Is redox commonly used as a shorthand for 25 oxidation reduction? 25 A. I absolutely have not looked for it. Page 65 Page 63 Q. And you've never had a discussion with any 1 A. That's one definition, yes. 2 (Exhibit 5 marked for identification.) 2 other of the 2,000 chemists about this article, this 3 paper, right? Q. I've handed you Exhibit 5. Can you identify 3 A. No. 4 it? A. This is a publication entitled "The Viologen Q. Let me represent to you that the -- we refer 6 to as the Michaelis, because that's the author, by 6 Indicators". Q. Have you ever read this before? 7 L Michaelis and Edgar S. Hill, do you see that? A. I have not. A. I do. 9 Q. Accepted for publication April 7, 1933? O. Do you know what it even is? 10 A. I do not and I'm afraid I've not ever read it 10 A. (Deponent nods). Q. And that was in the Journal of General 11 before. 12 Physiology. Let me just represent to you, sir, that O. Did you just tell me less than 5 minutes 13 the Michaelis paper reported the results of studies 13 before that you read and researched the mode of action 14 measuring the redox potential and determining the 14 of paraquat? A. No, I said that I was aware of the relevance 15 optical properties of the compounds it referred to as 16 viologen indicators? 16 of its properties to redox cycle and generate reactive A. Mm-hmm. 17 oxygen species to its potential toxicity. 17 Q. And were you aware that this scientific Q. What is a viologen indicator? A. It's a term that I'm very vaguely familiar 19 article published in 1933? 20 with. I couldn't define it. A. No, I was not aware of that. Q. Did you know that this dealt directly with O. Do you know whether an understanding what a 22 viologen indicator is would be important to

17 (Pages 62 - 65)

23 understanding the health science components of

A. I would not really believe that understanding

24 paraquat?

22 redox cycling?

A. No, I did not.

Q. Would you think that going back and

25 researching and analyzing how the scientific community

Page 66
1 as specific of what viologen indicators relevance was,
2 as I've said, understanding that the property in terms
3 of redox cycling is important.

4 Q. What's an indicator in chemistry?

5 A. It's a re-agent that is able to demonstrate

6 that a chemical reaction has occurred.

Q. And what's a viologen?

A. I'm not sure what a viologen is actually.

9 Q. Can you take a look at the paper for a

10 second, sir, and see at least the scope of what the

11 study was. Have you glanced through it at least?

12 A. Yeah.

8

13 Q. I know this hasn't given you a time to study

14 it, but you've glanced through it enough to understand

15 what it's about?

16 A. In very, very broad terms. But this a

17 detailed chemistry publication and I repeat I'm not

18 a chemist.

19 Q. Was ICI aware of this paper when it was

20 investigating paraquat for use as a herbicide?

21 MR. NARESH: Objection to scope.

22 A. I don't know.

23 BY MR, TILLERY:

24 Q. Should it have been?

25 MR. NARESH: Objection to scope.

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1 A. It certainly should have been and I imagine

2 it was, but I have no direct evidence that that was the

3 case.

4 BY MR. TILLERY:

5 Q. Would you agree with me before you started

6 selling this product as a herbicide you would want to

7 know about that paper?

8 A. I think that that is very likely to have been

9 the case.

10 Q. You would agree with me then that that would

11 be important, right?

12 A. I think it's obviously part of the -- an

13 important part of the history of the molecule,

14 certainly.

15 Q. Right. So paraquat, or methyl viologen as

16 Michaelis refers to it in this paper, was one of the

17 viologen indicators whose redox potential and optical

18 properties he studied and reported on in this 1933

19 paper; correct?

20 MR. NARESH: Objection: foundation; scope.

21 A. That's what I've quickly ascertained, yes.

22 BY MR. TILLERY:

Q. And Michaelis measured and reported the

24 results of studies measuring paraquat's redox potential

25 so scientists could use it as a yardstick in studies to

Page 68

1 measure the redox potential of other chemical

2 compounds, didn't he?

3 MR. NARESH: Same objections.

4 A. That's again my understanding from that

5 brief.

6 BY MR. TILLERY:

Q. And he determined and reported on its optical

8 properties so scientists could use it as an indicator

9 of redox reactions, didn't he?

10 MR. NARESH: Same objections.

11 A. Again that's my understanding, yes.

12 BY MR. TILLERY:

13 Q. And if you would look at Exhibit 5, the same

14 exhibit, at 859, the very first sentence. Could you

15 read that into the record?

16 A. "The quaternary bases derived from

17 y,y'-dipyridyl have proven to be useful as

18 oxidation-reduction indicators of properties very

19 desirable for biological purposes, especially because

20 their potential range is very negative, under certain

21 conditions more negative than that of any member of the

22 series of indicators worked out by W.M. Clark and his

23 associates (1) and supplemented by various other

24 authors."

1

25 Q. Okay, what does that mean to you?

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MR. NARESH: Objection: scope; foundation.

2 A. That these bases have interesting properties

3 that would be of value in the way in which you

4 described a few moments ago.

5 BY MR. TILLERY:

6 Q. "For biological purposes", do you see that?

7 A. Yes.

8 O. What does that mean?

9 MR. NARESH: Objection: foundation; scope.

10 A. I don't know specifically what they had in

11 mind by saying that at this point in the paper.

12 BY MR. TILLERY:

13 Q. What does it generally mean biological

14 purposes? "Very desirable for biological purposes",

15 what does that mean?

16 A. Well that would normally mean that it would

17 have utility in some way in understanding biological

18 processes or helping to understand biological

19 mechanism.

20 Q. The viologen indicators Michaelis studied are

21 the same as "The quaternary basis derived in

22 y,y'-dipyridyl" that this sentence refers to, aren't

23 they?

24 MR. NARESH: Objection: foundation; scope.

25 A. Yes.

Page 72 Page 70 1 BY MR. TILLERY: 1 A. It does. Q. And one of them is paraquat? 2 Q. Is paraquat monocation also known as paraquat 2 3 radical? 3 A. Yes. 4 A. That's correct, yes. O. And "their potential range is very negative", O. For simplicity and consistency sake, can we 5 that quote in the sentence means the viologen 6 agree to refer to paraquat monocation as paraquat 6 indicators Michaelis studied, including paraquat, have 7 radical for purposes of this deposition? 7 a very high potential to undergo, doesn't it? A. Yes. MR. NARESH: Can I have a standing objection 9 Q. What happens to the color of paraquat when 9 to this line of questioning on scope and foundation? 10 paraquat cation is reduced to paraquat radical? MR. TILLERY: Of course. 11 MR. NARESH: Objection: foundation. 11 BY MR. TILLERY: 12 A. I don't know. Q. I can restate it because of the question? 13 A. Please do. Please restate. 13 BY MR. TILLERY: 14 Q. If I told you it changed to a violet or deep Q. I will. I'll restate it. The quote is: 14 15 blue color would you have any reason to dispute my "Their potential range is very negative" in 15 16 this sentence means the viologen indicators Michaelis 16 basic chemistry understanding? 17 studied, including paraquat, have a very high potential 17 MR. NARESH: Objection: scope. A. No reason to dispute that. 18 18 to undergo redox cycling, doesn't it? 19 BY MR. TILLERY: A. That's my understanding, correct. 20 Q. So far have I been okay, as far as you know 20 Q. Paraquat has a very high potential to 21 about your chemistry background and my chemistry 21 participate in redox reactions, doesn't it? 22 questions? A. It does. A. As I said before, I'm not an expert in 23 Q. What color is paraquat? 24 chemistry or even in the specifics of this chemistry, A. I don't know. Again I'm sure it depends on 25 so I'm not able to dispute what you've said so far. 25 whether it's salt or the cation. I actually can't give Page 73 Page 71 Q. Is this change in color how paraquat got the 1 1 you an answer off the top of my head. 2 name methyl viologen? Q. You think there's anybody in the company, the 3 28,000-member company that could tell me what color the A. I don't know but from what I describe it, it 4 would suggest that may be the case. 4 product of paraquat is? And by the way, how long have Q. Is paraquat radical what is sometimes 5 5 you been working with this? Since 1955, the company 6 referred to as a free radical? 6 has? A. Yes. A. Yes. Q. Free radicals are unstable highly reactive Q. Is there anybody there you could think of 9 molecules, aren't they? 9 that could answer that question? A. They are. 10 A. There would be. Again, I wouldn't be able to Q. Can paraquat react -- strike that. Can 11 11 give you a name off the top of my head. 12 paraquat radical undergo a redox reaction in which it's Q. Okay. And paraquat can undergo a redox 13 oxidized back to paraquat cation? 13 reaction in which the charge on the paraquat cation is 14 A. Yes. 14 reduced from plus 2 to plus 1, can't it? 15 Q. What happens to the color of paraquat when 15 A. Yes. 16 paraquat radical is oxidized back to paraquat cation? O. Paraquat's very high redox potential means MR. NARESH: Objection: foundation; scope. 17 17 that this reaction occurs very readily and very quickly A. Again, I don't know. I'm not an expert in 18 18 if a suitable re-agent is present, doesn't it. 19 that. 19 A. That's correct, yes. 20 BY MR. TILLERY: Q. The result of reducing the charge on the Q. If I told you it went back to its original 21 paraquat cation from plus 2 to plus 1 is the paraquat 22 color, colorless, white or offwhite, would you have 22 monocation; correct?

19 (Pages 70 - 73)

24

25

23 any reason to dispute any statement?

A. No reason to dispute that.

MR. NARESH: Objection: same objections.

A. Yes.

25 the charge of 1?

Q. And does the "mono" in monocation refer to

23

24

Page 74 Page 76 1 BY MR. TILLERY: Q. In the presence of molecular oxygen, or O2, 2 Q. All right. Can paraquat radical undergo a 2 does paraquat radical undergo a redox reaction in which 3 redox reaction in which it's further reduced to an 3 its oxidized back to paraquat cation? 4 uncharged state? A. Yes. A. Yes. 5 Q. In that reaction O2 is the oxidant that takes Q. What color is paraquat that's been reduced to 6 an electron and paraquat radical is the reductant that 7 an uncharged state? 7 loses one? 8 MR. NARESH: Same objections. 8 A. Yes. A. Again, I don't know. Q. So one of the products of a redox reaction 10 BY MR. TILLERY: 10 between paraquat radical and O2 is paraquat cation? Q. If I told you it was yellow would you have 11 12 any reason to dispute that? 12-Q. And the other product of that reaction, the A. No. 13 result of the reduction of O2 is O2 minus; correct? Q. That paraquat changes color depending on 15 whether it has a charge of 2, 1 or zero is one of the 15 Q. Is O2 minus also known as superoxide and 16 properties that makes it useful as a redox indicator, 16 superoxide radical? 17 isn't it? 17 A. It is. 18 A. That's right, yes. 18 Q. Is superoxide a free radical? 19 Q. When paraquat undergoes a redox reaction in 19 A. Yes. 20 which paraquat cation is reduced to paraquat radical, Q. Is superoxide a reactive oxygen species? 20 21 the reduction refers to the decrease in charge from 21 A. That's my understanding that they're 22 plus 2 to plus 1; correct? 22 synonymous. 23 A. Correct. 23 Q. And you described what a reactive oxygen 24 Q. That decrease in charge from plus 2 to plus 1 24 species is. Can you give me the definition that you 25 occurs because paraquat gains an electron in that redox 25 would use for that? Page 75 Page 77 1 reaction, doesn't it? It's reactive oxygen species are not radical. 2 A. Yes. 2 That sort is an entity which has the capability of 3 Q. And because an electron has a charge of minus 3 interacting with other chemicals or with biological 4 1, gaining an electron reduces the charge on the 4 systems in a very active manner. 5 paraquat ion from plus 2 to plus 1; correct? Q. What other reactive oxygen species are you A. Yes. 6 aware of that are important in biological systems? Q. The electron paraquat gains when it's reduced A. I couldn't give you an answer to that. 8 in a redox reaction is taken from another molecule: 8 That's not my area of expertise. 9 correct? Q. The difference between the redox potentials 10 A. Yes. 10 of paraquat radical and O2 means that the redox 11 Q. In taking an electron from another molecule 11 reaction between paraquat radical and O2 that produces 12 in a redox reaction, is paraquat acting as what 12 paraquat cation and O2 minus occurs very readily and 13 chemists and biologists refer to as an oxidant? 13 very quickly, doesn't it? 14 A. Yes. 14 A. It does. Q. And the other molecule, the one losing an 15 Q. Is OH minus a reactive species? 16 electron to paraquat, is acting as a reductant? MR. NARESH: Objection: foundation; scope. 16 17 A. That's right. 17 A. I'm not able to answer that. Q. So an oxidation reduction, or redox reaction, 18 BY MR. TILLERY: 19 is a reaction where an electron is transferred from a Q. I should have said a reactive oxygen species. 19 20 reductant to an oxidant? 20 Would your answer be the same? 21 A. Yes. 21 A. It would be the same, yes. Q. And we say that an oxidant is reduced and the 22 Q. And would H2O2 be a reactive oxygen specie? 23 reductant -- strike that. And we say that the oxidant 23 MR. NARESH: Same objection.

20 (Pages 74 - 77)

A. Well H2O2 is hydrogen peroxide, and that in

25 itself is not a reactive oxygen entity.

24

A. Yes.

25

24 is reduced and the reductant is oxidized?

Page 78 Page 80 1 BY MR. TILLERY: 1 MR. NARESH: Same objections. Q. Can the paraquat cation the results from a 2 A. I imagine that the case. 3 redox reaction between paraquat radical and O2 undergo 3 BY MR. TILLERY: 4 again the first redox reaction we discussed in which 4 Q. Biological chemists as well? 5 A. I'm sure that would be the case. 5 its reduced to paraquat radical? 6 Q. Plant biologists as well? A. Yes. 7 A. Clearly it became something of importance to 7 Q. The cycle of the reduction of paraquat cation 8 plant, yes, to plant biologists. 8 to paraquat radical in one redox reaction and the O. And animal biologists? 9 oxidation of paraquat radical back to paraquat cation 10 in a second redox reaction will continue forever if 10 A. I don't know whether at the time you're 11 describing that that was something that was brought to 11 both a reductant to participate in the first reaction 12 the attention of animal biologists. 12 and O2 -- withdraw the question. [Asked to repeat.] 13 Let me start over. We'll withdraw the 13 Q. Would it be important to plant physiologists? A. It would be important to, if one were trying 14 question. The cycle of reduction of paraquat cation to 14 15 to invent herbicides to interfere with the normal 15 paraquat radical in one redox reaction and the 16 oxidation of paraquat radical back to paraquat cation 16 functioning of plants. 17 in a second redox reaction will continue forever if Q. What kinds of studies did scientists do 18 between the 1930s and the 1950s for which paraquat was 18 both a reductant to participate in the first reaction 19 useful as a redox indicator? 19 and O2 to participate in the second reaction are 20 MR. NARESH: Objection: scope and foundation. 20 present, one? 21 A. I believe that's correct, yes. A. I don't. 22 MR. TILLERY: I'll agree to a continued 22 Q. Is the sequence of redox reactions that 23 transforms paraquat cation to paraquat radical and 23 objection. 24 paraquat radical back to paraquat cation an example of 24 MR. NARESH: Okay, that's fine. 25 MR. TILLERY: I'm just concerned about the 25 what's called redox cycling? Page 79 Page 81 1 overlap. 1 A. It is. Q. Paraquat has a very high potential to undergo 2 MR. NARESH: I don't want to talk over you. 3 redox cycling in the presence of a suitable reductant 3 So maybe if you just give me a moment to chime in with 4 and oxygen, doesn't it? 4 an objection if necessary. But I'll accept your offer 5 of a standing objection and I'll only object if I have A. It does. Q. Going back to the beginning of the 6 a different ground for this line of questioning. 7 introduction of Michaelis paper. Does viologen 7 BY MR. TILLERY: Q. Did ICI scientists do studies between the 8 indicators being useful as redox indicators, quote -9 1930s and the 1950s in which paraquat was useful as a 9 referring to that article -- "of properties very 10 desirable for biological purposes" mean they were 10 redox indicator? 11 useful as indicators in the kinds of studies scientists 11 A. I don't know. 12 Q. Do you know if paraquat was used before the 12 did in the early to mid-20th century? 13 1950s to catalyze the formation of reactive oxygen MR. NARESH: Objection: scope; foundation. 14 species including superoxide radical? 14 A. Can you define by what you mean by scientists 15 A. I don't have a knowledge of that history. 15 in the early 20th century for me? 16 BY MR. TILLERY: 16 Q. Do you know if it was useful for that purpose O. Scientists who were working in the early to 17 because of its high potential to undergo redox cycling? A. As I don't know the history, it would be an 18 mid-20th centuries who were chemists, biochemists, was 18 19 it important to them? 19 assumption in answering that question. 20 Q. Paraquat is highly toxic to plants, isn't it? 20 A. Well, I assume it was, yes. 21 A. It is. MR. NARESH: Just for the record, same 22 objection to the question. 22 Q. Did ICI screen chemical compounds at 23 Jealott's Hill to identify compounds that were 23 BY MR. TILLERY:

21 (Pages 78 - 81)

24 potentially useful as herbicides?

A. They did and they still do.

25 in studies chemists did?

Q. Were these same features useful as indicators

CONFIDENTIAL Page 82 Page 84 Q. How many years have they been doing that at A. Yes. 2 Jealott's Hill, CTL or any other place? Q. You understood that was included in this mode 2 A. At Jealott's Hill. Not at CTL. And I don't 3 of action? 4 know -- I can't give you a date when that herbicide A. Yes. 5 discovery process started. I don't have that date in 5 Q. And you studied that? A. I was aware of this mode of action in order 6 my head. Q. How long has Jealott's Hill been in 7 to understand its potential relevance to human biology. 8 existence? Q. ICI knew before it decided to investigate A. 90 years. 9 paraquat's potential use as a herbicide that oxygen is 10 O. Weren't there tens of thousands of chemical 10 plentiful in plant cells, didn't it? 11 compounds known to the scientific community by the A. Yes. 12 1950s? Q. ICI knew before it decided to investigate 12-13 A. Yes. 13 paraquat's potential use as a herbicide that green 14 Q. Screening chemical compounds to investigate 14 plant cells take energy from sunlight and store it by 15 their potential usefulness as herbicides took time and 15 transforming carbon dioxide and water into food; didn't 16 cost a lot of money, didn't it? 16 it? 17 A. Yes. 17 MR. NARESH: Objection: scope; foundation. 18 Q. Given the time and expense that must have 18 A. Yes. 19 been involved, how did ICI decide which chemical 19 BY MR. TILLERY: 20 compounds to screen for in terms of identifying 20 Q. Is this process called photosynthesis? 21 compounds that might be useful to kill plants? 21 22 A. Again, I don't have a history of that so 22 Q. Oxygen is a byproduct of photosynthesis, 23 I couldn't give you a definitive list of criterion. 23 isn't it? 24 Q. What characteristics or properties did 24 A. It is. 25 paraquat have that led ICI to investigate whether it 25 Q. Does photosynthesis occur in a part of green Page 83 Page 85 1 plant cells called chloroplast? 1 might kill plants effectively and otherwise be useful 2 as a herbicide? A. It does. 3 Q. Is photosynthesis a series of electron MR. NARESH: I'll object on scope to this 4 transfer reactions? 4 line of questioning as well. A standing objection 5 okay? A. It is. MR. TILLERY: Yes. Q. Is a series of electron transfer reactions in 7 photosynthesis referred to as the electron transport A. Well again I would speculate only on that. 8 So its properties clearly would have some relevance in 8 system? 9 terms of the way in which plants rely on oxygen and so 9 A. That's right. 10 on and rely on that mechanism, and therefore there was 10 Q. ICI knew how photosynthesis worked before it 11 the potential it could interfere with normal physiology 11 decided to investigate paraquat's potential use as a 12 herbicide, didn't it? 12 of plants. 13 BY MR. TILLERY: 13 I'm sure it did. 14 14 Q. Any more? Q. Does paraquat inhibit photosynthesis in plant 15 A. I don't have any more detail on that. 15 cells? Q. Did ICI investigate paraquat's potential use A. It does. 16 17 as a herbicide because of its very high potential to 17 Q. Paraquat inhibits photosynthesis in plant 18 cells through redox cycling, doesn't it? 18 repeatedly undergo redox cycling and produce large 19 A. It does. 19 amounts of superoxide radical? 20 A. I don't know whether that was a specific 20 Q. The redox cycling of paraquat in plant cells

22 (Pages 82 - 85)

22

23

A. Yes.

21 produces superoxide radical, doesn't it?

ICI knew paraguat was likely to undergo redox

24 cycling and produce superoxide radical in plant cells

25 before it decided to investigate paraquat's potential

21 issue.

23 that?

Q. Are you aware of whether or not they knew

A. I'm sure they were aware of it, yes.

Q. They knew that that's how it worked?

22

24

25

1 use as a herbicide, didn't it?

- 2 MR. NARESH: Objection: scope; foundation.
- 3 A. Again I would assume that it did, but no
- 4 direct evidence of that.
- 5 BY MR. TILLERY:
- 6 Q. But that's perfectly logical that they would
- 7 have known it?
- 8 A. It's very logical, I agree.
- 9 Q. It knew, that is ICI knew, that paraquat was
- 10 likely to undergo redox cycling and produce superoxide
- 11 radical in plant cells because: 1) it knew about
- 12 paraquat's very high potential to undergo redox cycling
- 13 in the presence of molecular oxygen and a suitable
- 14 reductant; and 2) because it knew that photosynthesis
- 15 works through an electron transport chain that involves
- 16 a reductant and generates oxygen, right?
- 17 MR. NARESH: Same objections.
- 18 A. Yes, correct.
- 19 BY MR. TILLERY:
- 20 Q. If you wouldn't mind. He spoke -- he made
- 21 the objection. And the answer is "yes"?
- 22 A. Right. Yes it is, yes.
- 23 MR. NARESH: And I don't want to speak over
- 24 either of you, so if you would just give me one second
- 25 so that if I have an objection I can make it.

- Page 86
- 1 Q. Paraquat cation taking an electron from
- 2 ferredoxin is the first type of redox reaction we
- 3 discussed earlier with paraquat cation as the oxidant
- 4 and ferredoxin as the reductant; correct?
- 5 A. Right, yes, that's correct.
- 6 Q. That reaction, the transfer of an electron
- 7 from ferredoxin to paraquat cation reduces paraquat
- 8 cation to paraquat radical?
- 9 A. Right.
- 10 Q. And this happens in a chloroplast where
- 11 oxygen is present, doesn't it?
- 12 A. Right.
- 13 Q. So paraguat radical then losses an electron
- 14 to oxygen doesn't it?
- 15 A. Yes.
- 16 Q. Paraquat radical losing an electron to oxygen
- 17 is the second type of redox reaction we discussed
- 18 earlier where oxygen is the oxidant and paraquat
- 19 radical is the reductant; correct?
- 20 A. Yes.
- 21 Q. And as we discussed earlier, the products of
- 22 that reaction are paraquat cation and superoxide
- 23 radical, aren't they?
- 24 A. Yes.
- 25 Q. The regenerated paraquat cation this reaction

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- 1 BY MR. TILLERY:
- Q. In summary, ICI knew in the mid-1950s before
- 3 it decided to investigate paraquat's potential use as a
- 4 herbicide that all of the conditions for paraquat to
- 5 undergo redox cycling and produce superoxide radical
- 6 were present in green plant cells; correct?
- 7 MR. NARESH: Same objections.
- 8 A. Yes.
- 9 BY MR. TILLERY:
- 10 Q. Is part of the electron transport chain in
- 11 photosynthesis the transfer of an electron from
- 12 something called Photosystem I to a compound called
- 13 ferredoxin?
- 14 A. I think that is correct, yes.
- 15 Q. The way the electron transport chain in
- 16 photosynthesis normally works, ferredoxin would then
- 17 pass that electron on to the next link in the chain
- 18 NADP+; correct?
- 19 A. Yes.
- 20 Q. What is NADP+?
- 21 A. It's a biological molecule, nicotinamide
- 22 adenine phosphate.
- 23 Q. But paraquat cation intercepts that electron
- 24 by taking it from ferredoxin; doesn't it?
- 25 A. I think that's correct, yes.

Page 8

- 1 produces is then able to react with ferredoxin again in
- 2 the same way it did before; correct?
- 3 A. Right.
- Q. So in plant cells paraquat can cycle from
- 5 cation to radical and back to cation indefinitely as
- 6 long as photosynthesis is occurring; correct?
- 7 A. Yes.
- 8 Q. And every time paraquat cycles from cation to
- 9 radical, and back to cation, it both interferes with
- 10 photosynthesis by taking an electron from Photosystem I
- 11 and produces the reactive oxygen species superoxide
- 12 radical, doesn't it?
- 13 A. Ye
- 14 Q. The production of superoxide radical begins a
- 15 cascade of reactions that create other reactive
- 16 species, like hydrogen peroxide and hydroxyl radical;
- 17 correct?
- 18 A. I believe so, yes. But, again, this -- we're
- 19 now getting into fine detail, which I'm not an expert
- 20 in.
- 21 Q. That makes sense though, doesn't it, from
- 22 your understanding?
- 23 A. It makes sense, I agree, yes.
- 24 Q. Superoxide and other reactive species damage
- 25 parts of the plant cells including the cell membrane,

Page 92 Page 90 1 don't they? 1 small doses, isn't it? A. Yes. 2 A. It is an acutely toxic compound, yes. 3 Q. And they destroy biological membranes? 3 Q. An estimated 1.5 teaspoons can be lethal if 4 4 ingested; correct? 5 Q. Including DNA, the plant DNA? A. I think it's -- I'm not sure whether that 6 A. Yes. Yes. 6 particular figure is accurate, but certainly I can 7 Q. Interferes with enzymes in the biological 7 express it in different ways, but it is -- yes, it is 8 system? 8 acutely toxic certainly. 9 A. Yes. Q. Is there an antidote once it's taken? 10 Q. So paraquat kills plant cells by interfering 10 A. There is no antidote as such but there is 11 with photosynthesis, and producing reactive oxygen 11 effective treatment, yes. 12 species, oxygen-free radicals that damage cell Q. You said that you could express it a 13 membranes and other parts of the cells; correct? 13 different way. How would you express it? A. Yes. A. Well we usually express, in toxicology, as an 15 Q. Result is that paraquat is a very effective 15 LD50, a lethal dose, would in an experimental animal 16 killer of plants; correct? 16 result in 50 percent of the animals dying. So we note A. It's a very effective herbicide, yes. 17 that it has an LD50 value, which is quite low. 18 Q. And that's a molecule designed to kill 18 Q. Paraguat is involved in a disproportionately 19 plants, right? 19 high number of adverse incidents, including accidental 20 A. It is. 20 ingestions, as well as skin and eye contact due to Q. How long have these principles of paraquat 21 occupational spills, splashes and leaks which can 22 redox cycling been known to Syngenta or its corporate 22 result in damaging and often severe acute injuries; 23 predecessors? 23 would you agree with that? 24 MR. NARESH: Objection: scope. 24 MR. NARESH: Objection to form and scope. 25 A. Well in terms of the -- its effectiveness as 25 A. It has the potential to do that, yes. Page 91 Page 93 1 a herbicide, again I can't give you an accurate date 1 BY MR. TILLERY: 2 but clearly it is in some time in the 1950s I believe. Q. In biological systems, metabolism inside 3 But I'm not -- I couldn't give you a precise date. 3 cells, both synthesis and breakdown, use energy; 4 BY MR. TILLERY: 4 correct? Q. As a result of redox cycling paraquat is also A. Yes. 6 highly toxic to animals, isn't it? Q. NAD -- and you said it better than me because A. It is. 7 I had a heck of a time pronouncing it? Q. Paraquat will undergo redox cycling in vivo A. Let's stay with "NAD". 9 being reduced by an electron donor, such as NADPH, 9 Q. Okay. Do we know what we're talking about? 10 before being oxidized by an electron receptor such as 10 A. Yes. 11 di-oxygen to produce superoxide, a major reactive --11 Q. Let me take a shot at it, okay. 12 A. Yes. 12 A. Right. 13 MR. NARESH: Objection to form. 13 O. Nicotinamide adenine dinucleotide. 14 BY MR. TILLERY: A. Yes. Yes. 14 Q. Let me restate the question. Paraquat will 15 Q. So we'll both just stick with "NAD" 16 undergo redox cycling in vivo being reduced by an 16 17 electron donor, such as NADPH, before being oxidized by Q. All right. Is found in all living cells, 17 18 an electron receptor, such as di-oxygen, to produce 18 right? 19 19 superoxide, a major reactive oxygen species? A. Yes. 20 A. Yes. Q. This energy required for cellular life is 21 Q. In vivo means what, sir? 21 partially provided by NAD, NADPH, differing by a single 22 A. Literally within a body, within an organism. 22 phosphate group which can donate and accept electrons 23 Q. Living --23 as an energy source, right? 24 A. A living organism, yes. 24 A. Yes. 25 Q. Paraquat is highly poisonous in even very 25 Q. Examples are electron transport chain in

Page 94 O. Glutathione -- we'll refer to it as "GSH" 1 photosynthesis, right? 2 okay -- is an antioxidant found in all life forms; A. Yes. O. Electro -- strike that. Electron transport 3 correct? 3 A. Yeah, it is. 4 chain occurs in cellular respiration? Q. Those electrons would have been used to A. Yes. 6 replenish the supply of glutathione antioxidant; Q. Those are two fundamental biological 7 correct? 7 processes upon which all life is supported; is that A. Yes. 8 correct? Q. GSH would help mitigate the damages from 9 A. It is. O. So NADPH can donate an electron to an 10 superoxide; correct? 11 acceptor, correct? 11 A. Correct. 12 Q. In stealing electrons, paraquat is A. Correct. Q. This acceptor, a diaphorase, then becomes the 13 diminishing the cell's ability to perform basic 14 donor and can pass the electron to another acceptor; 14 survival functions, metabolism, and protect itself from 15 damages depleting antioxidants while continuously 15 correct? 16 producing more and more superoxide; is that correct? A. Correct. Q. Paraquat is an efficient electron acceptor in A. That's correct, yeah. 17 17 Q. This process of stealing electrons also 18 18 animals? 19 diminishings the supply of NAPDH which is crucial for 19 A. It does, yes. 20 the normal system functions described here. Q. Paraquat is particularly potent because as a 20 21 redox cycler one molecule of paraquat can undergo Q. So by the time paraquat was sold in the U.K. 22 hundreds, maybe thousands of rounds of taking electrons 22 23 from NAPDH and transferring them to oxygen and create 23 in 1962, is that the first year it was sold? A. I believe that's right, yes. 24 superoxide; correct? 25 Q. And subsequently in the United States in A. It certainly can engage in redox cycling. Page 95 1 1965? 1 I wouldn't be able to quantify how many cycles there, A. I believe that's correct. 2 2 so. Q. So the hundreds or thousands is what caused 3 Q. ICI should have known that paraquat would 4 redox cycle upon entry into oxygen-rich human lungs 4 you to "you don't know"? 5 correct? A. I don't know whether it's hundreds. MR. NARESH: Objection: scope; foundation. O. But if I said it did hundreds of thousands 6 7 you wouldn't have any basis to dispute that? A. I don't know whether at that time in 1962, 7 8 1965 that it was specifically known that it would A. I have no basis to dispute that, no. Q. The same is true for NAPDH oxidase in 9 damage the lung. 10 microglia in the human midbrain to molecular oxygen 10 BY MR. TILLERY: Q. Let me ask you. Is there anything about the 11 creating hundreds, maybe thousands of molecules of 12 process that you and I have discussed leading to an 12 damaging reactive oxygen species; correct? 13 understanding of it being -- because we know now, A. That's got potential certainly, yes. 13 14 scientists know, that certainly at this stage that that 14 O. You don't disagree with that? 15 happens, correct? 15 A. I don't disagree. 16 A. Yes. O. Aside from passing electrons to oxygen and O. Is there anything that would preclude them 17 17 creating superoxide, paraquat is stealing these 18 from knowing that? Was there any advancement in 18 electrons from NADPH? 19 science or understanding or change in the chemical or MR. NARESH: Objection to form. 19 20 anything else that would have precluded them from A. That's another way of describing it, yes. 20 21 understanding those scientific concepts by the time 21 BY MR. TILLERY: Q. And that's correct as well? 22 they introduced the product in 1962 and '65? 22

25 (Pages 94 - 97)

A. In 1962 and 1965 I imagine that what we now

24 call the regulatory toxicology studies -- well I know

25 that they had not been conducted because these were

23

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23

24

25

A. Yes.

A. Yes.

Q. It's fundamental?

CONFIDENTIAL Page 98 Page 100 1 studies that were done much later, and so that's why O. When was CTL first established? 1 2 I say I don't know at that time if the potential to 2 A. It was I think around about 1957. 3 cause lung toxicity was recognized. 3 Q. How many employees did it have during those Q. I guess what I'm saying or asking you is 4 periods? 5 this. Is there anything about the scientific concept 5 A. I don't know. Less than 100 I think but 6 that had they done the studies they couldn't have 6 I can't give you a figure. Q. So by the time paraquat was sold in the U.K. 8 A. Had they done the studies they could have 8 in 1962 and subsequently in the United States in 1965, 9 discovered that. 9 ICI should have known that paraquat would redox cycle O. Easily would have known this because the 10 with human tissue as well; correct? 11 studies would have generated the results, whether in MR. NARESH: Objection to form. 12 2020, 1962 would have been the same results? 12 A. Yes. 13 A. Yes. 13 BY MR. TILLERY: 14 Q. Did ICI test paraquat's toxicity and mode of 14 Q. And that would include the brain; correct? 15 action in animals before it sold it? 15 A. It potentially could include any tissue. It A. I don't know what precisely the panoply of 16 16 could involve any tissue. 17 studies was done in the 1960s because at that time the 17 Q. Especially one or a section of the brain or a 18 regulatory requirements were different to those that 18 section of the body that was oxygen-rich; correct? 19 were in place in the 1970s and beyond. 19 A. In theory, yes. 20 Q. But they could have, couldn't they. The 20 Q. How did ICI decide what studies to do about 21 technology was there? 21 paraquat toxicology and exposure? 22 A. Some technology was there but don't forget A. I can't give you the detail. If we're 23 many of the animal models used in toxicology were not 23 talking about the 1960s I was not there at the time and 24 developed at that time. 24 I've not investigated the historical record of that 25 Q. But -- strike that. Did they at that time 25 period. Page 99 Page 101 1 ICI and then later Syngenta only study what the Q. How did ICI decide what methodologies to use? 2 regulators required? A. Again, I can only answer in very general 3 terms. They would've used the methodologies that were A. I can't comment on that. I don't know. Q. Are you aware, from your experience of 4 developed at that time, which I said earlier would be 5 working at both entities, whether that they did studies 5 quite different to the ones that were used today. 6 only generated by a request from a regulatory body? Q. Before paraquat was released on to the U.S. A. As a general answer to that ICI would conduct 7 market in 1965 what testing did ICI do with regard to 8 studies not just for regulatory requirements, it would 8 animal and human toxicity? 9 also do so in order for it to understand itself the MR. NARESH: Objection to scope. 10 toxicological properties of a molecule, any molecule. 10 A. Again, that history is not something that 11 Q. And that includes the safety of the product? 11 I've actually reminded or looked at as part of my 12 A. It does. 12 preparation. Q. And to the extent that the product has the 13 BY MR. TILLERY: 14 potential because of its known characteristics of redox Q. Do you know if any tests were done on mice, 15 cycling to cause a cycle in an oxygen-rich environment, 15 rats, sheep, cows, humans to measure potential for

16 animal or human toxicity before the product was sold in

16 and they knew that certainly in plants didn't they?

17 A. Yes.

18 Q. They could have surmised from that

19 information that oxygen-rich environments in animals

20 should be investigated?

21 MR. NARESH: Objection to form; foundation;

22 scope.

23 A. They could have but I don't know what

24 questions were being asked at that point in time.

25 BY MR. TILLERY:

26 (Pages 98 - 101)

17 1965?

19 know.

A. I can't answer that question because I don't

A. Well there were some basic tests that could

21 paraquat was introduced into the market in 1965?

23 be done at that time, like I mentioned LD50 testing.

25 before that time so it was possible to understand how

24 That was certainly a test that was introduced well

Q. What methodologies were available at the time

18

22

- 1 acutely toxic the compound was, as one example.
- 2 Q. Any other tests?
- 3 A. Again, in terms of exactly which tests were
- 4 utilized at that time, I can't answer that.
  - Q. Could they have done lifetime feeding tests?
- 6 A. I think it's very unlikely that they would
- 7 have done that in the 1960s.
- 8 O. What standards did ICI use for establishing
- 9 the testing protocol for paraquat?
- 10 MR. NARESH: Objection to the scope.
- 11 A. Again, I can't comment on that because
- 12 I don't know.
- 13 BY MR. TILLERY:
- 14 Q. Do you know what a neurotoxicity study is?
- 15 A. I do.
- 16 Q. What is that for the record, please?
- 17 A. Well today a neurotoxicity study is, in my
- 18 world of regulatory toxicology, one in which usually
- 19 rodents are given the chemical and an investigation is
- 20 done of the nervous system, pathology and function.
- 21 Q. Was there any reason why neurotoxicity
- 22 studies couldn't be done at the time of the release of
- 23 paraguat into the American market?
- A. Again I can't be definitive but I would think
- 25 it unlikely that neurotoxicity was seen at that time to

- 1 Q. And what is the other?
  - 2 A. It's investigative toxicology. So once
  - 3 you've done regulatory studies there may be findings

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- 4 that you need to understand better, go into more
- 5 detail, so you'd actually do research studies. And you
- 6 also do toxicology studies as part of discovery, to
- 7 predict whether a potential new molecule might have
- 8 certain properties.
- 9 Q. And what about during the time period of the
- 10 release of the chemicals in 1965?
- 11 A. Again I can't tell you the detail of what
- 12 might have been thought about at that time. But it
- 13 would've been less than we're -- we do today.
- 14 Q. Were neurotoxicity studies feasible to do?
- 15 In other words, was the scientific knowledge, know-how,
- 16 laboratory capability available in the '60s?
- 17 A. Not entirely.
- 18 Q. What -- I'm sorry, I interrupted your answer.
- 19 Go ahead.
- 20 A. Not entirely because some of the measurements
- 21 that we now do in neurotoxicology studies, the
- 22 methodologies were not available at that time.
- 23 Q. What was missing at that time that would be
- 24 available today?
- 25 A. One example would be the detailed

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- 1 be part of the specific tests that would be done.
- Q. Is there a difference between regulatory
- 3 toxicity -- strike that. Is there a difference between
- 4 regulatory toxicology and any other form of toxicology?
- 5 A. Well fundamentally there isn't. It's about
- 6 the investigation of potential adverse effects on at
- 7 the end of the day the human body using -- usually
- 8 normally using animal models. Regular toxicology is
- 9 defined as what regulatory authorities require. That
- 10 doesn't mean that's all that is done.
- 11 Q. Okay. And who makes the decision about doing
- 12 other types of toxicology studies besides those
- 13 required by regulators?
- 14 A. Scientists in the company in our case.
- 15 Q. And what percentage of the studies would fall
- 16 under the category of regulatory toxicology studies?
- 17 MR. NARESH: Just for clarification, can you
- 18 clarify the time period? You're talking then or now?
   19 MR. TILLERY: He can answer it any way he
- 20 wants, then and now if you wish.
- 21 A. I was going to ask the same question. If
- 22 you're talking about now then regulatory toxicology is
- 23 probably slightly more than half of the work that we
- 24 do.
- 25 BY MR. TILLERY:

1 neuropathology that we conduct.

- Q. Explain that, sir?
- 3 A. Looking at the aspects of the nervous system,
- 4 the neurons under a microscope to see if there's any
- 5 evidence of damage.
- 6 Q. Is a regulatory neurotoxicity study a
- 7 screening study as opposed to say a method of action
- 8 study?
- 9 A. A neurotoxicology study can include a
- 10 regulatory study, i.e. it's required by a regulatory
- 11 authority. It can also mean an investigative study, as
- 12 I have indicated.
- 13 Q. Were any studies conducted with regard to
- 14 dermal exposure to paraquat and what systemic impact
- 15 they may have at the time of the release of the product
- 16 in 1965?
- 17 MR. NARESH: Objection to scope; foundation.
- 18 A. Again, I don't know the answer to that
- 19 question.
- 20 BY MR. TILLERY:
- 21 O. Were any studies conducted with regard to
- 22 inhalation exposure to paraquat and what impact it may
- 23 have on the respiratory system at the time the product
- 24 was first sold in 1965?
- 25 MR. NARESH: Same objections.

27 (Pages 102 - 105)

- A. I don't know.
- 2 BY MR. TILLERY:
- 3 Q. Did any studies at that time indicate that
- 4 exposure to paraquat spray mist might result in
- 5 pulmonary fibrosis?
- 6 MR. NARESH: Same objections.
- 7 A. I don't believe so at that early time period.
- 8 BY MR. TILLERY:
- 9 Q. Were any studies at that time period, and the
- 10 time period again we're referring to is the mid-1960s
- 11 when the product was first sold in America. Were any
- 12 studies conducted with regard to how paraquat can enter
- 13 the circulatory system and be transmitted to internal
- 14 organs, including the human brain?
- 15 A. I'm not aware of whether such studies were
- 16 done in the mid-1960s.
- 17 O. Did any human injuries or deaths, either ICI
- 18 employees or third-party consultants or test subjects,
- 19 occur in any testing or exposure to paraquat in that
- 20 period of time?
- 21 A. I don't believe that there was any deliberate
- 22 testing in human beings. But whether -- and I'm not
- 23 able to comment on whether any adverse effects were
- 24 seen in people who might have been using paraquat at
- 25 that time.

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- Q. Was ICI aware of any adverse effect of
- 2 paraquat before deciding to market it in the
- 3 United States?
- 4 MR. NARESH: Objection to the form.
- 5 A. I don't know exactly what it was aware of at
- 6 that time in 1965.
- 7 BY MR. TILLERY:
- 8 Q. Is there anybody in the organization or
- 9 anybody who used to be in the organization who is still
- 10 around who could answer those questions?
- 11 A. Yes. There will certainly be at least one
- 12 person that I can think of.
- 13 Q. Lewis Smith?
- 14 A. Lewis Smith.
- 15 Q. What agency in the United Kingdom was
- 16 responsible for initially authorising the sale and use
- 17 of paraquat in the U.K.?
- 18 A. Well that's going back again in history where
- 19 I don't know exactly the names of the government
- 20 departments that were in place at that time. I mean
- 21 I know what the departments are called today but that
- 22 may not be helpful to your question.
- 23 Q. Do you know what ICI told that agency about
- 24 the toxicity of paraquat?
- A. Not at that point in history, no.

- Q. Do you know what agency of the United States
- 2 Government was responsible for initially authorizing
- 3 the sale and use of paraquat in the United States in
- 4 1965?
- 5 A. I don't know because I don't have that
- 6 history either.
- 7 Q. Was Chevron Chemical Company the initial
- 8 registrant of paraquat in the United States?
- 9 A. I don't know if it was the initial
- 10 registrant.
- 11 Q. You think ICI may have been?
- 12 A. It could have been. Again, I don't have that
- 13 detail.
- 14 Q. Did ICI work with Chevron on the initial U.S.
- 15 registration?
- 16 A. Again I don't know precisely the answer to
- 17 that question. I know that there was some
- 18 collaborative work, but I don't have the detail.
- 19 MR. NARESH: And I'll just object and make
- 20 the point that there is a different designee on the
- 21 U.S. regulatory issues.
- 22 BY MR. TILLERY:
- 23 Q. Do you know what information ICI provided
- 24 about the toxicity of paraquat in support of its
- 25 initial application registration in the United States?

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- l A. No, I don't.
- Q. When did ICI first learn that paraquat enters
- 3 the brains of mammals?
- 4 A. Well, from my understanding of the work that
- 5 was done there was some understanding of that emerging
- 6 certainly in the 1980s and '90s, so we were beginning
- 7 to explore that issue there.
- 8 Q. Do all mammals have something called a
- 9 blood-brain barrier?
- 10 A. I believe all mammals do. Again, I couldn't
- 11 say absolutely all mammals, but certainly the human
- 12 being does.
- 13 Q. Would it be accurate to describe the
- 14 blood-brain barrier as a highly selective
- 15 semi-permeable border separating the contents of the
- 16 capillaries, the bloodstream from the brain and extra
- 17 cellular fluid in the central nervous system?
- 18 A. Yes.
- 19 Q. So the brain side of the blood-brain barrier
- 20 are the brain and other parts of the central nervous
- 21 system and fluid that isn't contained within the cells
- 22 of the central nervous system?
- 23 A. That's correct.
- Q. And the blood side of the blood-brain barrier
- 25 are the blood and everything else that is circulating

28 (Pages 106 - 109)

1 in the bloodstream?

- A. That's correct.
- Q. Does the blood-brain barrier protect the
- 4 brain by preventing certain molecules and toxins from
- 5 moving from the blood side of the brain to the brain
- 6 side -- sorry, I misspoke. Start over. I'll withdraw
- 7 the question and strike that.
- Does the blood-brain barrier protect the
- 9 brain by preventing certain molecules and toxins from
- 10 moving from the blood side to the brain side of the
- 11 blood-brain barrier?
- A. Yes.
- Q. Do molecules pass through the blood-brain 13
- 14 barrier by a process called passive diffusion?
- A. That's one way in which they can pass.
- Q. Is passive diffusion a process where
- 17 molecules in solution move from areas where they're
- 18 more concentrated to areas where they're less
- 19 concentrated?
- A. Yes. 20
- Q. Generally speaking do hydrophobic molecules,
- 22 meaning molecules that tend to repel or not mix with
- 23 water like O2, CO2, hormones and small polar molecules
- 24 tend to pass through the blood-brain barrier by passive
- 25 diffusion?

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- A. Again, I'm not a deep expert in that area.
- 2 So certainly I think that's true as a generalization,
- 3 yes.
- Q. It makes sense; you wouldn't have a reason to 4
- 5 dispute that?
- A. No. No.
- Q. And molecules like blood-born pathogens and
- 8 large -- let me start over.
- And molecules like blood-born pathogens and
- 10 large or hydrophilic meaning water soluble molecules
- 11 tend not to pass through the blood-brain barrier by
- 12 passive diffusion?
- A. That's correct. 13
- 14 O. Can some molecules, such as glucose and
- 15 certain amino acids pass through the blood-brain
- 16 barrier by a process called active transport?
- 17 A. Yes.
- O. Is active -- strike that. In active
- 19 transport the cells of the blood-brain transport --
- 20 strike that.
- 21 In active transport, the cells of the
- 22 blood-brain barrier transport -- use specialized --
- 23 I'm sorry. Let me start over.
- In active transport the cells of the 24
- 25 blood-brain barrier used specialized transport proteins 25 when you made it?

1 to move molecules through the blood-brain barrier;

- A. That's correct.
- Q. Is the permeability of the blood-brain
- 5 barrier constant, or does it vary with conditions and
- A. Again, I'm not an expert in that field.
- 8 I believe that there is some variability but I couldn't
- 9 quantify that.
- 10 Q. I believe you were listed as the person who
- 11 responds to our blood-brain barrier questions?
- A. Well again in broad terms I understand the --
- 13 what this --
- Q. And you've done some research, haven't you, 14
- 15 to answer my questions on blood-brain barrier. This is
- 16 very important to understanding this. You remember in
- 17 the complaint we set out this very clearly two and a
- 18 half years ago about the blood-brain barrier because it
- 19 was very important?
- A. Yes.
- Q. And you know that on your website you 21
- 22 indicate and have indicated for many years that the
- 23 reason paraquat is not really a concern for farmers is
- 24 because of the blood-brain barrier. Did you know that?
- 25 MR. NARESH: Objection to form.

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- A. I was aware of that, yes.
  - 2 BY MR. TILLERY:
  - Q. And did you have any part in putting that on
  - 4 the website?
  - A. Not at all. No, I have no personal
  - 6 involvement in that. And we do not now say that
  - 7 paraquat is unable to cross the blood-brain barrier.
  - Q. Okay, you've changed that statement?
  - 9 A. That statement has been modified in the light
- 10 of new information as it has arisen. Q. So let's talk about the blood-brain barrier, 11
- 12 okay?
- 13 A. Mm-hmm.
- Q. I'm asking you this generally. Are there 14
- 15 matters or issues or conditions of a human being which
- 16 alter the permeability of the blood brain barrier?
- A. Again, I'm not an expert in blood-brain
- 18 barrier physiology but I certainly believe that there
- 19 are such conditions, yes.
- Q. When the statement that I referred to about
- 21 the blood-brain barrier on the paraquat -- strike that.
- 22 When the statement on the website relating to the
- 23 blood-brain barrier and paraquat was first put on the
- 24 website, what grounds did you have for that statement

\_\_\_\_

- 1 MR. NARESH: Objection to the form.
- 2 Foundation.
- 3 A. When I look at the history of what we knew at
- 4 what time, I think that we were aware in the first
- 5 instance that the blood-brain barrier was certainly a
- 6 genuine barrier to paraquat getting into the brain.
- 7 Not an entire barrier but one which certainly reduced
- 8 the likelihood of paraquat getting into the brain. But
- 9 as we've produced more evidence then we have understood
- 10 that it is possible that paraquat can get into the
- 11 brain.
- 12 BY MR. TILLERY:
- 13 Q. You know now that the statements that were
- 14 made earlier on the website were not totally accurate;
- 15 correct?
- 16 A. I would say that with new knowledge then one
- 17 should redefine what one means when you're talking
- 18 about the effect of the blood-brain barrier.
- 19 Q. Is that another way of saying that I'm right
- 20 in my question?
- 21 MR. NARESH: Objection to form.
- 22 A. Yes. New scientific information has allowed
- 23 us to change our view.
- 24 BY MR. TILLERY:
- 25 Q. Are you saying that you don't know whether

- 1 Q. And it creates a situation where the
  - 2 blood-brain barrier is not as effective at protecting

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- 3 the components of the brain. Would you agree with
- 4 that?
- 5 A. That is my understanding, yes.
- 6 Q. Does the tendency to increase permeability
- 7 occur whether the inflammation is on the blood side or
- 8 the brain side, or the blood-brain barrier itself?
- 9 A. I don't know the answer to that question.
- 10 Q. Do you know what other factors tend to
- 11 increase the permeability of the blood-brain barrier?
- 12 A. No again, as I say, I'm not an expert in
- 13 the -- a deep technical expert in this.
- 4 Q. Do you know if there are illnesses that
- 15 increase the permeability of the blood-brain barrier?
- 16 A. I don't -- I couldn't specify diseases.
  - O. So the official position through this
- 18 corporate deposition, you understand for all intents
- 19 and purposes today you're speaking on behalf of the two
- 20 Syngenta entities I indicated?
- 21 A. Right.

17

- 22 Q. Syngenta AG and Syngenta Crop Protection LLC.
- 23 The official position today is that you don't know if
- 24 there's any specific illness that creates increased
- 25 permeability of the blood-brain barrier; is that
- Page 115
- 1 Syngenta or any of its predecessors knew before the
- 2 1980s or 1990s that paraquat could enter the brains of
- 3 mammals?
- 4 A. I'm not aware of any experimental work that
- 5 was done prior to that period.
- 6 Q. That would indicate that paraquat could enter
- 7 the brains of mammals?
- 8 A. Correct.
- 9 Q. Do you know whether the blood-brain barrier
- 10 tends to become more permeable as a person or other
- 11 mammal ages?
- 12 A. I actually don't know the answer to that
- 13 question.
- 14 Q. Okay. Has that ever been investigated to
- 15 your knowledge at Syngenta or by any of its corporate
- 16 predecessors?
- 17 A. I don't have any recollection of that kind of
- 18 a study being done, no.
- 19 Q. Does the blood-brain barrier tend to become
- 20 more permeable in the presence of inflammation?
- 21 A. That I believe is one of the conditions that
- 22 can cause a change in that, yes.
- Q. And how does it cause a change? What change?
- 24 A. It can change the effectiveness of, for
- 25 example, those active transporters that you described.

- 1 correct?
- 2 MR. NARESH: Object to the form --
- 3 A. I can't answer that question, no.
- 4 MR. NARESH: Do you want to re-ask? I spoke
- 5 over the witness. I didn't mean to. I'll object to
- 6 form.
- 7 BY MR. TILLERY:
- 8 Q. Do you know whether working in heat and
- 9 humidity increases the permeability of the blood-brain
- 10 barrier?
- 11 A. No.
- 12 Q. Do you know if head injury increases the
- 13 permeability of the blood-brain barrier?
- 14 A. No.
- 15 Q. Does infection increase the permeability of
- 16 the blood-brain barrier?
- 17 A. I understand that that is one factor, yes.
- 18 Q. Does stress cause increased permeability of
- 19 the blood-brain barrier?
- 20 A. I don't know.
- 21 Q. Does the blood-brain barrier protect the
- 22 entire brain?
- A. No, there are parts of the brain that are not
- 24 covered by the blood-brain barrier.
- Q. What parts?

30 (Pages 114 - 117)

Pa<sub>b</sub>

- 1 A. For example the upper part of the nasal
- 2 cavity is not protected. So there is an entry -- a
- 3 direct entry into the brain through here.
- 4 Q. The old factory bulb?
- 5 A. The old factory bulb, correct.
- 6 Q. What else?
- 7 A. There is another part of the brain which
- 8 I again --
- 9 Q. The pineal gland?
- 10 A. Yeah, that's true. Yes, there are.
- 11 Q. Pituitary gland?
- 12 A. Yes, you're right, yeah.
- 13 Q. Can molecules that can't or tend not to pass
- 14 through the blood-brain barrier enter the brain through
- 15 the posterior pituitary gland?
- 16 A. I don't know if that -- again that would be a
- 17 potential question. I don't know whether that's
- 18 actually happened.

A. Yes.

4 understood that?

A. No.

7 the pineal gland either?

11 the pineal gland; they might?

A. I'm not sure about that.

A. They could.

14 hypothalamus; correct?

17 to dispute what I'm saying?

A. No, I don't.

A. That's -- yeah, yeah.

- 19 Q. You understand the posterior pituitary gland
- 20 is not protected by the blood-brain barrier?
- 21 A. That is true, yes.
- 22 Q. So if it gets into the cerebral -- you
- 23 understand that these parts that are not protected by
- 24 the blood-brain barrier are bathed by cerebral spinal

Q. And if it gets into the cerebral spinal3 fluid, it gets into those parts of the brain, you

O. So the blood-brain barrier is not protecting

9 Q. Molecules that can't or tend not to pass 10 through the blood-brain barrier enter the brain through

Q. The blood-brain barrier does not protect the

Q. Let me ask you this. Do you have any reason

Q. So molecules that can't or tend not to pass

Q. Do you know what the postrema is in the

20 through the blood-brain barrier could enter the brain

21 through the hypothalamus, couldn't they?

A. Theoretically, yes.

25 fluid?

1

12

19

22

23

24 brain?

- 1 Q. The organ system -- let me just suggest to
- 2 you that there's a part of the brain called the
- 3 postrema that's not protected by the blood-brain
- 4 barrier. Assuming that you believe what I'm saying,
- 5 okay, if it's not protected by the blood-brain barrier
- 6 and it gets into the portion of the brain not protected
- 7 it can pass right straight through that area, can't it?
- 8 MR. NARESH: Objection to form.
- 9 A. Theoretically, yes.
- 10 BY MR. TILLERY:
- 1 Q. And practically yes. Do you have any reason
- 12 to understand, any practical reason why that's not
- 13 possible?
- 14 MR. NARESH: Objection to form.
- 15 BY MR. TILLERY:
- 16 Q. In terms of Syngenta's understanding of human
- 17 physiology?
- 18 A. If in general terms, no. If you're asking
- 19 specifically about paraquat that's another question.
- Q. Well, we will. You've indicated that you
- 21 understand that the blood-brain barrier does not
- 22 protect the olfactory bulb, right?
- 23 A. Yes.
- Q. Now let's talk about the olfactory bulb for a
- 25 minute. Where is it located?

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- l A. Above the nasal cavity here.
  - Q. Right here, right between your eyes?
  - 3 A. Correct.
  - 4 Q. And what's the method by which when you
  - 5 breath things in the transport occurs to the olfactory
  - 6 bulb? Can you walk me through that?
  - 7 A. No, I'm not an expert in that mechanism.
  - 8 Q. Okay. If I told you that when you breath
  - 9 things in through your nose, that that or some of those
  - 10 materials can go straight to the olfactory bulb would
  - 11 you disagree with that?
  - 12 A. I wouldn't dispute it.
  - 13 Q. And would you dispute the fact that from the
  - 14 olfactory bulb and straight to the substantia nigra
  - 15 portion of the midbrain there is a direct pathway,
  - 16 would you dispute that?
  - 17 MR. NARESH: Objection to the form.
  - 18 A. I can't dispute that.
  - 19 BY MR. TILLERY:
  - 20 Q. Do you know what the substantia nigra portion
  - 21 of the brain is?
  - 22 A. Yes.
  - Q. What is it?
  - 24 A. It's an area which is rich in neurons which
  - 25 we called dopaminergic neurons which is believed to be,

31 (Pages 118 - 121)

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A. No.

n to be the principal site of damage in

dopaminergic neurons produce what? amine. [Asked to repeat.] paminergic. I apologize. Let's start over

are this is clear on the record, okay. The

rgic neurons in the substantia nigra portion of

- 8 the brain produce what?
- 9 A. Dopamine.
- 10 Q. What is dopamine used for by the human body?
- 11 A. It's called a neurotransmitter, so it's
- 12 actually chemical, which helps the transmission of
- 13 signals through the nervous system.
- 14 MR. TILLERY: Off the record for a second.
- 15 THE VIDEOGRAPHER: Going off the record. The
- 16 time is 11:47 a.m.
- 17 (Break taken.)
- 18 THE VIDEOGRAPHER: Back on the record. The
- 19 time is 12:03 p.m.
- 20 BY MR. TILLERY:
- 21 Q. Sir, has the olfactory bulb been identified
- 22 as an initial site of Parkinson's disease pathology?
- 23 A. It is believed to be at the site of one of
- 24 what's called the prodromal symptoms of Parkinson's
- 25 disease.

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22

- Q. And has it been identified as an avenue by
- 2 which toxins can find their way to the substantia nigra
- 3 pars compacta?
- A. It is certainly in theory one way in which
- 5 that could happen.
- Q. Does the blood-brain barrier protect the
- 7 ventricles of the brain?
- A. Again, I'm not an expert, a deep expert.
- 9 I believe it does but I'm not sure -- I'm not secure 10 about that.
- Q. Would you agree that any toxin that enters
- 12 the cerebral spinal fluid can freely enter the brain?
- A. I'm not sure that I can say that it would be
- 14 able to freely enter the brain because again I'm sure
- 15 there are circumstances where there could be
- 16 mitigation, but I'm not an expert in that field.
- Q. Do you know what the enteric nervous system 17 18 is?
- 19 A. The enteric nervous system is that which is
- 20 associated with the gut. Q. And have you become aware, as Syngenta, that
- 22 the enteric nervous system has been implicated as a
- 23 transport system by which paraquat enters the gut can
- 24 find its way to the brain?
- A. We're aware of the research papers that have

1 explored that hypothesis.

- Q. And what is your understanding of that
- 3 transport system that you've become aware of?
- A. Well the hypothesis that has been generated
- 5 is that molecules can be transported through the nerves
- 6 that are present around the gut, the enteric nervous
- 7 system you describe it, and can go through the nervous
- 8 system towards the brain.
- Q. And go to the base of the brain?
- 10 A. Yes.
- 11 Q. And then freely enter into the substantia
- 12 nigra portion of the brain?
- 13 A. That is still hypothesis.
- 14 Q. Who is it that has done that research you are
- 15 referring to?
- 16 A. Yeah, and apologies, it's a research group
- 17 which we have actually got some familiarity with.
- 18 Right off the top of my head I've forgotten the name,
- 19 but they're in the north east of the U.S.
- 20 Q. Does paraquat cross the blood-brain barrier?
- 21 A. To a small degree we now know it does, yes.
  - Q. And what does "a small degree" mean?
- A. The majority of paraquat that may get into
- 24 the circulation actually does not get across the
- 25 blood-brain barrier, but it is possible for small

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- 1 concentrations of paraquat to move across.
- 2 Q. And when you use words like "small" or
- 3 whatever, do you have any other way of quantifying
- 4 those amounts?
- A. Well for example in the studies that we have
- 6 done we are talking about less than 1 percent.
- Q. Is that your understanding of the amount that 8
- gets through?
- A. That's our understanding from experimental 10 work, yes.
- Q. Is that Syngenta's position today that
- 12 roughly 1 percent gets in?
- 13 A. Less than 1 percent.
- 14 Q. Less than 1 percent?
- 15 A. (Nods).
- 16 Q. Whether it's by passive diffusion or whatever
- 17 it's however you think -- or active transport, it
- 18 doesn't matter, less than 1 percent of the paraquat in
- 19 a person's system gets into the brain?
- A. That's what our experimental evidence 20
- 21 suggests, yes.
- 22 Q. Is that your official position of the
- 23 company?
- 24 A. It's based on the science that we have done.
- 25 So it is the best scientific view the company can

- 1 provide --
- 2 Q. Today.
- A. -- today.
- Q. Okay. And earlier, perhaps 10 years ago or
- 5 so, you took the position on your website that it
- 6 didn't readily pass through the blood-brain barrier.
- 7 What did that term "readily" mean?
- A. Well I wasn't involved in coming up with that
- 9 wording so I can't precisely answer that question.
- Q. Do you know from a scientific standpoint what
- 11 the word "readily cross" the blood-brain barrier means
- 12 in that context?
- A. Well the term "readily" doesn't necessarily
- 14 have an immediate scientific interpretation. It's open
- 15 to a number of interpretations I would suggest.
- Q. That actually is what I was going to ask you.
- 17 What is the scientific determination of the word
- 18 "readily"?
- A. Well the closest I could give would be:
- 20 something that readily crosses would be something to
- 21 which there's no significant barrier.
- O. Okay. But the word "readily" doesn't lend
- 23 itself towards any kind of percentage quantification,
- A. It doesn't -- in itself it doesn't provide

- O. That is one, and what else? 1
- 2 A. There's another study in the Minnema paper

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- 3 that we published, which is the one where we gave
- 4 paraquat through the diet. We also did a kinetic study
- 5 in that as part of that program.
- Q. Okay. Are those the two studies upon which
- 7 you base that official statement of Syngenta?
- A. Those are the published studies and those
- 9 form the basis, one of the bases of my statement, yes.
- Q. That less than 1 percent? 10
- 11 A. Correct.
- O. Are there any other studies besides those 12
- 13 that you can think of?
- A. Well we've also conducted a study in the 14
- 15 non-human primate, which is a Macaque. Again it was a
- 16 study which is trying to -- which is to understand how
- 17 much paraquat gets into that particular animal model.
- Q. When did you do that study? 18
  - A. That study was started around about three or
- 20 four years ago.

19

- 21 Q. And has it been published?
- 22 A. It has not yet been published.
- 23 O. Okay, who's conducting that study?
- A. That study was conducted by a contract 24
- 25 research organization in the United States.

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- 1 that quantification.
- Q. So what is the difference in scientific terms
- 3 between "not crossing the blood-brain barrier" and "not
- 4 readily crossing the blood-brain barrier"?
- A. One is an absolute term. So "not crossing"
- 6 the blood-brain barrier would indicate nothing gets
- 7 across. "Not readily" would indicate some gets across.
- Q. Less than 1 percent?
- A. Well now we know that that is less than
- 10 1 percent.
- Q. And what studies are you relying on to
- 12 support the position that less than 1 percent of
- 13 paraquat in the body gets into the brain?
- A. Well we've done studies in the rodent, in the
- 15 mouse, for example, and also the rat. We call these
- 16 pharmacokinetic studies. So we've actually measured
- 17 this in animal studies.
- O. Can you tell us the names of those studies
- 19 and when they were conducted?
- A. Well one of the studies, as an example, would
- 21 be the one that's included in the Breckenridge 2013
- 22 paper. So that would be the kinetic study that's
- 23 described in that paper.
- Q. There's one study there, right? 24
- A. There's one study in that paper, yes.

- Q. Who are the people? 1
- 2 A. Battelle.
- O. Who?
- 4 A. Battelle.
- Q. Could you spell that for the reporter? 5
- 6 A. B-A-T-T-E-L-L-E.
- Q. And could you give me the methodology used in 7
- 8 the study, please?
- A. So this is a study where we were
- 10 administering paraguat to the Macaque and looking for
- 11 where that -- how much paraquat gets into the animal,
- 12 and also measuring how much gets out and how quickly,
- 13 so measuring paraquat in the urine for example, and
- 14 therefore understanding its kinetic behavior.
- 15 O. How many animals in the study?
- 16 A. Less than 10. I can't remember exactly how
- 17 many.
- O. Was it -- strike that. Was the paraquat 18
- 19 administered to the animals in their food?
- 20
- Q. It was -- how was it administered to them? 21
- A. This was given intravenously. 22
- 23 Where is the study being conducted?
- A. In the location I described. 24
- Q. Where is that? 25

33 (Pages 126 - 129)

		ge 130 Page 132
	1 A. At Battelle in the United States.	1 Q. Is that the first non-human primate
	2 Q. Who is the principal researcher?	2 pharmacokinetic study conducted by Syngenta?
	3 A. I can't remember the name of the person in	3 A. Conducted by Syngenta I believe it is, yes.
	4 that organization off the top of my head.	4 Q. Was it required by a regulator?
	5 Q. Has a final report been generated?	5 A. No.
	6 A. That is still being written up.	6 Q. When is it going to be published?
	7 Q. So who is writing it up?	7 A. We are close to finalizing not only the
	8 A. It's the contract research organization	8 report but also a paper for publication, and it's
	9 supported by some of my Syngenta colleagues.	9 difficult to predict exactly when it will go through
	10 Q. Who is the contract support organization?	10 the process. Perhaps later this year.
	11 A. It's Battelle, as we were describing.	11 Q. And what strike that. What scientists at
	12 Q. Do you know what city this was being done in	n? 12 Syngenta are collaborators in the study?
	A. Off the top of my head I can't remember that	13 A. The main collaborators on that study are
	14 detail.	14 Dr. Alex Stevens, who is still with the company, and
	15 Q. And is the study itself concluded now?	15 also Dr. Kim Travis who left the company just over a
	16 A. The study itself is concluded in it, yes.	16 year ago.
	17 We're now in the write up phase.	17 Q. And he has been with the study from the
	18 Q. And when was it initiated?	18 beginning?
	19 A. Around about three or four years ago.	A. Both of those individuals have been with the
	Q. When you say three or four, was it in 2016 or	20 study since the beginning.
	21 2017?	Q. You're not planning to retire soon, are you?
	22 A. I don't remember exactly that as to which	22 A. I am.
	23 year it was.	23 Q. When are you retiring?
	Q. Was it in response to a threat of litigation?	24 A. In a few months time.
	25 A. No.	25 Q. Are there any other unpublished studies that
	Pa	ge 131 Page 133
	1 Q. You had planned this before?	1 you rely upon for the conclusion that less than
	2 A. Yes.	2 1 percent enters the brain?
	3 Q. Who when was it planned to be done?	3 A. Yes, we have done also further studies in the
	4 A. We had been talking about doing that study	4 rodent which again with the same purpose of
	5 for a number of years prior to its conduct.	5 understanding exactly what the kinetics are in order
	6 Q. And what is the study called?	6 for us to understand how paraquat behaves across a
· .	7 A. It's a pharmacokinetic study in the non-human	7 range of species.
/	8 primate.	8 Q. And who did these unpublished studies?
83	9 Q. And you have preliminary results?	9 A. They were done by other again external
	10 A. Yes.	10 contract organizations, and I can't give you details
10% Shays m	11 Q. But the study hasn't been published?	11 off the top of my head.
18	12 A. It has not.	12 Q. How many studies are you referring to?
گ	13 Q. What are the results of the study?	13 A. Just another couple of studies in the rodent,
- 1	14 A. What the results principally showed is that	14 mouse and rat phase for example.
00	15 unlike a published study, which suggested that only	15 Q. When were those done?
21	16 around 60 percent of paraquat administered came out	in 16 A. Over the same timescale we've been talking
- 1	17 the urine in a certain period of time, in other words	17 about.
0	18 was quickly excreted. We were able to show that more	re 18 Q. So were these done in anticipation of
CATA	19 than 90 percent was excreted, which was a very	19 litigation?
Y	20 important finding, so less paraquat remained in the	20 A. No.
1	21 body than was suggested in that publication.	Q. Were they done for regulatory purposes?
}	22 Q. Is that the only finding?	22 A. No.
8	A. No, we also were able to look at how much	23 Q. So you have no intention of giving these
	24 paraquat was present in the circulation so we measure	,
	25 how much possessed was in the bland in the second	26 A W

34 (Pages 130 - 133)

A. We may well give these to regulators. We

25

25 how much paraquat was in the blood in the serum.

- 1 have no reason not to.
- Q. Will these studies be published?
- 3 A. Yes.
- 4 Q. And have they already been submitted or are
- 5 they waiting for finalization of the reports?
- A. As with the non-human primate study, they --
- 7 we are finalizing the report and the external
- 8 publication as we speak.
- 9 Q. For the mouse studies as well?
- 10 A. Yes. Yes.
- 11 Q. Who is involved from Syngenta in the mouse
- 12 studies?
- 13 A. The same people I referred to previously.
- 14 Q. Any other studies that you've done on this
- 15 subject?
- 16 A. No, I believe those are all the studies that
- 17 are pertinent.
- 18 Q. And those are all the studies you're relying
- 19 upon for your statement that less than 1 percent of
- 20 paraquat enters the brain?
- 21 A. Not just the studies I've just referred to,
- 22 but the ones that we've previously published where
- 23 we've quantified that figure.
- Q. When did Syngenta or any of its predecessors
- 25 first undertake studies to determine if paraquat could

- 1 the '90s?
  - A. Maybe if I could just correct the record.
  - 3 The Widdowsen paper, I'm not sure whether that was in

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- 4 the '80s or '90s, I may be confusing the decades, but
- 5 it was certainly done prior to 2000.
- 6 Q. So it could have been in the '90s was the
- 7 first one?
- 8 A. Yes I -- yes.
- 9 Q. And then in the ones you're talking about
- 10 which were done around 2017?
- 11 A. The ones that I indicated are still in -- not
- 12 yet been published were done in that period.
- 13 Q. Are the next ones. But the one you also
- 14 mentioned they were referenced in a
- 15 Charles Breckenridge 2013 study?
- 16 A. Yes.
- 17 Q. Or review. It was a review of studies?
- 18 A. Well, no, it was the neurotoxicology
- 19 publication, the Breckenridge et al publication in
- 20 2013. The study that I'm talking about in there would
- 21 have been conducted obviously in 2011, 2012.
  - Q. When did Syngenta or any of its predecessors
- 23 first undertake studies to determine if paraquat can
- 24 enter the brain through any route? Does that question
- 25 change any of your prior answers?

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- 1 pass the blood-brain barrier?
- 2 A. Well there was an initial research in that
- 3 area in the 1980s by colleagues at CTL.
- 4 Q. Who was that?
- 5 A. Peter Widdowsen and his colleagues.
- 6 Q. And what was the study?
- 7 A. Well that was specifically looking at this
- 8 question and where in that initial research there was
- 9 a suggestion that the amount of paraquat that got into
- 10 the brain was very low indeed.
- Q. And then following that what was the next
- 12 study?
- 13 A. Well the next studies really were those that
- 14 I've been describing. So they were at a later -- a
- 15 significantly later point in time in our research --
- 16 Q. The ones you're talking about now?
- 17 A. Yes, that's correct.
- 18 Q. So let's talk about the gap then. What would
- 19 that be? You said the early '80s or late --
- 20 A. The late '80s.
- 21 O. The late '80s was the first blood-brain
- 22 barrier study?
- 23 A. I believe. Yes, I don't have the date to
- 24 hand, but yeah.
- 25 Q. Okay and then after that there were none in

- Page 137

  A. Not really, no, if the question is meant to
- 2 not be specific to neurotoxicity or Parkinson's
- 3 disease. So perhaps you could clarify?
- 4 Q. Yeah, what I'm saying is were there other
- 5 routes explored through other tests, other than through
- 6 transport by passive diffusion or active transport
- 7 through the blood-brain barrier?
- 8 A. I'm not aware of any studies of that sort,
- 9 no.

1

- 10 Q. Can you tell me all the ways an environmental
- 11 toxicant like paraquat can enter the brain, gain access
- 12 to the substantia nigra?
- 13 MR. NARESH: Object to the form.
- 14 A. I think we've probably already mentioned
- 15 that.
- 16 BY MR. TILLERY:
- 17 Q. Mentioned them all?
- 18 A. I think if it could cross the blood-brain
- 19 barrier then potentially there are other routes where
- 20 theoretically it could gain entry, like olfactory bulb,
- 21 as we mentioned before.
- 22 Q. Olfactory bulb, cerebral spinal fluid, the
- 23 enteric system, the nervous system, the blood-brain
- 24 barrier. Any others?
  - A. No, I'm not aware of any others that would be

35 (Pages 134 - 137)

25

Page 138 Page 140 1 considered here, no. MR. NARESH: I think the version you gave to 2 MR. TILLERY: I'm starting, counsel, a whole 2 the witness is different than the version you have. 3 new section right now. Just beginning it, a completely 3 BY MR. TILLERY: 4 different section, getting off of this. Would this be Q. Oh, I'm sorry, would you look at the Bates 5 a little earlier? 5 number in the lower right-hand corner and look at MR. NARESH: That's fine. 6 139477 of that document. That's a Chevron document, 7 MR. TILLERY: We'll take our lunch break. 7 counsel. 139477. 8 THE VIDEOGRAPHER: Going off the record. The 8 A. Okay. 9 time is 12:23. Q. Does this start at the top of the page that MR. NARESH: Oh, I need to -- do you want me 10 you're looking at with the statement "PARAQUAT 11 to say on the record that we'll read and sign and mark 11 DICHLORIDE"? 12 it confidential, or can we agree that --A. It does. 12 13 MR. TILLERY: Absolutely, that's standard 13 O. And then it starts with "Dermal Toxicity"? 14 practice. 14 A. That's correct. 15 15 Q. Would you take a look at that study, please? (Break taken.) 16 THE VIDEOGRAPHER: Back on the record. The A. Would you like me to just look at the acute 16 17 time is 1:25. 17 toxicity one or the full --18 BY MR. TILLERY: 18 Q. Just familiarize yourself with the study. It Q. Sir, by the mid-1960s ICI knew or had reason 19 speaks for itself. I'll ask you some questions, and 20 to believe from toxicity studies that paraquat got into 20 you can of course look at it any time you need to to 21 the brains of laboratory animals, didn't it? 21 answer. 22 22 A. I don't think I said it by the mid-1960s. A. Okay. Q. Exhibit 6 is a study from 1964 in which 23 I said that that was something that certainly became 23 24 more evident into the 1990s. 24 albino rabbits were given sub-acute dermal doses of 25 Q. 1990s. So you have no understanding about 25 paraquat on their shaved skin; correct? Page 139 Page 141 1 this from the 1960s? 1 A. Correct. A. No. Q. And that means that paraquat was applied to Q. And by the mid-1960s ICI knew or had reason 3 3 the rabbit's skin? 4 to believe from toxicity studies that paraquat caused A. Yes. 5 neurological effects on the central nervous system of 5 O. And that's what's referred to as dermal 6 laboratory animals? 6 exposure? A. Not in the 1960s. Again, that is a line of 7 A. That's right. 8 evidence that was being explored much later than that. Q. And if you could verify that the statement Q. Like 30 years later? 9 I'm making from your reference to this study is 10 A. Yes. 10 correct: they were given a daily dose of 3.5 milligrams 11 per kilogram for up to 21 days; is that correct? 11 Q. Over 30 years later? A. I'm just checking that dose level. Yes, 12 A. Yes. 13 Q. Could you please take a look at Exhibit 6. 13 I can see that now. Yes. Well actually, excuse me. 14 (Exhibit 6 marked for identification.) 14 So in the sub-acute toxicity, now that I can orientate And for reference on the record this is a 15 myself, they were given doses up to 50 milligrams per 16 Chevron document which starts at Bates number 139117. 16 kilogram. 17 Do you see that at the top, the front page in the lower 17 Q. For sub-acute? 18 right-hand corner? 18 A. For sub-acute, yes. For the sub-acute. 19 A. Yes, I can. 19 Q. And at a daily dose of 3.15 milligram per Q. Now this is a study, if you look at the 20 kilogram the dermal exposure was followed by weakness 21 second page of this, it gives a description of the 21 and unsteadiness, wasn't it. Do you see that? 22 study? 22 A. I'm just looking at that information now. 23 MR. NARESH: Steve, I don't think we're all 23 Yes, I can see that in the female animals.

36 (Pages 138 - 141)

Q. Weakness and unsteadiness are clinical signs

25 of central nervous system effects, aren't they?

24 aligned on this.

A. No, this doesn't look like a study.

\_\_\_

- 1 A. Not necessarily. When you have significant
- 2 systemic toxicity, general toxicity, that can express
- 3 itself in a number of ways, including apparent weakness
- 4 and unsteadiness.
- 5 Q. Well let me phrase it this way. Can weakness
- 6 and unsteadiness be clinical signs of central nervous
- 7 system effects?
- 8 A. They could be but I certainly would not say
- 9 that was a clear conclusion from this study.
- 10 Q. But you're agreeing with me that they could
- 11 be signs of neurotoxicity, couldn't they?
- 12 A. Well they could be, but I suspect that in
- 13 this study that's less likely.
- 14 Q. And would you look at, continue and see
- 15 whether or not at 12.5 milligrams per kilogram for up
- 16 to 21 days this dermal exposure was followed by
- 17 nervousness, increased salivation and tremors. Do you
- 18 see that as well?
- 19 A. So we're now at which dose level?
- 20 Q. 12.5 milligrams per kilogram.
- 21 A. Right. Okay.
- 22 Q. Inco-ordination, weakness, and nervousness,
- 23 increased salivation and tremors. Are those also or
- 24 can those also be clinical signs of central nervous
- 25 system effects?

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- A. They could be. But again, I would restate
- 2 I wouldn't necessarily say that that was clear evidence
- 3 that it was the case in this study.
- 4 Q. Can you tell by looking at this study whether
- 5 those are signs of central nervous system effects or
- 6 from something else?
- A. No, you can't be definitive about it.
- 8 I would say, as I said, there are a number of
- 9 explanations.
- 10 Q. And one of them is that it's a clinical sign
- 11 of central nervous system effects; right?
- 12 A. It's one possible interpretation.
- O. And then there's another. At 6.25 milligrams
- 14 per kilogram for 21 days this dermal exposure was
- 15 followed by incoordination and decreased motor
- 16 activity. Do you see that?
- 17 A. Yes.
- 18 Q. Incoordination and decreased motor activity
- 19 can also be signs of central nervous system effects,
- 20 can't they?
- 21 A. Again, that's possible.
- 22 Q. They can be. In this study in order to --
- 23 strike that.
- 24 In this study, if there were manifestations
- 25 of central nervous system effects, to reach the

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- 1 rabbits' brains paraguat would have to be absorbed
- 2 through the skin into the bloodstream and then cross
- 3 the blood-brain barrier; correct?
- 4 A. Correct.
- 5 Q. As part of the study did ICI make any effort
- 6 to measure the concentration of paraquat in the
- 7 rabbits' blood?
- 8 MR. NARESH: Objection to form.
- 9 A. Well I cannot see any evidence in what I've
- 10 got in front of me that that was done.
- 11 BY MR. TILLERY:
- 12 Q. So ICI, at least from the study, made no
- 13 effort in that study to rule in or rule out systemic
- 14 toxicity as a cause; is that correct?
- 15 MR. NARESH: Objection to the form.
- 16 A. I don't believe that the purpose of the study
- 17 was to investigate that specifically, no.
- 18 BY MR. TILLERY:
- 19 Q. Is that something they would normally report
- 20 if they measured it?
- 21 A. We're talking about 1964 here and this was
- 22 what I would call a general toxicity study, how toxic
- 23 is paraguat to the rabbit, so it would not have been a
- 24 requirement of this study to look in any specific
- 25 tissue or system.

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- 1 Q. So you're saying if you're studying general
- 2 toxicity and that's the purpose of it you finish this
- 3 entire study and don't report the findings of general
- 4 toxicity, is that what you're telling me?
- MR. NARESH: Objection to form.
- 6 A. No, I'm saying that the purpose of the study
- 7 as I read it was to investigate general toxicity.
- 8 BY MR. TILLERY:
- 9 Q. As part of the study did ICI make any effort
- 10 to detect or measure the concentration of paraquat in
- 11 the rabbits' brains?
- 12 A. I can see no evidence for that.
- 13 Q. And why not?
- 14 A. Because that would have not -- that was not
- 15 part of the study, I assume. But I was not involved in
- 16 the design of the study so I'm -- I can only read
- 17 what's in front of me.
- 18 Q. You agree with me though that the clinical
- 19 observations in this study could have results from
- 20 effects on the nervous system, the central nervous
- 21 system, caused by dermal exposure to paraquat; correct?
- 22 A. They could but there are alternative
- 23 explanations.
- 24 Q. Okay, on what scientific grounds can Syngenta
- 25 rule out the possibility that the clinical observations

37 (Pages 142 - 145)

- 1 in this study could have resulted from effects on the
- 2 central nervous system caused by the dermal exposure to 3 paraguat?
- MR. NARESH: Objection: foundation and scope.
- 5 A. You can't rule out but you can estimate that
- 6 at the kind of dose levels that were used here, which
- 7 were approaching lethality, that you are likely to see
- 8 non-specific effects.
- 9 BY MR. TILLERY:
- Q. If it's a kind of dose level -- and that's
- 11 what you're basing your opinion on -- that they didn't
- 13 A. Internal dose level. So, yes, to clarify I'm
- 14 talking about external dose. Dose actually
- 15 administered.
- Q. So you're relying upon a result from the
- 17 administration of an amount, which you didn't measure,
- 18 as a basis for explaining the clinical observations;
- 20 A. I'm describing what ext -- in other words
- 21 what administered dose was given to the animals which
- 22 is normal practice and certainly at that time it would
- 23 not have been a normal practice to measure internal
- 24 exposure.
- 25 Q. What was a lethal dose by dermal exposure?

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- A. Well I think that it indicates here. The
- 2 conclusion was that -- I said earlier, I used the term
- 3 LD50, so again I see that this is used here. And it
- 4 said calculation of a sub-acute LD50 gives a figure of
- 5 around 6.24 milligrams per kilogram per day.
- (Exhibit 7 marked for identification.)
- Q. We've handed you what's been marked
- 8 Plaintiff's Exhibit 7. Can you read into the record
- 9 the title of the document and the authors?
- A. "The Toxicity of Paraquat", D. G. Clark,
- 11 T. F. McElligott, and E. Weston Hurst.
- 12 Q. And it's from Imperial Chemical Industries
- 13 Limited, Industrial Hygiene Research Laboratories,
- 14 Alderley Park; right?
- 15 A. Yes.
- 16 Q. And what year was this published?
- 17 A. 1966.
- 18 Q. Who was D. G. Clark?
- 19 A. Well he is/was a toxicologist, a senior
- 20 toxicologist in the laboratory at that time.
- Q. In this study were rats and mice injected 21
- 22 intraperitoneally with acute 30 to 75 milligram per
- 23 kilogram doses of paraquat?
- A. I'm reading this in the "Methods" to say
- 25 paraquat was administered in the food and it was also

1 applied to the skin.

- Q. Well if you look at Syngenta number 0548879?
- 3 A. Yes. And in addition, intraperitoneal
- 4 dosing. Yes, I can see that now.
- Q. All right. Doesn't it say there signs of
- 6 poisoning after intraperitoneal dosing?
- A. Yes.
- 8 Q. And it says:
- 9 "After a single large intraperitoneal dose
- 10 (30 to 75 mg. ion/kg.) in rats, the signs of poisoning
- 11 varied somewhat from animal to animal."
- Do you see that? 12
- 13 A. Yes.
- Q. Read the next say two sentences? 14
- 15 A. "... most pointed to an action of the
- 16 substance on the central nervous system. In the
- 17 earlier stages, hyper-excitability, violent forced
- 18 movements flinging the animal about the cage, or a
- 19 stiff and incoordinate gait might be present. Spasms
- 20 might recur, or the limbs might be widely splayed. A
- 21 rolling gait might continue up to the time of death
- 22 which, at the levels of dosage employed, usually
- 23 occurred on or before the fifth day."
- 24 Q. What is an intraperitoneal injection?
- 25 A. It's an injection into the abdominal cavity.

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- 1 In other words, the space around the stomach and the
- 2 intestines.
- 3 Q. And Clark and his colleagues, all people from
- 4 Syngenta's predecessor, ICI, right?
- A. Yes. 5
- Q. Stated in most of the animals the injection 6
- "pointed to an effect on the central nervous system."
- 8 Didn't they?
- 9 A. That's what it says here.
- 10 Q. In this study the paraquat is systemically
- 11 absorbed and needs only to cross the blood-brain
- 12 barrier: correct?
- A. If these effects are -- originate in the
- 14 central nervous system.
- Q. Okay. Do you have any reason today to
- 16 dispute the findings of these scientists in 1966?
- 17 A. No, I do not.
- Q. Okay, so if the scientists from your own
- 19 laboratories were correct saying there were central
- 20 nervous system effects from paraquat in 1966, you have
- 21 no way today to dispute their findings, do you?
- 22 A. No, I don't.
- Q. All right. So that would tell you that your
- 24 labs didn't wait until the late '90s to do and find
- 25 effects on the central nervous system, as you just told

38 (Pages 146 - 149)

\_\_\_\_

- 1 me 10, 15 minutes ago. In fact, they'd done studies
- 2 one year after the release of this chemical into the
- 3 U.S. market showing it had central nervous system
- 4 effects; correct?
- A. That's correct. And I have not seen this 6 study previously.
- 7 (Exhibit 8 marked for identification.)
- 8 Q. We've handed you what's been marked as
- 9 Plaintiff's Exhibit 8. As you did with number 7, would
- 10 you mind reading the title of the document and the
- 11 names of the people involved in the production of it?
- 12 A. "Paraquat and related bipyridyls", D.M.
- 13 Conning, K. Fletcher, A.A.B. Swan.
- 14 Q. And who are these people?
- 15 A. Again, they were scientists in the laboratory
- 16 which at that time was called the Industrial Hygiene
- 17 Research Laboratory.
- 18 Q. And this is Syngenta's predecessor isn't it,
- 19 ICI?
- 20 A. It is.
- O. And these people were all employed by the
- 22 same company you started working for when you graduated
- 23 from school; correct?
- 24 A. Yes.
- 25 Q. And they published this where?
- Page 151
- A. I'm not sure I can see a journal for this off
- 2 the top of my first reading. I can't see a journal on
- 3 the paper.
- 4 Q. What year?
- 5 A. Again, I'm struggling to find a date.
- 6 Q. 1969 I think if you look closely. It appears
- 7 in that journal at page 245 doesn't it, and goes
- 8 through page 249.
- 9 A. Yes I can now just see. It is obscured at
- 10 the bottom of one of the pages. So British Medical
- 11 Bulletin 1969, I can just read that.
- 12 Q. 1969. Okay. At page 248 of that, if you'd
- 13 go to that page, the authors state:
- 14 "The delayed toxic effects of paraquat
- 15 occurring after the excretion of virtually all of the
- 16 material have caused it to be classed as a
- 17 'hit-and-run' compound ... that is a compound causing
- 18 immediate damage, the consequences of which are not
- 19 apparent until later."
- 20 Have I read that correctly?
- 21 MR. NARESH: Where are you?
- 22 BY MR. TILLERY:
- 23 Q. On page 248 under "Discussion" in the second
- 24 or right-hand column, middle of the page?
- 25 A. Yes, okay, I've found that.

- Page 150 | 1 Q. Do you want to read that part, the sentence
  - 2 that says "The delayed toxic effects"?
  - 3 A. "The delayed toxic effects of paraquat
  - 4 occurring after the excretion of virtually all of the
  - 5 material have caused it to be classed as a
  - 6 'hit-and-run' compound ... that is a compound causing
  - 7 immediate damage, the consequences of which are not
  - 8 apparent until later."
  - Q. Okay. That statement means paraquat has both
  - 10 immediate effects and effects that develop over time;
  - 1 correct?
  - 12 A. Yes.
  - 13 Q. The more time that passes after exposure, the
  - 14 more effects will be seen, according to these?
  - 15 A. Yes
  - 16 Q. What steps did ICI undertake after the study
  - 17 to investigate the effects of paraquat that would
  - 18 develop over time?
  - 19 A. Well they were largely based, as I understand
  - 20 it but again I stress that I was not involved, on
  - 21 particularly on the effects on the lung and kidney, as
  - 22 what we call principal target organs.
  - 23 Q. Well look further down there in that same
  - 24 paragraph, where it says:
  - 25 "Whilst each bipyridylium ..."

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Page 152

- 1 Would you read that aloud in the record,
- 2 please?
- 3 A. "Whilst each bipyridylium ion appears to be
- 4 relatively organ-specific, there are indications that
- 5 in all cases epithelial tissue is the major site of
- 6 damage: for example, intestinal mucosa and lens
- 7 (diquat), lung (paraquat) and the kidney tubular system
- 8 (morfamquat)."
- 9 Q. And the next sentence, please?
- 10 A. "It must be admitted that non-epithelial
- 11 tissues, such as liver, cardiac muscle and, with very
- 12 large doses, brain, can show signs of damage, but in
- 13 general these tend to be transitory.
- "On the other hand, reported local effects of
- 15 paraquat on lungs, corneal, epithelium, nasal mucosa,
- 16 ... skin and fingernails ... reinforce the idea that
- 17 epithelial tissue is the most affected."
- 18 O. Is blood-brain barrier an epithelial tissue?
- 19 A. I am not sure. I would need to check that 20 point.
- 21 O. You don't know the answer?
- 22 A. No, I don't know the answer to that.
- 23 Q. If I told you it was, you wouldn't be able to
- 24 dispute it, would you?
- A. I wouldn't be able to dispute it as we sit

5

1 here, no.

- 2 Q. Does the choroid plexus consist of cells in
- 3 the ventricle of the brain that produce cerebral spinal
- 5 A. Again, that's an area of expertise that
- 6 I don't -- doesn't enable me to answer that question.
- Q. Well let's ask you to assume that the choroid
- 8 plexus is a layer of epithelial cells. Okay? So
- 9 paraquat could damage the choroid plexus if it were to
- 10 reach that location couldn't it, if you assume that it 11 is?
- 12 MR. NARESH: Object to the form.
- A. Potentially, yes. Potentially, because of 13
- 14 what we've read here, that is possible.
- 15 BY MR. TILLERY:
- 16 Q. The author of this ICI study also wrote:
- 17 "It must be admitted ..."
- 18 I'm sorry, strike that question. You read it
- 19 already.
- 20 So ICI knew by this study no later than 1969
- 21 that paraquat could get into the brain, didn't it?
- A. Well, I think it said here that with very 22
- 23 large doses.
- 24 Q. Okay, but it still gets in the brain?
- 25 A. It has the potential to get into the brain,

- 1 yes.
- Q. In 1969 what did ICI consider to be a very
- 3 large dose of paraquat?
- A. Well, this, the studies that we've been
- 5 talking about, as I said it about the previous paper,
- 6 were doses which in some cases were approaching the
- 7 LD50 so they would be doses that were very toxic.
- Q. Is that what you thought the dose was here?
- A. Well, I've not yet had time to read all of
- 10 the detail of this paper, so I would need to check this
- 11 one. I was certainly referring to the previous one.
- Q. Do you know what ICI based its determination 12
- 13 of what a very large dose of paraquat was?
- 14 A. No.
- Q. Has Syngenta or any of its predecessors ever
- 16 warned paraquat applicators or users that a very high
- 17 dose of paraquat could cause brain damage?
- 18 MR. NARESH: Objection to the scope.
- 19 A. We have not specifically warned of that
- 20 effect, of that potential, because we don't believe
- 21 that at the kind of exposure concentrations that people
- 22 would see that that was a likely outcome.
- 23 BY MR. TILLERY:
- 24 Q. I move to strike the answer as unresponsive.
- 25 I'm going to ask your question again.

Has Syngenta or any of its predecessors ever

2 warned paraquat users that very high doses of paraquat

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- 3 could cause brain damage?
- A. I'm not aware of that.
  - Q. Did ICI do any studies to investigate how
- 6 much smaller than a very large dose would cause brain
- 7 damage?
- A. I'm not aware of that.
- Q. ICI knew in 1969 that people who mixed,
- 10 loaded or applied paraquat or who were nearby when it
- 11 was applied would be exposed to it, didn't they?
- A. That is true, ves.
- 13 Q. And in fact ICI knew that before it ever put
- 14 paraquat on the market that these people would be
- 15 exposed to it if they sold it?
- 16 A. That is true.
- 17 Q. Did ICI do any studies in or after 1969 to
- 18 investigate how much brain damage could occur from
- 19 exposure to paraquat when it was used as directed?
- 20 A. I don't know for sure but I don't believe
- 21 that any such study was done.
  - Q. Did ICI do any studies in or after 1969 to
- 23 investigate how much brain damage could occur from
- 24 exposure to paraquat when it was used in ways other
- 25 than as directed but that ICI would be aware would

Page 155 1 occur in the real world? In other words, were

- 2 reasonably foreseeable?
- 3 MR. NARESH: Object to form.
- 4 BY MR. TILLERY:
- 5 Q. Do you want me to restate the question? A. If you wouldn't mind.
- Q. Did ICI do any studies in or after 1969 to
- 8 investigate how much brain damage could occur from
- 9 exposure to paraquat when it was used in ways that they
- 10 reasonably anticipated farmers and applicators could
- A. Well we were, in our much later research
- 13 program in our mouse model were investigating potential
- 14 effects on the brain. Here we're talking about in the
- 15 years after 2003 so --
- 16 Q. Much later.
- 17 A. -- much later.
- 18 Q. So you're saying that at least 35 years after
- 19 this study in 1969?
- 20 A. That's when the majority of our research work
- 21 on this -- in this area was being done.
- 22 Q. Okay.
- 23 (Exhibit 9 marked for identification.)
  - Would you take a look at Plaintiff's
- 25 Exhibit 9, sir.

40 (Pages 154 - 157)

24

- 1 A. Yes.
- 2 Q. Could you tell me what this is?
- 3 A. It's a publication in the journal Toxicology
- 4 entitled "The tissue distribution of the bipyridylium
- 5 herbicides diquat and paraquat in rats and mice."
- 6 Q. And what year was this study?
- 7 A. 1973.
- 8 Q. And who was it undertaken by?
- 9 A. M. H. Litchfield, J. W. Daniel and Susan
- 10 Longshaw.
- 11 Q. And by whom are they employed?
- 12 A. By ICI.
- 13 Q. Same laboratory?
- 14 A. Same laboratory, yes.
- 15 Q. Now in this 1973 report of a study by
- 16 Litchfield, Daniel and Longshaw, they gave paraquat to
- 17 mice by intravenous injection of 20 milligrams per
- 18 kilogram of radio-labeled paraquat; correct?
- 19 A. Yes.
- 20 Q. What's radio-labeling mean?
- A. It means that you attach a radioactive marker
- 22 to the molecule such that you can then see where it
- 23 gets to when it's for example when it's injected into
- 24 animals.
- Q. How does that happen? How do you do that in

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- 1 a laboratory?
- A. You use normally, and I see that this was
- 3 done here, a technique called autoradiography so when
- 4 the animal is killed at the end of a study you can
- 5 essentially detect that radioactivity in sections of
- 6 the animal, you can see where it's located.
- Q. Like taking an x-ray of the animal, isn't it?
- 8 A. It's --
- 9 Q. By following that chemical and tracing the
- 10 chemical in the body?
- 11 A. That's correct.
- 12 Q. Did that radio-labeling allow them to detect
- 13 paraquat in various tissues of the mice by taking
- 14 x-rays and inspecting the x-ray film images?
- 15 A. Yes, that's clearly what's been done here.
- 16 Q. At various points in time after the paraquat
- 17 was injected, they then killed the mice and took the
- 18 films; right?
- 19 A. Yes, correct.
- Q. In mice killed after 24 hours they detected
- 21 paraquat in the brain and spinal cord, didn't they?
- 22 A. So --
- Q. If you go to page 159 in the "RESULTS"
- 24 section, middle of the page.
- 25 A. Okay. So I'm reading: "One significant

- 1 feature in the 24-hour autoradiograms from
- 2 paraquat-treated mice was the presence of radioactivity
- 3 in the lung. This was in addition evidence of the
- 4 presence of radioactivity in both the brain and spinal
- 5 cord."
- 6 Q. So it was reaching the brain and the spinal
- 7 cord and the lungs, right?
- 8 A. That's what that says.
- Q. And what's common in terms of physiology, of
- 10 a mammalian physiology, common to both rats, mice and
- 11 humans about lungs and brain on this topic?
- A. Are you referring to how well perfused they
- 13 are?
- 14 Q. Or how about that it's a very highly
- 15 oxygen-rich environment?
- 16 A. Which is really saying what I said in a
- 17 different way.
- Q. Exactly the same thing you said.
- 19 A. Yes.
- Q. What does that mean? For people who are
- 21 watching you later on this deposition, what does that
- 22 mean?
- 23 A. It means they've got -- there's a very active
- 24 blood supply feeding those tissues.
- 25 Q. And oxygen-rich means what?

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- A. It means that there is literally the presence
- 2 of oxygen as transported around with red blood cells.
- 3 Q. So if redox cycling were involved this would
- 4 be a place to wind up, wouldn't it?
- 5 A. It obviously means that redox cycling could
- 6 occur in the presence of oxygen, of course.
- Q. And where would you look in terms of
- 8 investigating oxygen-rich environments, wouldn't you?
- 9 MR. NARESH: Objection to form.
- 10 A. And that's why particularly the lung was
- 11 investigated where there was a persistence of paraquat.
- 12 BY MR. TILLERY:
- 13 Q. That's home base for presence of oxygen,
- 14 right, the lung. But the brain also generates an
- 15 enormous amount, doesn't it?
- 16 A. Yes.
- 17 Q. And the production of dopamine in terms of
- 18 human physiology generates a lot of oxygen, doesn't it?
- 19 A. I'm not sure that I'd necessarily say that
- 20 dopamine itself produces --
- O. Not the dopamine, the process, the
- 22 physiological process involved in that pot, taking
- 23 place in that substantia nigra? Were you aware of
- 24 that?
- 25 A. I'm not quite sure that I know precisely

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1 which biological process you're referring to?

- Q. Well are you aware of the fact that the brain
- 3 in terms of the substantia nigra is an oxygen-rich
- 4 environment?
- A. I didn't know that it was more oxygen-rich 6 than other parts --
  - Q. Than any other part of the body, okay.
- A. -- of parts of the brain even, no.
- Q. What about dopamine metabolism?
- A. Well dopamine metabolism certainly occurs in
- 11 areas of the brain which are rich in dopamine clearly,
- 12 of which substantia nigra is one but not the only one.
- 13 Q. What about dopamine metabolism in terms of
- 14 generating oxygen? Do you know anything about that?
- 15 A. No I don't.
- 16 Q. So if I told you that what created -- the
- 17 metabolism of dopamine created an oxygen-rich
- 18 environment, you wouldn't be able to dispute that,
- 19 would you?
- 20 A. I can't dispute that, no.
- Q. And if it did create an oxygen-rich 21
- 22 environment, that would really be a very good location
- 23 for paraquat to undergo redox cycling, wouldn't it?
- MR. NARESH: Objection to the form. 24
- 25 A. I can't dispute what you're saying.

Q. Paraquat was not detected in the bloodstream,

- A. No, it was not determined, which is 4 different.
- O. What's the difference between "determined" 6 and "detected"?
- A. My understanding of that would be that
- 8 measurements were not made, when we say "not
- determined", but that would be my interpretation.
- 10 Q. But you don't know why they didn't make
- 11 measurements in the blood?
- 12 A. No, I don't know.
- 13 Q. This study tells us that paraquat can be
- 14 accumulated in the brain when none is detectable in the
- 15 blood, can it? Are you saying that because they didn't 16 detect it --
- 17 A. No, I'm saying they didn't actually look for
- 18 it is my interpretation of ND.
- O. Would you mind taking a look at the study and
- 20 telling me where it says they didn't look at it, just
- 21 to clarify the record?
- A. Well --
- 23 Q. And are you saying "ND" means -- are you
- 24 relying on the abbreviation "ND"?
- A. No, I'm saying that in table 1 it says ND 25

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- Q. Now let's go on. In that study we see one
- 3 significant feature in the 24-hour test. Here it says
- 4 "there was an additional evidence of the presence of
- 5 radioactivity in both the brain and spinal cord". So
- 6 it entered in the spinal cord, right?
- A. I don't know whether it entered through the
- 8 spinal cord.
- Q. But it was there?

1 BY MR. TILLERY:

- 10 A. It was there.
- 11 Q. So it got into the brain, didn't it?
- A. At that time period they could detect it in
- 13 the brain.
- Q. And if you go to the table, and that would be
- 15 on page Syngenta 1980132, do you see that table?
- Q. And the table is entitled "The concentration
- 18 of paraquat or diquat in tissue of male rats fed diets
- 19 containing paraquat or diquat for 2, 4, and 8 weeks"; 20 right?
- 21 A. Yes.
- Q. And what do they see for the brain at 8
- 23 weeks? Concentrations in the brain, right? Do you see
- 24 that?
- 25 A. Yes.

- 1 means not determined. I then look in the materials and 2 methods.
- Q. Point me the page, please?
- A. Which is page 157, and it does say -- journal
- 5 page 157. It says there:
- "At 2, 4 and 8 weeks ten rats from each group
- 7 and five controls were killed, and brain, lungs, liver,
- 8 kidney, hind leg muscle, stomach, small and large
- 9 intestines were analysed for paraquat and diquat". So
- 10 that does not include blood.
- Q. These rats, none of them died from the doses, 11
- 12 did they?
- 13 A. The paper doesn't indicate that that was the
- 14 case. It gives no indication that that happened.
- Q. So they were dosed at 120 parts per million
- 16 for 8 weeks and never showed signs of general toxicity,
- 17 did they?
- A. Well I would have to go away and calculate
- 19 that in a way which I was able to relate it. But
- 20 normally for this kind of experiment, where you're
- 21 trying to detect where in this case paraquat goes, you
- 22 would not use a toxic concentration of paraquat, you
- 23 would use a lower concentration.
- 24 Q. And the paper says that at 250 parts per
- 25 million no clear pattern likely because rats stopped

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1 eating the food?

- 2 A. Which suggests that they -- that that was
- 3 heading towards being toxic.
- 4 Q. So they quit eating it when it would have
- 5 made them sicker or probably killed them, they quit
- 6 eating the food?
  7 A. Yes.
- 8 Q. So this would tell you, the inference would
- 9 be, that none of the rats died?
- 10 A. I don't have direct evidence from this paper
- 11 but that's one inference.
- Q. So this 1973 study is consistent with ICI's
- 13 previous 1969 study in that it found paraquat in the
- 14 brains of mice and rats; correct?
- 15 A. It did, but there is commentary elsewhere in
- 16 this paper that that paraquat in the brain did not
- 17 persist.
- 18 Q. I move to strike the answer as unresponsive.
- 19 Let me start over.
- 20 So this 1973 study is consistent with ICI's
- 21 previous 1969 study in that it found paraquat in the
- 22 brains of mice and rats?
- 23 MR. NARESH: Object to the form.
- 24 A. Yes.
- 25 BY MR. TILLERY:

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- 1 Q. How much of our DNA do we share with mice and 2 rats?
- 3 MR. NARESH: Objection: scope.
- 4 A. A significant proportion. More than
- 5 90 percent I understand.
- 6 BY MR. TILLERY:
- 7 Q. ICI knew about paraquat's very high redox
- 8 cycling potential when it did these studies, didn't it?
- A. It would have done, yes.
- Q. ICI knew paraquat would undergo redox cycling
- 11 in human tissues when it did these studies that it
- 12 reported in 1969 and 1973, right?
- A. It would have done.
- 14 Q. You didn't know about these studies until you
- 15 walked in here, did you?
- 16 A. I certainly have not ever read these studies
- 17 before.
- 18 Q. Did you even know that they existed?
- 19 A. I don't know that I did actually, no.
- 20 Q. So someone put you up to answer questions and
- 21 didn't show you these studies?
- 22 A. I certainly was not shown these studies as
- 23 part of the preparation.
- 24 Q. And in your preparation and your research at
- 25 all the facilities and libraries and everything you had

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- 1 at your beck and call as worldwide director of science
- 2 you didn't know about them, did you?
- 3 MR. NARESH: Objection to form.
- 4 BY MR. TILLERY:
- O. Is that a fair statement?
- A. Well let me clarify I'm not worldwide
- 7 director of science. I'm an adviser to product safety
- 8 specifically.
- 9 Q. All right.
- 10 A. And the scope of my research was around the
- 11 more recent studies that we've done.
- Q. And the statements you made about the late
- 13 '90s being -- studying neurotoxic effects or finding
- 14 neurotoxic effects earlier in this deposition were just
- 15 flat wrong, weren't they?
  - MR. NARESH: Objection to form.
  - A. I'm not sure that I would agree with that.
- 18 Would you like to be more specific?
- 19 BY MR. TILLERY:
- Q. Well when you told me that, no, none of these
- 21 studies were undertaken until the late '90s. These
- 22 studies were clearly undertaken by ICI in the '60s,
- 23 weren't they?

16

17

- A. But they did not have as their purpose to
- 25 specifically address neurotoxicity or Parkinson's

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- 1 disease specifically.
- Q. So that's what you meant when you answered my
- 3 questions?
- 4 A. That's correct.
- 5 Q. So you were telling me if they didn't have,
- 6 despite their findings of neurotoxicity, if they didn't
- 7 have that as a purpose then you could freely answer my
- 8 question that they didn't undertake them until the late
- 9 '90s, is that what you're telling me?
- 10 MR. NARESH: Objection to form.
- 11 A. I'm telling you that studies which were
- 12 specifically directed to the hypothesis that paraquat
- 13 might affect the region of the brain implicated in
- 14 Parkinson's disease did not start until the late 1990s.
- 15 BY MR. TILLERY:
- 16 Q. ICI knew that paraquat could get into the
- 17 human brain when it did these studies that it reported
- 18 in 1969 and 1973 didn't it?
- 19 A. Well, I don't know that I would say into the
- 20 human brain because there was no direct evidence for
- 21 that.
- 22 Q. These mouse studies then are not studies that
- 23 would allow you to draw conclusions about whether it
- 24 can or cannot get into the human brain?
- A. That is one reason why we increasingly wanted

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- 1 to do the kind of research that we did later to see
- 2 whether there were -- was evidence for species
- 3 differences.
- Q. So you think the mouse studies are not
- 5 predictive?
- A. At the time that these were done it would be
- 7 not possible to be sure that they were predictive of
- 8 what happened in humans.
- Q. And if you're not sure, what's the correct
- 10 scientific approach to take?
- A. As I've described this morning, we took the
- 12-course of studying the pharmacokinetics of paraquat in
- 13 a non-human primate model.
- Q. But if you're not sure of neurotoxicity, you
- 15 don't know and it's 1965, 1966, and you're about to
- 16 launch a product into a market where farmers are not
- 17 being told about neurotoxicity, what's the responsible,
- 18 ethical course to take by a company?
- 19 MR. NARESH: Objection to scope and form.
- 20 A. I think it's worth saying at this point that
- 21 toxicology, the discipline of toxicology frequently
- 22 involves giving animals high doses of chemicals where
- 23 you see effects on any tissues, not just the nervous
- 24 system, and which you do not believe are of relevance
- 25 to what humans will be exposed to. And that would be

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- 1 certainly true of some of the studies we've looked at 2 just now.
- 3 BY MR. TILLERY:
- Q. So irrespective of the findings, you don't
- 5 have to do anything further? Because if it came back
- 6 negative, you wouldn't do any more. If it came back
- 7 positive, like it did here, you didn't do any more
- 8 until the late '90s; right?
- MR. NARESH: Same objections.
- 10 BY MR. TILLERY:
- 11 Q. Is that true?
- A. These studies were, as I said earlier, were
- 13 not specifically to address neurotoxicity. The finding
- 14 of possible effects on the nervous system was one
- 15 diagnosis of what went on in these high dose studies.
- Q. But don't you do additional testing? Once
- 17 you see evidence of this, isn't it a red flag that
- 18 additional testing needs to be done because you know 18 neurotoxic studies should be undertaken?
- 19 that real live human beings are being exposed to the
- 20 potential neurotoxic effects of your product?
- 21 A. As I said, we see frequently in today's world
- 22 of toxicology where we do a lot more studies we
- 23 frequently see effects at high doses. Where proper
- 24 toxicological practice is that you then look at where
- 25 you see what's called the no effect level. So it's on

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- 1 that basis that you then conduct a risk assessment to
- Q. When did you do that first? When did you do 3
- 4 your no effect level studies?
- A. Many of those came when we started to do the
- 6 regulatory toxicology studies.
- Q. So could you give me a year when you did your
- 8 no effect studies?
- A. Well one of the key studies that we used were
- 10 studies in the rat where we were able to confirm the
- 11 lung as the principal target organ. That had the
- 12 lowest no effect level.
- 13 Q. Excuse me, sir, I move to strike your answer
- 14 as un-responsive. Specifically I asked you in what
- 15 year did you first do the study? What was it?
- A. I was about to say I can't recall what year
- 17 the test was done.
- 18 Q. Was it after 2005?
- 19 A. No, it was before then.
- 20 Q. Was it in the '90s?
- 21 A. It may even have been before that. It
- 22 certainly was one of the earliest regulatory toxicology
- 23 studies that we were doing, on regulatory toxicology --
- 24 Q. It was at least 20 or 30 years after these
- 25 studies were done, right?

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- 1 A. I can't give you a precise date.
- 2 Q. You're not willing to give me a precise date?
- MR. NARESH: Objection: argumentative. 3
- A. No, I honestly can't remember when that
- 5 key -- the study I referred to was conducted.
- 6 BY MR. TILLERY:
- Q. Did Syngenta or any of its predecessors ever
- 8 take the position that neurotoxicity studies were
- 9 unnecessary because of the human blood-brain barrier?
- A. I don't believe that that was the case.
- 11 Q. You're not aware that they took that position
- 12 one way or another?
- 13 A. No.
- 14 Q. Do you think that these study results that
- 15 I just showed you, that you said you had never seen
- 16 before, would be inconsistent with the position that
- 17 the blood-brain barrier was so protected that no
- 19 MR. NARESH: Objection to form.
- A. This was -- these studies were done at a time
- 21 when doing specialized neurotoxicity studies was not
- 22 conducted. No laboratory would have normally done such
- 23 a thing.
- 24 BY MR. TILLERY:
- Q. Would it have been reasonable for ICI to have

- 1 inferred by no later than 1969 that paraquat undergoing
- 2 redox cycling in the brain would produce superoxide
- 3 radical and other reactive oxygen species?
- A. It would be reasonable to assume that
- 5 paraquat was having that effect in a number of tissues,
- 6 including the brain.
- Q. Specifically would it include the brain, sir? 7
- A. Yes.
- Q. And would it have been reasonable for ICI to
- 10 have inferred by no later than 1969 that paraquat
- 11 undergoing redox cycling in the brain and producing
- 12 superoxide radical and other reactive oxygen species
- 13 would damage or kill brain cells?
- A. It would be reasonable to assume that was a 14
- 15 possibility, yes.
- Q. When were neurotoxicity studies, the specific
- 17 neurotoxicity studies first done in toxicological
- 18 laboratories?
- A. In my recollection the first requirement for
- 20 such studies, which came from actually from the U.S.
- 21 environmental protection agency, was in the 1990s.
- Q. I'm talking about generally. Whether or not
- 23 it's for your products, whether or not it's for any --
- 24 I'm saying when were neurotox studies first undertaken?
- A. In the 1990s. 25

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- Q. So there were no studies worldwide in any 1
- 2 laboratory studying neurotoxicity before the '90s?
- A. Not using specialized techniques that are
- 4 required for such studies.
- Q. Well were there tests of any kind studying
- 6 neurotoxicity before the '90s?
- A. There may have been but I can't speak for
- 8 every compound and every situation.
- Q. Has Syngenta or any of its successors -- I'm
- 10 sorry. Has Syngenta or any of its corporate
- 11 predecessors ever warned paraquat users that paraquat
- 12 could get in their brains?
- A. I'm not aware of that being given. 13
- (Exhibit 10 marked for identification.) 14
- Q. Is Exhibit 10 a 1974 report of a study by 15
- 16 M. Rose and Lewis Smith titled "Evidence for
- 17 energy-dependent accumulation of paraquat into rat
- 18 lung"?
- 19 A. It is.
- O. Did M. Rose work at ICI? 20
- A. He did. 21
- Q. What was his job at ICI in 1974? 22
- A. In 1974 he would have been the section head
- 24 of what was then called the Biochemical Mechanisms
- 25 Unit.

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- Q. And Lewis Smith is the same Lewis Smith
- 2 you've mentioned before in this deposition?
- 3
- Q. What was his job at that time at ICI? 4
- A. In 1974 he would have been a research worker
- 6 in Mike Rose's department.
- Q. In this study paraquat accumulation was found 7
- 8 to be energy-dependent and to follow saturation
- 9 kinetics, right?
- 10 A. Yes.
- Q. Did Rose and Smith say this implies that 11
- 12 uptake of paraquat involves active transport across
- 13 cell membranes?
- A. In the lung, yes.
- Q. What relationship if any is there between
- 16 paraquat accumulation being energy-dependent and uptake
- 17 of paraquat involving active transport across cell
- 18 membranes?
- A. A level of detail which I'm not able to
- 20 answer, I'm afraid.
- Q. Does paraquat accumulation being 21
- 22 energy-dependent and uptake of paraquat involving
- 23 active transport across cellular membranes mean energy
- 24 is used to transport paraquat across cellular
- 25 membranes?

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- A. That's what that would mean, yes.
- Q. This study shows that paraquat can be
- 3 transported across cell membranes even though it's a
- 4 charged molecule, right?
- A. It does.
- Q. Do the findings in this study show that
- 7 paraquat doesn't pass through cell membranes by passive
- 8 diffusion?
- A. Again, I would have to read this paper again 9
- 10 in more detail.
- Q. What are saturation kinetics? 11
- A. They are the kinetics of the behavior of 12
- 13 transport of a substance across -- in this case across
- 14 a membrane barrier. So it puts some mathematical
- 15 numbers on to that, the rate of transport for example.
- Q. If paraquat passes through cellular members
- 17 through active transport, as this study found, isn't it
- 18 reasonable to infer that it could also pass through the
- 19 blood-brain barrier through active transport?
- A. Well each membrane that we're talking about 20
- 21 has different properties and has different transporter
- 22 molecules for example, so you can't always say that
- what happens in one will necessarily happen in another.
- Q. So you're saying that the answer to my 24
- 25 question is, no, it can't happen that way?

45 (Pages 174 - 177)

Page 1 1 A. No, I'm saying	1 age 10
2 Q. Or are you saying you don't know?	1 Q. And it's Table 3, page 31, paraquat
3 A. I'm saying don't assume it would happen in	2 concentration in rat tissues after oral administration
4 the same way.	3 of 680 micromoles per kilogram body weight. Do you se
5 Q. And conversely you can't assume that it	4 that?
6 wouldn't, right?	5 A. Yes.
7 A. No. No.	6 Q. Does that table show that at 2 hours after
8 (Exhibit 11 marked for identification.)	7 dosing the concentration of the brain was 6.8 is
9 Q. To make this easier we've given you the whole	8 that what is the measure there?
document, but also the specific page referenced	9 A. This is nanomoles, so that is three orders of
11 documents.	10 magnitude lower than a micromole.
2 A. Okay.	Q. So the concentration of the brain was 6.8
Q. Would you mind familiarizing yourself a bit	12 nanomoles per gram of wet weight tissue?
4 with that document, please. This is Plaintiff's	13 A. That's correct.
5 Exhibit 11.	14 Q. At 4 hours the concentration in the brain was
6 A. Okay.	15 what?
•	16 A. 0.81 nanomoles per gram.
2 - 2 2 minore 11 to 1970 report of a study by	17 Q. Okay. At 18 hours it was what?
3 M. Rose of ICI entitled "Paraquat Accumulation: Tissue and Species Specificity"?	18 A. 1.5.
	19 Q. At 30 hours it was what?
150,1 teneve you said 1570. It says 1975.	20 A. 3.1.
Q. I'm sorry, July 1975. So is this such a 2 study?	21 Q. So paraquat's concentration in the brain was
	22 increasing over time, wasn't it?
	23 A. Yes, but you have to be careful about how to
Q. And again this was done by Mr. Rose, Lock,	24 interpret these studies.
5 Smith and Wyatt?	25 Q. Would you agree with me, sir, that the
A. Yes.	Page 181
100.	1 paraquat's concentration in the brain was increasing
C. The mose are an people from ICI?	2 over time by this study?
	3 A. The data here suggests that's a possibility,
Q. So this was an ICI-produced document?  A. Yes.	4 yes.
	5 Q. When ICI did this 1976 study it knew from its
Q. And in this study Wistar rats were dosed	6 own 1973 study by Litchfield and others that it found
orally with 680 micrograms what is that measure?	7 paraquat in the brain after 8 weeks, didn't it?
A. No, it's micromoles.	8 A. Yes.
<ul><li>Q. Micromoles per kilogram?</li><li>A. Yes.</li></ul>	9 Q. Knowing that, why did ICI run the study for
A. Yes.	10 only 30 hours?
Q. Of paraquat; correct? A. That's correct.	11 A. I really am not able to answer that.
A. That's correct.	12 Q. Okay. So if you knew that it was in the
Q. The study found paraquat was markedly	13 brain from a study in 1973 for 8 weeks, it would be
accumulated by lung slices and significantly	14 reasonable to conclude it would continue and stay in
accumulated by brain slices. Do you see that?	15 the brain, right?
A. Yes.	16 MR. NARESH: Objection to form. Scope.
Q. And you can look at page 25, if you wish, to	17 A. The study wasn't continued beyond 30 hours so
verify that statement?	18 it's not possible to predict what might have happened.
A. Just before we go on. To clarify, if I may.	19 BY MR. TILLERY:
This was a study which involved both, as you described,	20 Q. You're not going to say one way or another?
giving an oral dose of paraquat to rats but also the	21 A. Because we don't know what might have
use of tissues slices, which is different.	22 happened.
Q. Right. Exactly right. Now, if you would	I N
look at Table 3 on page 31?	MR. TILLERY: Let's go off the record for 24 just a moment, please.
A. Yes.	25 THE VIDEOCRAPHED C.: CO.:

THE VIDEOGRAPHER: Going off the record. The

Page 182 Page 184 1 time is 2:30. 1 A. It was. Q. And then below that it has PPL, and that's 2 (Break taken.) 3 Mr. Jenkins and Mr. Schumacher. Do you know what PPL 3 THE VIDEOGRAPHER: Back on the record. The 4 time is 2:43. 5 BY MR. TILLERY: A. I'm not absolutely sure. I suspect it's 6 prime protection, but I don't know what the "L" stands Q. In June of -- sorry, strike that. In 1974 7 Chevron was distributing paraquat in the United States Q. Okay. And would that be another corporate 8 under an agreement with ICI, wasn't it? 9 predecessor of Syngenta's? MR. NARESH: Objection to scope. If you A. I can't accurately answer that question, not 10 know. A. I can't confirm that. I don't know exact 11 knowing exactly what PPL is. 11 12 dates of commercialization. Q. Do you know who these people Jenkins and 13 Schumacher? 13 BY MR. TILLERY: A. They're not names that I remember seeing Q. Do you know whether or not Chevron ever 14 15 distributed paraquat in the United States? 15 before. Q. Do these notes recount what was discussed at A. Oh yes I know that, yes. Yes. 17 a meeting about Ortho Paraquat? Q. Do you know when that started? 17 A. Well I haven't read the document so I 18 A. I don't know the start date, no. O. Did you understand that they had an agreement 19 can't --Q. Why don't you take a minute and look at it. 20 20 between Chevron and ICI where Chevron was a sole MR. TILLERY: So if he's not prepared to 21 21 distributor of paraquat in the United States? 22 discuss anything about the relationship between Chevron A. I was aware that there was a period of time 23 and ICI, is that a topic that will be discussed when we 23 where Chevron were the sole distributor. 24 resume on April 9th? Q. Do you know when it ended? 25 25 MR. NARESH: I don't believe that he is A. I do not. Page 185 Page 183 1 designated for that topic, and off the top of my head Q. Let me hand you what's been marked as 2 Exhibit 12. 2 I don't remember that being a topic. MR. TILLERY: Yeah, it is. It's in the first (Exhibit 12 marked for identification.) 3 You would please read Plaintiff's Exhibit 12 4 series of topics. MR. CRAIG: Communications about studies --5 which is entitled "Notes on Discussions with Chevron MR. TILLERY: Yeah and one of his topics is 6 San Francisco March 28 and 29, 1974". Do you see that 6 7 internal and external communications about the 7 at the top? A. I do. 8 paraquat. 9 MR. NARESH: So I think you're saying two 9 O. And it says: 10 different things. One is the relationship between 10 "Present for formal discussions on the Ortho 11 Chevron and ICI, the contractual relationship? 11 paraquat label were:- " 12 MR. TILLERY: Well not really contractual, And from Chevron it lists Mr. Ospenson. Do 13 I'm not going to ask that because that's a foregone 13 you see that? A. I do. 14 conclusion, they've got a contract. What I'm asking 14 Q. Mr. Cavalli, Tanner, Lewis, Hopkins, Doppelt, 15 is, is he going to be the one that discusses the 16 discussions they had and the sharing of scientific 16 Stelzer, Searle, Kamienski. Do you see that? 17 information? 17 A. I do. Q. And then from IHRL, Mr. Fletcher? MR. NARESH: So I think we ought to see where 18 19 this goes and then we can talk about it afterwards. A. Yes. 20 MR. TILLERY: Okay. 20 O. What is IHRL? A. Industrial Hygiene Research Laboratory. A. Okay. 21 22 BY MR. TILLERY: Q. Do you know what they were? 22 Q. Now, do these notes say Chevron intended to A. It was the name of the laboratory that 23 24 subsequently became the Central Toxicology Laboratory. 24 submit a revised paraquat label to the EPA and then the Q. Was this part of ICI at that time? 25 quote is:

Page 186 "... containing, among other things, the 2 phrase 'when spraying, wear goggles and a respirator to

3 avoid eye contact and nasal, throat and respiratory

4 tract irritation'."

It does say that, yes.

Q. And would you read the third paragraph for

7 the record, please?

A. The one beginning:

"Dr. Lemac Hopkins's job ..."

10 Q. Yes, and if you could go to the fourth line

11 down, "Extreme"?

A. "Extreme examples quoted were the proposal in

13 California to require workers to undergo a

14 cardio-pulmonary evaluation before spraying paraquat,

15 and a proposal from a Mr. Stephenson of Georgia for a

16 paraquat ban. In both these instances the persons

17 concerned were persuaded not to proceed with their

18 proposals."

19 Do you want me to go on?

20 Q. Yes, please.

21 A. "Other comments from State officials indicate

22 concern about possible long term chronic effects of

23 workers licking small quantities of paraquat daily from

24 their lips and/or breathing in low doses via small

25 droplets from spray mist. Some agricultural

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1 commissioners have criticised the label for not being

2 clear."

Q. So Chevron and ICI knew at the time of this

4 meeting, and what was the date of it? It was in March

5 of 1974?

A. Correct.

Q. That California state officials were

8 concerned about the possible long-term chronic effects

9 of workers licking small quantities of paraquat daily

10 on their lips and/or breathing in low doses via small

11 droplets from the spray mist; correct?

12 A. Yes.

Q. If you would go to the second page. Oh

14 actually -- yes, go to the second page, please. The

15 last sentence of the third paragraph?

A. The paragraph which starts "Mr. Lewis"?

17 Q. I'm looking for the one that said

18 Dr. Fletcher confirmed in answer to a direct

19 question --

20 A. That's the fourth paragraph.

Q. The fourth paragraph, I'm sorry. Yes, the

22 last sentence of the fourth paragraph, would you read

23 that into the record?

24 A. "Before the point was conceded by PPL

25 Dr Fletcher confirmed in answer to a direct question

Page 188 1 that IHRL had no experimental evidence to support the

2 contention that there is no chronic effect from

3 continual exposure to spray mist at sub acute effect

4 levels."

5 Q. Dr. Fletcher was again from ICI?

6 A. Yes.

Q. And he confirmed they had no evidence of

8 that, right?

A. That no evidence that there is no effect.

10 It's a double negative.

Q. And there's a Post-it note on the right. Do

12 you see that? It says:

13 " i.e. we have done no long term inhalation

14 studies."

17

15 Do you see that?

16 A. I see that, yes.

Q. So as of 1974 when Chevron had been selling

18 products that were formulated from paraguat

19 manufactured by ICI for nearly 10 years, ICI knew it

20 hadn't done no long-term studies on the effects of

21 inhaling paraquat mist; correct?

22 A. That's what that suggests.

23 Q. If they had done those studies they would

24 have presumably given those to Chevron at that time?

A. I would have presumed so.

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Q. So by the time of this meeting Chevron hadn't

2 done long-term inhalation studies itself and ICI hadn't

3 provided Chevron any long-term inhalation studies,

4 Chevron knew even before this meeting that no long-term

5 studies had been done to investigate the effect of

6 inhaling paraquat spray mist, didn't it?

7 A. This is what that suggests.

8 (Exhibit 13 marked for identification.)

Q. Now if you'd look at number 13. This is

10 another meeting between Chevron and ICI and this is

11 October 6th through to the 9th, 1975, isn't it?

A. Yes. 12

13 Q. And it's an international paraquat meeting

14 reporting October 7?

15 A. Yes.

16 Q. Do you see that?

17 A. Yes.

18 Q. CTL is the same place we've been talking

19 about; correct?

20 A. CTL was what IHRL had become known by then.

21 Q. It became?

22 A. Yes.

23 Q. If you would turn to the last page and read

24 the paragraphs numbered 5 and 6 to yourself.

25 A. Okay.

- Q. Near the end of the paragraph numbered 5 with the heading "CHRONIC TOXICITY", do you see that?
- 3 A. I do.
- 4 Q. It says:
- 5 "It is suggested that a critical epidemiology
- 6 study is carried out and a long term toxicity study
- 7 using sprays on animals."
- 8 Correct?
- 9 A. Yes.
- O. So an epidemiology study was referred to as
- 11 critical but it hadn't been done, had it?
- 12 A. That's what this would be -- the assumption
- 13 would be that that was the case, yes.
- 14 Q. And a year had passed since the previous
- 15 meeting, when it was noted that no long-term study had
- 16 been done to investigate the effects of inhaling
- 17 paraquat?
- 18 A. Yes.
- 19 O. Still no study; correct?
- 20 A. That's what I'm assuming.
- Q. And you earlier said that non-human primates
- 22 are the best to use for these studies; correct?
- 23 A. No, I didn't say that. I said non-human
- 24 primates are often useful to check whether for example
- 25 the kinetics of paraquat in humans could be different
  - Page 191
- 1 from what we see in rodents.
- 2 Q. So what other species would you suggest would
- 3 give the best predictive results for health effects on
- 4 humans other than non-human primates?
- A. Well, it is obviously possible that the
- 6 rodent studies or dog studies could equally identify
- 7 the potential target organ toxicity that you might see
- 8 with paraquat in humans.
- 9 Q. So you're suggesting that rodent studies are
- 10 equally predictive to non-human primate studies,
- 11 correct, is that what you're saying?
- 12 A. I'm not saying that. I was saying that, as
- 13 is always the case in toxicology it is always possible,
- 14 and indeed often is true, that lower species, rodents
- 15 and dogs, are capable of predicting human toxicity.
- 16 It's not always the case.
- 17 Q. In the ten years that paraquat had been on
- 18 the market in the United States at the time of this
- 19 meeting -- I'm going to suggest to you that paraquat
- 20 was first marketed in the United States in 1965, from
- 21 the information that your attorneys have provided us.
- 22 Assuming that's correct, in that ten years
- 23 that paraquat had been on the market, did ICI have the
- 24 facilities to conduct a long-term, low dose, non-human
- 25 primate study?

- - A. I don't believe that it did. I'm not aware
  - 2 that ICI itself had a non-human primate facility.
  - 3 There may have been at least -- let me just build on
  - 4 that, if I may. It's pharmaceutical division may have
  - 5 had such a facility, but not the laboratories we're
  - 6 talking about here.
  - Q. And had they wanted to do it, they could have
  - 8 hired somebody to do it?
  - A. Of course, yes.
  - 10 O. Or they could have done it in their
  - 11 pharmaceutical division?
  - 12 A. That is undoubtedly feasible, yes.
  - 13 Q. So it wasn't a question of having the ability
  - 14 to do it, or the staff to do it, or the facilities to
  - 15 do it, they for reasons which apparently you don't
  - 16 know, they just chose not to do it; correct?
  - 17 A. But this doesn't suggest, if I may say --
  - 18 Q. I want you to answer my question. They had
  - 19 the ability to do these things?
  - 20 A. I believe that the pharmaceuticals division
  - 21 did have.
  - 22 O. All right. And as far as you know could
  - 23 Chevron have also done that study if they wanted to?
  - 24 A. I don't know whether they could have done it
  - 25 themselves in their own laboratory or whether they

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- 1 would have been able to contract it to somebody else.
- 2 Q. A long-term low-dose non-human primate study
- 3 could be used to investigate the effect of an
- 4 applicator's exposure to paraquat, couldn't it?
- A. It could.
- 6 Q. But ICI didn't do that study at that time,
- 7 did it?
- 8 A. No.
- 9 Q. And Chevron, to your knowledge, didn't do
- 10 that study either?
- 11 A. I've no evidence to suggest that they did.
- 12 Q. Now look at the first sentence in paragraph
- 13 6. It says:
- 14 "ACTIVITY OF PARAQUAT ON [CENTRAL NERVOUS
- 15 SYSTEM]."
- 16 That's the heading, right?
- 17 A. Yes.
- 18 Q. It says:
- 19 "In a recent autopsy on a paraquat poisoning
- 20 the pathologist discovered lesions on the motor
- 21 neurons."
- 22 Did I read that right?
- 23 A. Yes
- 24 Q. This is referring to lesions on motor neurons
- 25 in the brain, right?

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Page 194 Page 196 A. No, that's not necessarily the case. I don't 1 BY MR. TILLERY: 2 know where those motor neurons were. Q. Page 189777. Q. What studies, if any, did ICI undertake to A. So 189777 is the second page of the shorter 4 investigate whether paraquat may have been responsible 4 document you've given me. 5 for the lesions on the motor neurons in the brain? Q. Yes. MR. NARESH: Objection to the form. MR. NARESH: And where is July? A. I'm not aware whether any specific study was 7 BY MR. TILLERY: 8 done in response to this. Q. It looks like it's "PARAQUAT TOXICOLOGY 9 BY MR. TILLERY: 9 MEETING FEBRUARY, 1976". Do you know who Mr. Fletcher 10 Q. It also says in paragraph 6: 10 is? 11 "Fisher has also reported ataxia from 11 A. Yes. He was a senior toxicologist at CTL. 12 -paraquat-administered-by any route ..." -12 Q. And Mr. Cavalli? 13 Do you see that? 13 A. No, I don't know Mr. Cavalli. 14 A. Yes. Q. I will represent to you that he was an Q. Who is Fisher? 15 15 individual who worked for Chevron Chemical Company, A. That's a good question. I don't know --16 sir. 17 there's a reference to Dr. fisher in this document and 17 A. Okay. 18 I don't know who Fisher is. 18 MR. TILLERY: Let's go off the record, Q. Is ataxia a lack of voluntary movements? 19 please. A. Ataxia is certainly an effect on the muscles THE VIDEOGRAPHER: Off the record. The time 20 21 which can result from an effect on the nerves, supply 21 is 3:07. 22 of muscles. 22 (Break taken.) 23 Q. On the central nervous system? 23 THE VIDEOGRAPHER: Back on the record. The 24 A. Yes. 24 time is 3:09. 25 Q. Ataxia is a clinical finding consistent with 25 BY MR. TILLERY: Page 195 Page 197 1 neurological injury, isn't it? 1 Q. Have you had a chance to read this document, 2 A. It can be, yes. 2 sir? Q. As a matter of fact, it's most often that 3 A. Well I'm still only halfway through the 4 way, isn't it? 4 entire short version. A. I'm not a neurologist so I wouldn't be able 5 Q. Okay, go ahead and do the short version, 6 to say. 6 please. Q. It's a finding consistent with neurological A. Okay. 8 injury to the brain, isn't it? 8 Q. Can you go to the Bates number that says A. Well, that's possible but I would imagine it 9 189736? 10 can also be a direct injury to the peripheral nervous 10 A. So 189736 is the title page. 11 system. But, again, I'm not a neurologist so I don't 11 Q. And can you find 189777? 12 know. A. Yes, that's the page which follows in my 12 13 Q. What studies if any did ICI undertake in 13 version. 14 light of Fisher having reported ataxia from paraquat 14 Q. Is that the first page that follows? 15 administered by any route? 15 A. It's the page after the title, yes. 16 A. I'm not aware of any specific studies in 16 Q. And there's a section that says "We discussed 17 response to that. 17 at some length", do you see that? (Exhibit 14 marked for identification.) 18 A. I do. Q. We've handed you Plaintiff's Exhibit 14. 19 Q. Would you read that into the record, please? 20 This is a letter from R. Cavalli to Ken Fletcher, dated A. "We discussed at some length, the gaps in our 21 July 9, 1975. Who is Ken Fletcher? And this is Bates 21 knowledge of the chronic effects of paraquat exposure. 22 number -- I want to direct your attention from that 22 The animal studies available are old and do not meet 23 overall document to Bates number 189777. 23 current standards." 24 MR. NARESH: I'm not following the dates 24 Q. I couldn't hear you: 25 here. "... do not meet current standards."

- 1 May I read this on the record, please, so we
- 2 can all hear:
- 3 "We discussed at some length, the gaps in our
- 4 knowledge of the chronic effects of paraquat exposure."
- 5 Is that correct, did I say that right?
- 6 A. Yes.
- 7 Q. "The animal studies available are old and do
- 8 not meet current standards. Some are poorly done. In
- 9 fact, the cause of death from chronic exposure to
- 10 paraquat could not be determined from these studies.
- 11 Dr. Fletcher agreed to review these and to consider
- 12 repeating certain of the studies. I have recently
- 13 received a letter from him (enclosed) in which he
- 14 states that he has reviewed this area with Allen
- 15 Calderbank and Arthur Waitt, and they do not believe it
- 16 warranted to repeat any of this work. I agree with
- 17 this only if we can do the proposed epidemiology study.
- 18 If not, our only recourse will be to have good animal
- 19 studies in this area."
- 20 Do you understand that? Did you read it?
- 21 A. Yes.
- 22 Q. Now, the poorly done chronic animal studies
- 23 had been done on rabbits, rats and mice; correct?
- 24 A. I'm not sure exactly what studies they're
- 25 referring to here.

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- 1 O. And the date of this is 1976?
- 2 A. That's correct.
- 3 Q. And how long had the product been on the
- 4 market in the U.S. at this time?
- 5 A. From what you told me earlier that would
- 6 suggest about 11 years.
- 7 Q. And this was two years after Chevron and ICI
- 8 knew the State of California was concerned about tiny
- 9 amounts of paraquat having long-term effects, right?
- 10 A. Yes.
- 11 Q. And still no testing done or at least no
- 12 adequate testing being done?
- 13 A. At this point this is what this suggests.
- 14 Q. In the two years after you were put on actual
- 15 notice by the State of California of its concerns about
- 16 chronic effects from paraquat, you could have done a
- 17 .... house eximate study if would shough to do it
- 17 non-human primate study if you'd chosen to do it,
- 18 couldn't you?
- 19 MR. NARESH: Objection to the form.
- 20 A. Potentially, yes.
- 21 BY MR. TILLERY:
- 22 Q. But you didn't do any such study?
- 23 A. No, I don't believe we did.
- Q. Can you tell me why ICI did not do the study?
- 25 A. Well, you are specifying a non-human primate 25

1 study there, and I'm not sure that that was necessarily

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- 2 what was intended when they were thinking about
- 3 long-term studies. It could have been a rodent study
- 4 or a dog study, so I wouldn't say you would specify the
- 5 species. But I can't comment beyond that.
- 6 Q. So you just don't know?
- A. Because I don't know.
- 8 Q. Okay. Do you think it had anything to do
- 9 with potential effects or results from the study?
- 10 A. I can't speculate on that.
- 11 O. When did ICI first learn that a person had
- 12 died from an oral dose of paraquat?
- 13 A. I don't have that date to hand.
- 14 Q. When did ICI first learn that a person had
- 15 died from a dermal dose of paraquat?
- 16 A. Again, I don't have a precise date to hand.
- 17 Q. Do autopsies in known or suspected poisonings
- 18 typically involve analysis of tissues and measurements
- 19 of the concentration of a suspected poison in tissues
- 20 suspected to be involved in the process?
- 21 A. I can't speak about tissues. I know that
- 22 normally blood samples would be analyzed.
- Q. ICI and Chevron kept each other apprized of
- 24 adverse incidents occurring with respect to paraquat
- 25 products, didn't they?

1 A. It would seem so, yes.

- 2 Q. And Chevron Environmental Health Center did
- 3 analysis of tissues after poisonings, didn't it?
- 4 A. I don't know.
- 5 (Exhibit 15 marked for identification.)
- 6 Q. I'll show you what's been marked 15 and
- 7 number 16, just to acquaint you with the fact that
- 8 Chevron and ICI were aware of these studies. Number
- o chevion and for word aware or mose brades. These
- 9 15, if you look at that document, indicates a death in
- 10 1970, a person aged 33 years drank Gramoxone from a
- 11 beer bottle, died within 10 days. Do you see that?
- 12 A. I do.
- 13 Q. The next one is in 1971, a four year old
- 14 child ingested an unknown quantity of Gramoxone, given
- 15 immediate attention for paraquat poisoning, lavage,
- 16 exchange blood diffusion, forced diuresis, the child
- To exchange blood diffusion, forced diaresis, the one
- 17 survived.
- 18 1972, aged 46 year old died as a result of
- 19 drinking Gramoxone, died within hours. Do you see
- 20 those?
- 21 A. I do.
- 22 Q. And then you see that the materials that --
- 23 the other parts of the body that they receive reports
- 24 on?
- 25 A. Yes.

- 1 (Exhibit 16 marked for identification.)
- 2 Q. Likewise, sir, if you take a look at number
- 3 16. This is an indication that they were aware of
- 4 these being reported and then sharing the information
- 5 about toxicological studies and analysis of autopsies
- 6 of people who ingested paraquat products and died?
- A. Okay.
- 8 (Exhibit 17 marked for identification.)
- Q. 17 is headed "Fatal case of poisoning by
- 10 paraquat" by F.B. Bronkhorst, J.M. van Daal, H.D. Tan.
- 11 Do you see that?
- 12 A. I do.
- Q. It's a report of a poisoning in a scientific 13
- 14 literature in February 1968?
- 15 A. That's correct.
- 16
- Q. If you go to page 8 of that document, you see
- 17 observations of a man poisoned with paraquat. It's in
- 18 the first paragraph I'll direct your attention to. The
- 19 observations included perivascular oedema in the white
- 20 matter of the brain and areas in which ganglion cells
- 21 from the cortex showed "pycnosis of the nuclei". Do
- 22 you see that?
- 23 A. Yes, that's in the -- written with a pen
- 24 writing, yes. I see that.
- 25 Q. So this autopsy was reported to have found

Page 204 1 be exposed to paraquat as a result of spray drift and

- 2 as a result of contact with sprayed plants?
- A. That is possible, yes.
- Q. You would agree with that?
- Q. Would you agree that Syngenta knew that users
- 7 of paraquat and persons nearby could be exposed to
- 8 paraquat as a result of spills, splashes and leaks
- 9 while equipment used to spray paraquat was being
- 10 emptied or cleaned or clogged spray nozzles, lines or
- 11 valves were being cleared?
- 12 A. Yes.
- 13 Q. Syngenta also knew that paraquat could enter
- 14 the human body via absorption through or penetration of
- 15 the skin, mucus membranes and other epithelial tissues
- 16 including tissues of the mouth, nose and nasal
- 17 passages, trachea and conducting airways, particularly
- 18 where cuts, abrasions, rashes, sores and other tissue
- 19 damage was present?
- 20 MR. NARESH: Objection to form.
- 21 A. That is possible, yes, of course.
- 22 BY MR. TILLERY:
- 23 Q. Syngenta knew that paraquat could enter the
- 24 human body via respiration into the lungs, including
- 25 the deep parts of the lungs where respiration or gas

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- 1 histopathological changes in the brain including active
- 2 cell death in the ganglion of cells in the cortex;
- 3 didn't it?
- A. That's what that says.
- Q. What are histopathological changes?
- A. They are changes that you can see in tissues
- 7 by using a microscope. So you're looking at the 8 cellular detail.
- Q. Sir, I'm going to break a little bit here and
- 10 move on to a different topic and then come back and
- 11 finish this because we have a couple of missing
- 12 exhibits that we're going to add to this discussion
- 13 we'll finish either today or tomorrow when we finish
- 14 your deposition. But I do want to ask you some more
- 15 questions now, if I can.
- 16 A. Okay.
- 17 Q. Would you agree that Syngenta knew that users
- 18 of paraquat and persons nearby could be exposed to
- 19 paraquat while it was being mixed and loaded into the
- 20 tanks of sprayers as a result of spills, splashes and
- 21 leaks?
- 22 A. Yes, we were aware of that.
- 23 Q. Would you agree that Syngenta knew that
- 24 persons who sprayed paraquat or were in or near areas
- 25 where it was being or recently had been sprayed would

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- 1 exchange were to occur?
- A. Well we know that the amount of paraguat that
- 3 is respirable, that is small enough to get into those
- 4 deep parts of the lungs, is actually very, very small.
- 5 Most of the paraquat when it's sprayed is larger
- 6 particles which can't get into the deep lung.
- Q. But it does. But you knew that it could get
- 8 into those lung parts?
- A. Potentially it could if the particles were
- 10 small enough, but that is not normally the case.
- 11 Q. But are you saying it can't get into the
- 12 lungs?
- 13 A. No, I'm not saying it can't get into the
- 15 Q. And did ICI know all of these things, the
- 16 same as Syngenta?
- 17 A. ICI could have known that kind of
- 18 information. But, again, that information became more
- 19 information about that was received as time went on so
- 20 we understood more about it.
- Q. But in terms of how farmers were to apply
- 22 chemicals, in terms of how they handled chemicals, in
- 23 terms of their exposure to chemicals, all of these same
- 24 things were known to ICI the same as Syngenta?
- 25 A. Yes.

- 1 Q. Did Syngenta or ICI ever learn paraquat could
- 2 enter the human body via injection into the digestive
- 3 track of small droplets swallowed after entering the
- 4 mouth or nose?
- 5 A. Again that was something that was known to be 6 possible, yes.
- Q. Did ICI or Syngenta also know that paraquat
- 8 that entered the human body via ingestion into the
- 9 digestive track could enter the enteric nervous system?
- 10 A. No.
- 11 O. That wasn't until later?
- 12 A. That was -- and again, that is still a
- 13 hypothesis that that is one way in which paraquat could
- 14 be transported?
- 15 Q. Does Syngenta flatly dispute that as an
- 16 avenue, or does it say that it's still an open
- 17 question?
- 18 A. I think I've said it's a hypothesis, which is
- 19 absolutely another way of saying it's an open question.
- 20 Q. All right. Syngenta or ICI knew that
- 21 paraquat that entered the human body whether via
- 22 absorption, respiration of ingestion could enter the
- 23 bloodstream?
- 24 A. Yes.
- 25 Q. Syngenta also knew that paraquat that entered

- 1 learned through studies in the public domain that
  - 2 paraquat that entered the nose and nasal passages could

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- 3 enter the brain through the olfactory bulb?
- 4 A. Of course, yes. Could.
- Q. Would you agree that Parkinson's disease is a
- 6 progressive neuro-degenerative disorder of the brain
- 7 that affects primarily the motor system, the part of
- 8 the nervous system that controls movement?
- 9 A. Yes.
- 10 Q. The characteristic symptoms of Parkinson's
- 11 disease are its primary motor systems, resting tremor,
- 12 shaking of muscles, Bradykinesia, slowness of movement,
- 13 rigidity, stiffness, and postural instability. Would
- 14 you agree with that?
- 15 A. I agree.
- 16 Q. Would you agree that Parkinson's disease
- 17 primary motor symptoms often result in secondary motor
- 18 systems such as freezing of gait, shrinking of
- 19 handwriting, a mask-like expression, a flat face
- 20 expression, slurred, monotonous, quiet voice, stooped
- 21 posture, muscles spasms, impaired coordination,
- 22 difficulty swallowing, excess saliva and drooling
- 23 caused by reduced swallowing movements. Would you
- 24 agree with that?
- 25 A. I would agree with that, yes.

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- 1 the bloodstream could enter the brain, whether through
- 2 the blood-brain barrier or parts of the brain not
- 3 protected by the blood-brain barrier?
- 4 A. We obviously know that there was evidence
- 5 that that could occur.
- 6 Q. Syngenta or ICI learned through studies in
- 7 the public domain that paraquat that entered the nose
- 8 and nasal passages could enter the brain through the
- 9 olfactory bulb which is not protected by the
- 10 blood-brain barrier?
- 11 A. That was conceivable, yes.
- 12 O. And you don't dispute that?
- 13 A. I don't dispute that that is possible, yes.
- 14 Q. So you used the word "possible". It makes me
- 15 a little queasy, let me say. I'm a little concerned.
- 16 I want to explore that a little bit more. Are you
- 17 saying that it's just possible? Are you saying that it
- 18 can't happen? It can? What is the probability?
- 19 A. Well I think you're making an assumption that
- 20 any -- that paraquat that we know may get into the
- 21 brain in low concentration will necessarily have come
- via those routes, including the olfactory bulb, and wedon't necessarily know that for sure.
- 24 Q. Well then let me rephrase that statement and
- 25 ask if you would agree with it. Syngenta or ICI

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- Q. Would you agree that the non-motor symptoms,
- 2 such as the loss or altered sense of smell,
- 3 constipation, low blood pressure on rising to stand,
- 4 sleep disturbances and depression are present in most
- 5 cases of Parkinson's disease, often for years before
- 6 any of the primary motor symptoms appear?
- 7 A. I would not be able to comment about most.
- 8 I am certainly aware that those symptoms have been
- 9 detected in some Parkinson's patients.
- 10 O. And you know that from your research at
- 11 Syngenta in terms of that particular group that studies
- 12 Parkinson's disease in paraquat?
- 13 A. Yes.
- 14 Q. What is the name of that group?
- 15 A. In terms of let me just go back. So when you
- 16 say we knew it, all those symptoms we knew from that
- 17 particular group?
- 8 Q. Well you know from all sources, I presume?
- 19 A. I was going to say, not exclusively from that
- 20 source.
- 21 Q. Of course. Of course. From your own private
- 22 research or the group or presentations or whatever,
- 23 this would be known generally across the board by the
- 24 scientists who were involved in that study area?
- 25 A. That's right, yes.

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- Q. Is that correct?
- A. Yes. Yes.
- Q. There's currently no cure for Parkinson's 3
- 4 disease. No treatment will slow, stop or reverse its
- 5 progression and the treatments most commonly prescribed
- 6 for its motor symptoms tend to become progressively
- 7 less effective and to cause side effects the longer
- 8 they're used. Would you agree with that?
- A. I would, yes.
- 10 Q. The selective degeneration and death of
- 11 dopaminergic neurons, that is the dopamine-producing
- 12 nerve cells, in part of the brain called the substantia
- 13 nigra pars compacta is one of the primary patho
- 14 physiological hallmarks of Parkinson's disease?
- 15 A. It is.
- 16 MR. NARESH: Objection to form.
- 17 BY MR. TILLERY:
- Q. Dopamine is a neurotransmitter, a chemical
- 19 messenger that transmits signals from one neuron to
- 20 another neuron, muscle cell or gland cell that is
- 21 critical to the brain's control of motor functioning.
- 22 Would you agree with that?
- 23 A. I would agree with that.
- 24 Q. The death of dopaminergic neurons in the
- 25 substantia nigra decreases the production of dopamine?

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- A. Yes.
- Q. Once dopaminergic neurons die they're not
- 3 replaced. When enough dopaminergic neurons have died,
- 4 dopamine production falls below the level the brain
- 5 requires for proper control of motor function,
- 6 resulting in motor symptoms of Parkinson's disease. Do
- 7 you agree with that?
- MR. NARESH: Objection to form.
- A. That's my understanding of it, yes.
- 10 BY MR. TILLERY:
- Q. The presence of Lewy bodies, the aggregates
- 12 of protein called Alpha-synuclein, in many of the
- 13 remaining dopaminergic neurons in the substantia nigra
- 14 is another of the primary patho physiological hallmarks
- 15 of Parkinson's disease. Would you agree with that?
- 16 A. I would agree.
- 17 Q. Dopaminergic neurons are particularly
- 18 susceptible to oxidative stress, a disturbance in the
- 19 normal balance between oxidants present in cells and
- 20 cells antioxidant defenses. Would you agree?
- 21 A. Yes. Yes.
- Q. Scientists who study Parkinson's disease
- 23 generally agree that oxidative stress is a major factor
- 24 in the degeneration and death of dopaminergic neurons
- 25 in the substantia nigra and the accumulation of Lewy

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- 1 bodies in the remaining dopaminergic neurons that are
- 2 the primary pathophysiological hallmarks of Parkinson's
- 3 disease?
- MR. NARESH: Objection to scope; form.
- 5 BY MR. TILLERY:
- Q. Would you agree with that statement?
- A. If the inference from that is that most cases
- 8 of Parkinson's disease are caused by oxidative stress,
- 9 I'm not sure that that is necessarily right, because
- 10 I think a lot of cases of Parkinson's disease are
- 11 idiopathic, in other words it's not clear exactly how
- 12 they have occurred.
- 13 Q. Could you tell me your source for that
- 14 statement?
- 15 A. Again by what I've heard from neurologists
- 16 speaking at conferences for example.
- 17 Q. Would you agree that paraquat is highly toxic
- 18 to both plants and animals?
- 19 A. Yes.
- 20 Q. Would you agree that paraquat injures and
- 21 kills plants by creating oxidative stress that causes
- 22 or contributes to cause the degeneration and death of
- 23 plant cells?
- 24 A. Yes.
- 25 Q. Paraquat injures and kills humans and other

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- 1 animals by creating oxidative stress that causes or
- 2 contributes to cause the degeneration and death of
- 3 animal cells?
- A. Yes.
- Q. Paraquat creates oxidative stress in the
- 6 cells of plants and animals because of redox properties
- 7 that are inherent in its chemical composition and
- 8 structure?
- A. Yes.
- 10 Q. Paraquat is a strong oxidant and it readily
- 11 undergoes redox cycling in the presence of molecular
- 12 oxygen which is plentiful in living cells?
- 13 A. Yes.
- 14 Q. The redox cycling of paraquat in living cells
- 15 interferes with cellular functions that are necessary
- 16 to sustain life with photosynthesis in plant cells and
- 17 with cellular respiration in animal cells?
- 18 MR. NARESH: Objection to form.
- 19 A. Yes.
- 20 BY MR. TILLERY:
- Q. The redox cycling of paraquat in living cells
- 22 creates a reactive oxygen species known as superoxide
- 23 radical, an extremely reactive molecule that can
- 24 initiate a cascading series of chemical reactions that
- 25 creates other reactive oxygen species that damage

- 1 lipids, proteins and nucleic acids, molecules that are
- 2 essential components of the structures and functions of
- 3 living cells?
- 4 MR. NARESH: Objection: form.
- 5 A. Yes.
- 6 BY MR. TILLERY:
- Q. Because the redox cycling of paraquat can
- 8 repeat indefinitely in the conditions typically present
- 9 in living cells, a single molecule of paraquat can
- 10 trigger the production of countless molecules of
- 11 destructive superoxide radical?
- 12 MR. NARESH: Objection: form.
- 13 A. In theory that's true one molecule could.
- 14 Whether one molecule would, I wouldn't like to be able
- 15 to speculate.
- 16 BY MR. TILLERY:
- 17 Q. But it's certainly consistent with what we
- 18 know of a mode of action of the molecule, isn't it?
- 19 A. Of course, yes.
- 20 Q. Paraquat's redox properties have been known
- 21 to science since at least the 1930s, '33; correct?
- 22 A. Yes, correct.
- 23 Q. From the study we reviewed this morning?
- 24 A. That's correct.
- 25 Q. That paraquat is toxic to the cells of plants
- Page 215
- 1 and animals because it creates oxidative stress through
- 2 redox cycling has been known to science since at least
- 3 the 1960s; correct?
- 4 A. Yes.
- 5 Q. The surfactants with which paraquat was
- 6 typically formulated were likely to increase paraquat's
- 7 toxicity to humans by increasing its ability to stay in
- 8 contact with or penetrate the skin, mucus membranes or
- 9 other epithelial tissues, including issues of the
- 10 mouth, nose and nasal passages, trachea and conducting
- 11 airways, the lungs and the gastrointestinal tract?
- 12 MR. NARESH: Objection: scope; foundation;
- 13 form.
- 14 A. I don't know that I have direct evidence that
- 15 surfactants would necessarily have those effects in all
- 16 the tissues that you're describing.
- 17 BY MR. TILLERY:
- 18 Q. Can you point me to any single study that
- 19 Syngenta has ever done which would dispute that
- 20 statement?
- 21 MR. NARESH: So I'll object. And, Steve,
- 22 I thought we had an agreement that 31(j) is not the
- 23 subject of today's deposition?
- 24 MR. TILLERY: I won't ask him any more.
- 25 MR. NARESH: If you know.

- 1 BY MR. TILLERY:
- Q. Can you point to a single scientific study or
- 3 any analysis that Syngenta has ever done or is aware of
- 4 that would dispute that statement?
- 5 A. I can't today point to such a study.
- 6 Q. The same redox properties that make paraquat
- 7 toxic to plant cells and some types of animal cells
- 8 make it toxic to dopaminergic neurons; that is,
- 9 paraquat is a strong oxidant that interferes with the
- 10 function of, damages and ultimately kills dopaminergic
- 11 neurons by creating oxidative stress through redox
- 12 cycling?
- 13 MR. NARESH: Objection: form; foundation.
- 14 A. It has that potential.
- 15 BY MR. TILLERY:
- 16 Q. So you agree with that statement?
- 17 A. I can't dispute that statement.
- 18 Q. I'm sorry?
- 19 A. I can't dispute that statement, yes.
- 20 O. Paraguat is used by scientists in laboratory
- 21 studies to produce animal models of Parkinson's
- 22 disease?

24

- 23 A. That is true.
  - Q. In animal models of Parkinson's disease
- 25 hundreds of studies involving various routes of

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- 1 exposure have found that paraquat creates oxidative
- 2 stress that results in the degeneration and death of
- 3 dopaminergic neurons in the substantia nigra, other
- 4 pathophysiology consistent with that seen in human
- 5 Parkinson's disease and motor deficits and behavioral
- 6 changes consistent with those commonly seen in human
- 7 Parkinson's disease?
- 8 MR. NARESH: Objection to form.
- 9 A. I don't know that "hundreds" is a correct
- 10 description. There are certainly studies that have
- 11 shown those effects in the brain that you describe, and
- 12 it is assumed that that may occur through the oxidative
- 13 stress mechanism.
- 14 BY MR. TILLERY:
- 15 Q. Studies of in vitro -- strike that. In vitro
- 16 studies have found that paraquat creates oxidative
- 17 stress that results in the degeneration and death of
- 18 dopaminergic neurons?
- 19 A. In vitro that is true, yes.
- 20 Q. Many epidemiological studies have found an
- 21 association between paraquat exposure and Parkinson's
- 22 disease, including multiple studies finding a 2 to
- 23 5-fold or greater increase in the risk of Parkinson's
- 24 disease in populations with occupational exposure to
- 25 paraquat, compared to populations without such

Page 218 Page 220 1 exposure? MR. NARESH: Just for the record, you gave 2 MR. NARESH: Objection to the form. 2 the witness both the excerpted version you gave me and 3 A. Some studies have seen that effect. Other 3 the complete version? 4 studies have seen no effect. MR. TILLERY: I gave him both a complete and 5 BY MR. TILLERY: 5 a short. And if you need the complete one --Q. Right but as that's phrased you would agree MR. NARESH: I can get it. 7 with the statement? 7 MR. TILLERY: Thank you. Mr. Orlet, that's A. Yes. 8 20406. MR. TILLERY: Want to take a few minutes 9 (Pause. Witness reviews document.) 10 break? 10 BY MR. TILLERY: THE VIDEOGRAPHER: Going off the record. The 11 11 Q. You ready? 12 time is 3:42. 12 A. I'm ready. 13 (Break taken.) 13 Q. Thank you very much. Exhibit 18 is a 1981 THE VIDEOGRAPHER: Back on the record. The 14 14 report of a "Lifetime Feeding Study in the Mouse" that 15 ICI performed; correct? 16 (Exhibit 18 marked for identification.) 16 A. Correct. 17 BY MR. TILLERY: 17 Q. And this starts at Bates number CUSA-0020408. 18 Q. Before you start looking at Plaintiff's 18 A. The title page is 406. 19 Exhibit 18 I'd like to clear up one thing from the 19 Q. Title page is 406. And the -- if you go to 20 discussion prior to the break. Was ICI aware by 1970 20 page 408 in the Bates range it says: 21 of all of the plausible ways for paraquat to get into 21 "Study Title: PARAQUAT: LIFETIME FEEDING 22 the brain that Syngenta is aware of now? 22 STUDY IN THE MOUSE" A. I doubt that but I couldn't be definitive 23 23 Do you see that? 24 about it. 24 A. I do. 25 Q. You know we went through and I asked you all 25 Q. The study director was M. H. Litchfield? Page 219 Page 221 1 those questions about what Syngenta knew and you gave 1 A. Yes. 2 me answers. What I'm trying to understand now, would Q. Who was he? 3 any of them differ with respect to ICI's knowledge of A. He was again a senior toxicologist at CTL. 4 the means by which paraquat could enter the human Q. As far as you know this was the type of 5 brain? 5 information -- this came from production from Chevron A. Well I think that science has moved on and 6 U.S.A. so it's another document. As far as you know 7 other hypotheses have emerged. We talked about the 7 this was information that would have been shared with 8 enteric one, for example. 8 Chevron as the work was done? 9 Q. Right, other than that, and I knew you would A. Well I can't comment whether it was shared, 10 say that and I think that's fair, but you said that 10 but I couldn't dispute it either. 11 that's more common in terms of recent days. But other 11 Q. Now what did Mr. Litchfield do at ICI? 12 than those, in terms of knowledge about the cerebral 12 A. He was what we would have called in those 13 spinal fluid or knowledge about the olfactory bulb, or 13 days a consultant toxicologist largely. So he had --14 knowledge about transdermal into the bloodstream, were 14 he provided input in a number of different ways to 15 those known in terms of human physiology, in terms of 15 science issues. But at that time it was customary for 16 potential routes of access to the brain by ICI in 16 such senior people to act as study directors of major 17 general terms as much as Syngenta now? 17 studies. 18 A. Yes, I think that's fair. 18 Q. Was he a senior person at that time? 19 Q. Thank you. If you wouldn't mind taking a 19 A. Yes, he was. 20 look at number 18, please. And we've given you a Q. Okay, if you would please turn to 20411 and

21 the top of that page says "INTRODUCTION". Do you see

Q. And it starts, on the first full paragraph

25 "on assessment" if you'd read that to yourself, please.

22 that?

A. Yes.

23

24

25 that you need, sir.

21 shortened version just to make sure that you have

22 easier access to the pages that I'm going to ask you

23 questions about. But if you take a few minutes and

24 familiarize yourself with the study. Take the time

- 1 I think you've already probably read that paragraph?
- A. So 11 I beg your pardon, yes.
- 3 Q. And the study was designed as a cancer study,
- 4 right?
- 5 A. That's right.
- 6 Q. It wasn't designed as a chronic neurotoxicity
- 7 study?
- 8 A. No, it was not.
- 9 Q. So if you would please turn to the next page,
- 10 under 2.2 "Animals and Accommodation", do you see that
- 11 and if you read that section I think you probably
- 12 already have?
- 13 A. Yes.
- 14 Q. It says:
- 15 "The Alderley Park strain was used since this
- 16 was the strain used in the previous study and
- 17 background tumour incidences are available from other
- 18 mouse carcinogenic studies ..."
- 19 A. Yes.
- 20 Q. If you look at the top of the page in the
- 21 first paragraph -- I'm sorry, if you go back a page.
- 22 It talks about, in the assessment stage, that the study
- 23 was restarted. Did you see that?
- 24 A. Can you just tell me where you're reading
- 25 that now?

- Page 223
- 1 Q. The second sentence it says:
- 2 "However in this study there was a high
- 3 mortality rate in all groups and some evidence of
- 4 respiratory infection. In addition, although the
- 5 original study design was acceptable at that time
- 6 (1969), it fell short of current standards particularly7 regarding the duration of the study. As a consequence
- regulating the duration of the study. The a consequen-
- 8 of this, a new study was commissioned starting 25
- 9 October 1977."
- 10 A. Yes.
- 11 Q. So the first one was scrapped; correct?
- 12 A. The first one was -- yes, it was terminated
- 13 because of -- at a certain period of time because many
- 14 of the mice had died I think because they'd reached a
- 15 certain age where that's what happens to mice.
- 16 Q. Well if you go to the next paragraph, the
- 17 second sentence:
- 18 "The duration of the study was set to last
- 19 two years or until approximately 80% mortality occurred
- 20 in a control group or the study overall ..."
- 21 A. That's correct.
- 22 Q. If we go now back, this involved feeding
- 23 Swiss albino mice food laced with paraquat, right? Is
- 24 that what your understanding was?
- 25 A. You're now talking about the earlier study?

- 1 Q. No, the one that is the subject of this
- 2 report.
- 3 A. Right. Okay, that I agree, yes.
- Q. And it says here on 14 -- if you go to 14.
- 5 Do you see a reference to using "expanded portion rat

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- 6 diet with a vitamin E supplement"? Did you notice that
- 7 they did that?
- 8 A. I don't see that on page 14.
- 9 Q. I'm sorry. Go to the next page, number 15.
- 10 I misspoke. "2.4 Specification of Diets, Diet
- 11 Preparation and Diet Analysis"?
- 12 A. Yes.
- 13 Q. "... Expanded Portion Rat Diet with a Vitamin
- 14 E Supplement (PRDE) was used."
- Do you know why that was used?
- 16 A. I actually do not know why that was done at
- 17 that time.
- 18 Q. Is vitamin E an antioxidant?
- 19 A. I can't remember. I would need to check
- 20 that.

22

1

- 21 Q. Well let me ask you to assume that it is a --
  - A. I thought it was but I -- thank you for --
- 23 Q. Yes. An antioxidant, okay. And does vitamin
- 24 E bioaccumulate?
- 25 A. Again, I don't know without checking.
  - Page 225
- 2 A. Why not.
- 3 O. So it is an antioxidant which bio-accumulates

Q. Let me ask you to assume that it does.

- 4 okay. And what does bio-accumulation mean?
- 5 A. It means the -- a substance or any biological
- 6 substance which builds up over a period of time in the
- 7 body.
- 8 Q. And because it's an antioxidant that
- 9 bio-accumulates, increased levels of vitamin E in the
- 10 body would reasonably be expected to reduce whatever
- 11 effects the redox cycling of paraquat would otherwise
- 12 have; correct?
- 13 MR. NARESH: Objection to the form.
- 14 A. I think it's speculation as to whether that
- 15 would have happened in the context of a study like
- 16 this.
- 17 BY MR. TILLERY:
- 18 Q. Can you rule it out?
- 19 A. I can't rule it out.
- 20 Q. Giving an antioxidant is a means currently
- 21 used by clinicians to help people with Parkinson's
- 22 disease to protect them, protect dopaminergic neurons;
- 23 were you aware of that?
- 24 MR. NARESH: Objection: foundation.
- 25 A. I had heard about that. But yes, I can't

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- 1 dispute that.
- 2 BY MR. TILLERY:
- Q. So to provide a neuro-protective device for
- 4 the substantia nigra?
- A. That's the clinical meaning of that
- 6 absolutely, yes.
- Q. And so here these rats were laced with a
- 8 vitamin E supplement; correct?
- A. That's what this says.
- 10 Q. A higher level of vitamin E in the body would
- 11 be expected to provide more protection from the
- 12 destructive effects of a reactive oxygen species,
- 13 wouldn't it?
- 14 A. Yes, but my understanding of this is that the
- 15 main part of this study did not involve a diet with
- 16 vitamin E supplement. That's my reading of this.
- 17 Q. I move to strike the answer as
- 18 non-responsive. Let me ask you again, sir. A higher
- 19 level of vitamin E in the body would reasonable be
- 20 expected to provide more protection from the
- 21 destructive effects of reactive oxygen species,
- 22 wouldn't it?

1 an animal.

- 23 MR. NARESH: Objection: form.
- 24 A. Again, to me that would be speculative as to
- 25 whether that would occur if it was given in this way to

- 1 the bottom of the cage?
  - A. Yes. To clarify that's the mice where urine
  - 3 was collected were transferred from where they would

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- 4 normally reside and eating the diet into what are
- 5 called metabolism cages. So a different device.
- Q. And on 17, that 020417, the urine was then
- 7 analyzed for paraquat, wasn't it?
- A. That's right.
- Q. If you can now turn to 20549.
- 10 A. Okav.
- 11 Q. The control mice were the mice that weren't
- 12 given food laced with paraquat, right?
- 13 A. Yes.
- 14 Q. No paraquat was detected -- strike that. If
- 15 you look at 20549, do you see that?
- 16 A. Yes.
- 17 Q. Where it says "Metabolism cages"?
- 18 A. Mm-hmm.
- 19 Q. "Metabolism cages were used to collect urine
- 20 with added paraquat equivalent to that excreted by high
- 21 dose animals; the cages were washed and autoclaved in
- 22 the normal manner. They were then returned to the
- 23 animal cell and used to collect urine from control
- 24 animals. This urine was found to contain low but
- 25 detectable levels of paraguat ..."

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1

- 2 BY MR. TILLERY:
- Q. Well let's say this. From a purely
- 4 scientific perspective of what you know about reactive
- 5 oxygen species and about an antioxidant, is that
- 6 consistent what I said?
- A. Yes, there's nothing scientifically wrong
- 8 with what you said. Whether it applies in this
- 9 circumstance I couldn't comment.
- Q. Okay. Could you look at number 13 and see
- 11 what the housing of these animals was, if it was
- 12 stainless steel cages?
- A. Yes. 13
- 14 Q. It was, wasn't it?
- 15 A. Yes.
- 16 Q. So from a purely scientific standpoint would
- 17 you agree with me, sir, that effectively the mice were
- 18 being given an antidote for the redox cycling effects
- 19 of paraquat?
- A. I would find it very difficult to imagine
- 21 that that was what was intended by what it says here is
- 22 in the pre-experimental phase feeding the animals that
- 23 type of diet.
- Q. Can you go to 17, on that Bates number, and
- 25 confirm for me that the urine was collected in a pan at

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- And this was the control group?
- 2 A. That's right, and that's why they were trying
- 3 to understand where that had come from.
- Q. And they found that it was from cages that
- 5 hadn't been properly cleaned?
- A. Yes because paraquat is known to stick to a
- 7 number of different surfaces.
- 8 Q. And stainless steel is one of them?
- 9 A. Including stainless steel.
- 10 Q. And that's why I asked you that question. So
- 11 they were using stainless steel cells for the animals
- 12 and they found that in the control group that had not
- 13 been fed the paraquat that they tested positive from
- 14 the urine collected; right?
- 15 A. Yes.
- 16 Q. 10 mice that weren't even in the study were
- 17 tested and found to have paraquat in their urine?
- 18 A. Due to the contamination, yes.
- 19 Q. Due to the contamination. Okay. So based
- 20 upon the urine samples that tested, ICI couldn't
- 21 distinguish between mice that were in the treatment
- 22 group that got paraquat in their food as part of the
- 23 study, mice that were in the control group so they
- 24 couldn't get paraquat on their food, and mice that

25 weren't in the study at all, could they?

- 1 A. And that's why, as I understand it, they
- 2 subsequently made sure that a revised washing procedure
- 3 was put in place to reduce the possibility of
- 4 cross-contamination.
- 5 Q. Okay. Would you go to 20511 and read that
- 6 section to yourself. Conclusion page. Do you see
- 7 this?
- 8 A. I do.
- 9 O. ICI gave two possible reasons for the
- 10 controlled urine having paraquat in it, didn't it?
- 11 A. Yes
- 12 Q. One was a bad laboratory practice in washing
- 13 the cages, right? And the other one was a bad
- 14 analytical method, meaning a bad measurement. Correct?
- 5 A. I think "bad" is not quite the word I would
- 16 use here, because I think this was at a time when we
- 17 were only beginning to really understand how paraquat
- 18 can stick to surfaces like stainless steel. So in that
- 19 particular case I think this was a discovery if you
- 20 like rather than bad practice.
- O. And look at the one rat or one mouse that's
- 22 referred to here, and it says: there was one female
- 23 control with paraquat in her urine that neither of
- 24 these explanations could account for. Do you see that?
- 25 A. Mm-hmm.

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- 1 Q. So ICI just speculated about the cause and 2 used the results in the study anyway, didn't it?
- 3 A. Yes.
- 4 Q. Did they discard the data that occurred and
- 5 was collected before the new washing procedure?
- 6 A. I don't know. I've not -- I need to do a 7 more thorough --
- 8 Q. Would you have if you were conducting the 9 study?
- 10 MR. NARESH: Objection to the form.
- 11 A. I think if you don't have an explanation then
- 12 one option is to take that animal out of the study.
- 13 That is one possibility.
- 14 BY MR. TILLERY:
- 15 Q. Would you say that a responsible laboratory
- 16 method would be to discard all of the results achieved
- 17 from using contaminated pens or containers for the
- 18 mice?
- 19 MR. NARESH: Same objection.
- 20 A. Not necessarily if you're able to actually
- 21 understand how that happened and that it actually tells
- 22 you that in reality those control animals did not
- 23 receive paraquat in their diet, they were not actually
- 24 exposed to it, then it's okay to include those animals.
- 25 BY MR. TILLERY:

1 Q. So you think that even though the controls

- 2 showed they were contaminated and that they found out
- 3 was due to improper methods of collection because they
- 4 were using contaminated pens for the animals, that it
- 5 was still okay to use those test results?
- 6 A. It did not, in my view, invalidate the study
- 7 as a whole, no.
- 8 O. Has ICI relied on those results in that
- 9 study?
- 10 A. It relied in the sense that by the time the
- 11 study that we're now looking at was conducted, we are
- 12 talking about the regulatory toxicology requirements
- 13 that we were discussing earlier today and so it became
- 14 necessary to include that in some of our registrations
- 15 or re-registrations. Part of the dossier.
- 16 Q. Have you informed the regulatory authorities
- 17 of the problems with contamination of the pens for the
- 18 animals?
- 19 A. These studies will be made available to
- 20 regulatory authorities.
- 21 Q. But have you told them about that,
- 22 affirmatively?
- 23 A. I don't know whether my colleagues may have
- 24 specifically pointed that out.
- 25 (Exhibit 19 marked for identification.)

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- 1 MR. NARESH: Do you have a Bates number for
- 2 this document?
- 3 MR. TILLERY: We do not. If you look in the
- 4 upper left-hand corner, sir, of the document in number
- 5 19 it says "ICI Americas Inc. Agricultural Products,
- 6 Wilmington, Delaware". Do you see that?
- A. Yes, I do.
- 8 Q. "Submission for Draft Paraquat Registration
- 9 Standard"?
- 10 A. I see that.
- 11 Q. And I'll submit to you that this was obtained
- 12 from the State of California in a FOIA request and
- 13 that's why it doesn't show a production Bates number on
- 14 it. What is this document, sir?
- 15 A. Well you haven't yet given me much time to
- 16 read it.
- 17 Q. Sorry. Take your time.
- 18 MR. NARESH: Steve, I can't pull this one up
- 19 on my system.
- 20 A. I could spend a lot longer getting into the
- 21 detail of this that may not be necessary. Maybe we can
- 22 try where your questions are?
- 23 BY MR. TILLERY:
- Q. I'm just going to ask a couple of questions
- 25 about the study, sir. What is the study -- what is the

59 (Pages 230 - 233)

Page 234 Page 236 1 purpose of the study, as far as you know? 1 Industries PLC? A. So this is a study in the rat. The previous A. Yes. 3 one we were talking about was the mouse. So it's a 3 Q. What's the date of the document? Upper 4 two-year, 104-week study which is normal for what is 4 right-hand corner. 5 described here as a chronic toxicity study. So it's A. 27 October 1983. 6 looking at long-term effects, in this case of paraquat, Q. And this is a Chevron document 241880 it 7 in the rat. starts in the Bates range; correct? 8 Q. And when was that done? 8 A. Okay. 9 A. So the study was completed in 1982. 9 Q. If you'd take a minute and look at that, 10 Q. And it wasn't designed to investigate 10 please? 11 neurotoxicity, was it? 11 A. Again, I could spend a long time going into 12 A. It was not. 12 the detail of this if you wish to proceed? 13 Q. It was designed to investigate paraquat's 13 Q. What was the purpose of the study, sir? 14 effects on the central nervous system? 14 A. So this --A. Not specifically. 15 Q. Go to 241899 if you want that will tell you 16 Q. Paraquat was mixed into a rat's food in 16 exactly what it says? 17 concentrations of 60, 30, 100 and 300 parts per million 17 A. Repeat that number, please? 18 correct? 18 Q. 899, purpose of the study? 19 A. That's correct, yes. 19 A. Yes, to investigate the chronic toxicity --Q. Would you look at the summary, please, and 20 chronic effects of paraquat including whether it may 21 read that to yourself. And I think that's on pages 6 21 cause neoplasms, in other words whether it could cause 22 and 7? 22 carcinogenicity, rats in this case, using dietary 23 A. Yes, I was looking at that earlier. 23 exposure over what would normally be the treatment 24 Q. Do you see the reference to the brain? 24 period of 104 weeks but a treatment was continued in 25 A. I'll just go down that again, please. So in 25 this particular study until I believe 50 percent of the Page 235 Page 237 1 paragraph 9. 1 animals were dead. Q. Okay. Read that in the record? 2 Q. And this study was reported 10/27/83? A. "At week 52 in the 300 ppm group, males 3 That's right. 4 showed elevation of thyroid and kidney weights and 4 And it was performed by ICI Americas, or for 5 females displayed a rise in ovary (left) weight and 5 them? 6 drops in the relative weights of the brain, heart and 6 A. For them certainly, yes. 7 liver." Q. By Life Science Research? Q. Is a drop in the relative weight of the brain A. Correct. 9 in these female rats a finding that suggests Q. And it was not designed to investigate 10 neurotoxicity? 10 neurotoxicity of paraquat, correct? 11 A. No, it probably does not indicate that. 11 A. It was not, no. 12 Q. And you can tell that in what way? 12 Imperial Chemical Industries Plc, what is 13 A. Because it's an organ which is subject to 13 that? 14 changes in relative weight due to changes in body A. That is what the company name had become by 15 weight. 15 that time. The term Plc is a U.K. -- it's a limited 16 Q. And was that the conclusion of the study 16 company basically so ICI that was the name of the 17 group? 17 company. 18 A. I'm not sure whether I've seen a particular 18 Q. It's the same entity? 19 comment about that. That's my assessment of it. 19 A. Same as "Limited". It used to be called 20 (Exhibit 20 marked for identification.) 20 "Limited" and then became "Plc". 21 Q. Number 20, another study "Paraquat: Combined Q. That's the same toxicology laboratory 21 22 Toxicity and Carcinogenicity Study in Rats". Do you 22 Alderley Park, exactly the same entity? 23 see that? 23 A. That's correct. 24 A. Yes. 24 Q. Now, does Syngenta believe the results of

60 (Pages 234 - 237)

25 this study show paraquat is not neurotoxic? Do you

Q. At the bottom it's Imperial Chemical

25

Page 238	Page 240
1 know one way or another?	1 A. The sciatic nerve is not necessarily on the
2 A. I don't know whether a conclusion was made on	2 central nervous system.
3 that specific point.	3 Q. But the spinal cord is, isn't it?
4 Q. The treatment in the study was initiated on	4 A. Yes.
5 April 6, 1978. Do you see that?	5 MR. TILLERY: Let's go off the record for a
6 A. Yes, I did see that.	6 moment.
7 Q. ICI knew by 1978 that paraquat entered the	7 THE VIDEOGRAPHER: Going off the record. The
8 brains of experimental animals, didn't it?	8 time is 4:55.
9 A. We've established that earlier, yes.	9 (Whereupon, the deposition continued the
10 Q. All right. Now, please turn to 241914,	10 following day).
11 "Paraquat tissue levels"?	11 MR. TILLERY: We'll stipulate the exhibits
12 A. Yes.	12 will be left for tomorrow's court reporter.
13 Q. Was brain tissue tested?	13
14 A. This suggest not.	14
15 Q. They didn't test brain tissue, did they?	15
16 A. This is talking about paraquat tissue level	16
17 so that's how much paraquat may have been in these	17
18 tissues.	18
19 Q. Look through the study and see after they	19
20 dosed these animals for two years and had them and	20
21 sacrificed them, and then studied liver, lungs, kidneys	21
22 whether or not you see any evidence of them testing the	22
23 brains?	23
24 A. By "testing", if you're indicating	24
25 Q. Analyzing them.	25
A. They were analyzed in the way that you would 2 do normally in a study like this which is the pathology 3 and the histopathology. 4 Q. Where does it show that? 5 A. Because I saw evidence of effects that were 6 supposedly seen in the brain. I thought I noticed that 7 as I was going through. 8 Q. Did you see evidence of numbers of cysts or 9 cystic spaces in the spinal cord? 10 A. Yes, that's one of the things I noted. 11 Q. So you saw evidence of it but do you see any 12 evidence that they actually looked at the brain itself? 13 A. Well this is where I would need to get into 14 the detail and I haven't had a chance to look at all 15 these will be in the tables I would need to go through. 16 Q. Quickly look at this and confirm this, if you 17 wouldn't mind. Whether one of the findings of the	1 CERTIFICATE OF COURT REPORTER 2 3 I, Chanelle Malliff, an Accredited Real-time Reporter 4 of the United Kingdom and Europe, hereby certify that 5 the testimony of the witness Dr. Philip Botham in the 6 foregoing transcript, numbered pages 1 through 240, 7 taken on this 25th day of February, 2020 was recorded 8 by me in machine shorthand and was thereafter 9 transcribed by me; and that the foregoing transcript is 10 a true and accurate verbatim record of the said 11 testimony. 12 13 14 I further certify that I am not a relative, employee, 15 counsel or financially involved with any of the parties 16 to the within cause; nor am I an employee or relative 17 of any counsel for the parties; nor am I in any way 18 interested in the outcome of the within cause.
18 study was that animals given paraquat had	19
19 "hydrocephalus degeneration of the nerve fibres of the	20
20 sciatic nerve, and an increase in the numbers of cysts	Chanelle Malliff
21 or cystic spaces in the spinal cord."	21 Signed:
22 Did you see that?	22 Name: CHANELLE MALLIFF
23 A. I did see that, yes.	23 Date: February 26, 2020
Q. Those are effects on the central nervous	24

		1	
1	Page 242 Ragan Naresh, Esq.	١.	Page 244
2		1	Hoffmann, Diana v. Syngenta Crop Protection LLC
3	March 2, 2020		Dr. Philip Botham (#3984456)
4		3	ACKNOWLEDGEMENT OF DEPONENT
5	2/25/2020, Dr. Philip Botham (#3984456)	4	I, Dr. Philip Botham, do hereby declare that I
6	The above-referenced transcript is available for		have read the foregoing transcript, I have made any
7			corrections, additions, or changes I deemed necessary as
8	Within the applicable timeframe, the witness should		noted above to be appended hereto, and that the same is
9			a true, correct and complete transcript of the testimony
	read the testimony to verify its accuracy. If there are	9	given by me.
10 11	any changes, the witness should note those with the reason, on the attached Errata Sheet.	10	
12		11	D. BLUL Dealess D.A.
	The witness should sign the Acknowledgment of	12	Dr. Pininp Botnam Date
13	Deponent and Errata and return to the deposing attorney.	13	*If notary is required
14	Copies should be sent to all counsel, and to Veritext at	14	SUBSCRIBED AND SWORN TO BEFORE ME THIS
15	cs-ny@veritext.com.	15	DAY OF, 20
16	Det in 14.1 is 141 on 1 or	16	
17	Return completed errata within 30 days from	17	
-	receipt of testimony.	18	
19	If the witness fails to do so within the time	19	NOTARY PUBLIC
	allotted, the transcript may be used as if signed.	20	
21		21	
22	Yours,	22	
23	Veritext Legal Solutions	23	
24		24	
25		25	
	Page 243		
1	Hoffmann, Diana v. Syngenta Crop Protection LLC		
	Dr. Philip Botham (#3984456)		
3	ERRATA SHEET		
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	REASON		
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23			
	Dr. Philip Botham Date		
25			

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1	IN THE CIRCUIT COURT
	TWENTIETH JUDICIAL CIRCUIT
2	ST. CLAIR COUNTY, ILLINOIS
3	
4	
	DIANA HOFFMANN, individually and as
5	Independent Administrator of the
	Estate of THOMAS R. HOFFMANN,
6	Deceased, et al.,
	Plaintiffs,
7	Case No.: 17-L-517
	v.
8	
	SYNGENTA CROP PROTECTION, LLC, et al.,
9	Defendants.
10	
11	
12	February 26, 2020
13	9:13 a.m.
14	
15	CONTINUED VIDEO DEPOSITION of DR. PHILIP BOTHAM,
16	held at the offices of Kirkland & Ellis LLP, located
17	at 30 St. Mary Axe, London EC3A 8AF, United Kingdom,
18	before Laura Evans, Accredited Court Reporter of the
19	United Kingdom and Europe.
20	
21	
22	CONFIDENTIAL
23	
24	
25	

CONFID		
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1 APPEARANCES 2	1 EXHIBITINDEX	
3 Attorneys for the Plaintiff:	2 3 No. Description Page	
KOREIN TILLERY, LLC	4	
4 One U.S. Bank Plaza 505 N. 7th Street, Suite 3600	5 Exhibit 21 Patent with256	
5 St. Louis, MO 63101	"Inventors/Applicants" John Doe,	
(314) 241-4844	6 Nicholas Sturgess, Kim Travis, dated 31 August 2006.	
6 By: Stephen M. Tillery	7	
stillery@koreintillery.com 7 John Craig	Exhibit 22 Assignment of patent rights by256	
jcraig@koreintillery.com	8 John Doe, Nicholas Sturgess and Kim	
8 Rosemarie Fiorillo	Zachary to Syngenta.	
rfiorillo@koreintillery.com	9 Eulikis 22 Separate avalation IIDan and 8 200	
9 WALKUP, MELODIA, KELLY & SCHOENBERGER	Exhibit 23 Syngenta presentation "Paraquat &296 10 Parkinson's Disease", Bates	
10 650 California Street, 26th Floor	SYNG-PA-00493318 through 00493392.	
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11 (415) 981-7210 By: Michael A, Kelly	Exhibit 24 Printed PowerPoint presentation318	
12 mkelly@walkuplawoffice.com	12 "Paraquat and Parkinson's Disease	
13	Research Literature Update (External Publications)".	
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14 KIRKLAND & ELLIS LLP 1301 Pennsylvania Avenue, N.W.	"Paraquat & Parkinson's Disease".	
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16 By: Ragan Naresh ragan.naresh@kirkland.com	16 Syngenta CTL by L. Marks. 17 Exhibit 27 Abstract for presentation "Lack342	
ragan.naresh@kirkland.com	of Effect of Paraquat on the	
18 Attorneys for the Chevron Defendant:	18 Nigrostriatal Dopaminergic System	
HUSCH BLACKWELL LLP	of the Mouse" at the Society for	
19 190 Carondelet Plaza, Suite 600 St, Louis, MO 63105	19 Neuroscience Annual Meeting,	
20 (314) 480-1927	October 23-27, 2004, San Diego,	
By: Joseph C. Orlet	20 California. 21 Exhibit 28 Research report of study XM7258347	
21 joseph orlet@huschblackwell.com	by Dr. Marks. Study initiation	
22 23 Also Present:	22 date 17 September 2003.	
Nicole Graham, paralegal, Korein Tillery	23 Exhibit 29 Research report of study XM7371359	
24 Mark Smith, in-house, Syngenta	by Dr. Marks, initiated April 6,	
Philip Viner, Videographer, Veritext	24 2004. 25 Exhibit 30 Document titled "Notes of370	
25	25 Exhibit 50 Document littled Notes of	
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2	him on the latest Parkinson's disease	
_	2 findings on 3rd December 2004". 3 Exhibit 31 Document headed "Thoughts On378	
3 Witness Page	Options For Challenging The PQ and	
4	4 C57Bl6 Mouse Model."	
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5	6 February 2005.	
	7 Exhibit 33 Letter to the US EPA from	
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6	Subject 24 Property Separate Cataly VM7570 406	
7	Exhibit 34 Research report of study XM7570406  9 by Dr. Marks. Study initiation	
8	date 3 April 2006.	
9	10	
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10 11 12	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation	
10 11 12 13	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation410 13 "Paraquat & Parkinson's disease" at the Atlanta meeting on February	
10 11 12 13	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation	
10 11 12 13 14	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation 410 13 "Paraquat & Parkinson's disease" at the Atlanta meeting on February 14 13th-14th 2008. 15 Exhibit 37 Document Bates numbered 414 SYNG-PQ-01586117 through	
10 11 12 13 14	Nigrostriatal Toxicity of Paraquat	
10 11 12 13 14 15	11	
10 11 12 13 14 15 16	Nigrostriatal Toxicity of Paraquat	
10 11 12 13 14 15 16	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation 410 13 "Paraquat & Parkinson's disease" at the Atlanta meeting on February 14 13th-14th 2008. 15 Exhibit 37 Document Bates numbered 414 SYNG-PQ-01586606. 16 SYNG-PQ-01586606. 17 Exhibit 38 Product Safety Technical 422 Evaluation Claimed Links Between 18 Exposure to Paraquat and Development of Parkinson's Disease.	
10 11 12 13 14 15 16 17	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation 410 13 "Paraquat & Parkinson's disease" at the Atlanta meeting on February 14 13th-14th 2008. 15 Exhibit 37 Document Bates numbered 414 SYNG-PQ-01586117 through SYNG-PQ-01586117 through 16 SYNG-PQ-01586606. 17 Exhibit 38 Product Safety Technical 422 Evaluation Claimed Links Between 18 Exposure to Paraquat and Development of Parkinson's Disease. 19 Draft: September 2009.	
10 11 12 13 14 15 16 17 18	Nigrostriatal Toxicity of Paraquat	
10 11 12 13 14 15 16 17 18 19 20	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation 410 13 "Paraquat & Parkinson's disease" at the Atlanta meeting on February 14 13th-14th 2008. 15 Exhibit 37 Document Bates numbered 414 SYNG-PQ-01586117 through 16 SYNG-PQ-01586606. 17 Exhibit 38 Product Safety Technical 422 Evaluation Claimed Links Between 18 Exposure to Paraquat and Development of Parkinson's Disease. 19 Draft: September 2009. 20 Exhibit 39 Product Safety Technical 430 Evaluation Claimed Links Between	
10 11 12 13 14 15 16 17 18	Nigrostriatal Toxicity of Paraquat	
10 11 12 13 14 15 16 17 18 19 20 21	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation	
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10 11 12 13 14 15 16 17 18 19 20 21 22 23	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation 410  13 "Paraquat & Parkinson's disease" at the Atlanta meeting on February  14 13th-14th 2008.  15 Exhibit 37 Document Bates numbered 414 SYNG-PQ-01586117 through  16 SYNG-PQ-01586117 through  17 Exhibit 38 Product Safety Technical 422 Evaluation Claimed Links Between  18 Exposure to Paraquat and Development of Parkinson's Disease.  19 Draft: September 2009.  20 Exhibit 39 Product Safety Technical 430 Evaluation Claimed Links Between  21 Exposure to Paraquat and Development of Parkinson's Disease.  22 Draft: July 2011.  23 Exhibit 40 Printed PowerPoint presentation 443  "Does the animal or human element	
10 11 12 13 14 15 16 17 18 19 20 21	11 Nigrostriatal Toxicity of Paraquat Dichloride" by Dr. Marks.  12 Exhibit 36 Summary of a presentation	

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1 2016, Brazil	1 Parkinson's disease, which are related to changes in motor
2 Exhibit 41 Email exchange dated 22 June 2007459	2 function but there are other clinical symptoms as well as,
subject "Study titles".	3 but in short, that's that is Parkinson's disease.
3	4 Q. What is alpha synuclein?
4	5 A. Alpha synuclein is a protein which can be found
5	6 in including in cells in the brain.
6	
7	7 Q. And what role does the misfolding of alpha synucleir
8	8 have in Parkinson's disease?
9	9 A. It's, again, perhaps as I said yesterday, I'm not
10	10 a clinical neurologist, but my understanding of alpha
11	11 synuclein is that it's believed to play some role in
12	12 Parkinson's disease.
13	Some people believe it has a pathological role, in
14	14 other words it's in some way causing some of the symptom
15	15 that we have been describing; but I have heard others say
16	16 that it has a protective effect. So I think there is still
17	17 some uncertainty about precisely how alpha synuclein wou
18	18 work.
19	19 Q. What are the risk factors for Parkinson's disease?
20	20 A. The biggest factor that I am aware of is genetic.
21	21 So there are a number of people who would have genetic
22	22 susceptibility. I believe that that is particularly so for
23	23 people who get early onset Parkinson's disease.
24	24 Q. And could you define what early onset Parkinson's
25	25 disease is?
Page 251	Page 253
1 PHILIP BOTHAM	1 A. Again saying I'm not a clinical neurologist so my
2 having been duly sworn testified as follows:	2 accuracy here may not be complete, but that would generall
THE VIDEOGRAPHER: Good morning. The date today	3 mean people who are under the age of 60. There are other
4 is February 26, 2020. The time of commencement is 9:13 am.	4 risk factors which are known. Head jury is a similar one
5 This is Day 2 in the deposition of Mr. Philip Botham.	5 Q. I'm going to work through those.
6 I would just add for the record that the court	6 A. Yes.
7 reporter today is Ms. Laura Evans, and the videographer is	7 Q. Yes. When you used the word biggest factor, what de
8 Philip Viner, both of Veritext.	8 you mean by that?
9 With that you may continue your questions.	9 A. In terms quantitatively, yes.
10 MR. NARESH: Before you start, Steve, I think	10 Q. Okay. What is Syngenta's position or conclusion as
11 I didn't do this on the record yesterday: we will read and	11 to whether exposure to paraquat causes or contributes to
12 sign and the transcript should be marked "confidential" in	12 cause Parkinson's disease?
13 accordance with the protective order in the case.	13 A. Our position is that whilst there is biological
14 MR. TILLERY: Are you ready to resume the	14 plausibility that the chemical properties of paraquat could
15 deposition, Mr. Botham?	15 cause damage to cells in the substantia nigra, so we
16 THE WITNESS: I am.	16 certainly don't deny that that is a plausible hypothesis,
17 EXAMINATION BY MR. TILLERY (continued):	17 but the overall evidence based on studies in animals the
18 Q. Can you give me your understanding and definition of	18 mouse model particularly and the epidemiology studies d
18 Q. Can you give me your understanding and definition of 19 Parkinson's disease.	19 not allow you to conclude that paraquat is a causative
	20 factor in Parkinson's disease.
20 A. Parkinson's disease is a neurodegenerative disease	
21 which is focused on the region of the brain called the	, 5
22 substantia nigra. The specifics neurodegeneration is what	22 evidence shift to the point where all the key studies are
23 are called dopaminergic cells in that region.	23 replicable in independent laboratories, what would
	0.4 (0
When a significant proportion of those cells have died, then that results in the clinical symptoms of	24 Syngenta's position be about the ongoing manufacture and 25 sale of paraquat?

Page 254	Page 256
1 MR, NARESH: I object to the form and scope.	So we have not developed a treatment ourselves, but
2 You can answer.	2 we would we encourage the use of appropriate treatments
3 A. Clearly if the evidence became more convincing that	3 to that are used in acute poisoning, such as the use of
4 there was an association and indeed a causation, then we	4 Fuller's Earth and deactivating other deactivating
5 would need to consider what appropriate steps might be	5 materials.
6 taken.	6 Q. So you have not generated your own treatment for
7 BY MR. TILLERY:	7 Parkinson's disease?
8 Q. And what quantum of evidence would Syngenta require	8 A. Not generated it per se, no. No, we have used
9 to reach that stage?	9 existing mechanisms
10 MR. NARESH: Same objections.	10 Q. Used it from other people?
11 A. That would include more evidence from the two	11 A. Correct.
12 strands that I mentioned previously. So if the experimental	12 Q. Okay.
13 research studies were lending further evidence to paraquat	Now what is our next exhibit number you have?
14 being a causative agent, or epidemiology goes beyond what it	14 (Exhibit 21 marked for identification)
15 currently does which is very equivocal on this subject, then	15 BY MR. TILLERY:
16 we may be in a position where we need to take a different	16 Q. And would you mark this as 22, please.
17 view.	17 (Exhibit 22 marked for identification).
18 BY MR. TILLERY:	18 BY MR. TILLERY:
19 Q. And would the different view include terminating the	19 Q. Have you ever seen exhibit 21 before?
20 sale of the product product paraquat?	20 A. No, I have not seen this exhibit.
21 MR. NARESH: Same objections.	21 Q. Were you aware of this process?
22 A. I wouldn't rule that out if the evidence became so	22 A. I was aware of the the research that had gone on
23 strong. But at this stage I think we are some way from	23 with this, yes.
24 being in that position.	24 Q. And let's, first of all, describe for the record
25 BY MR. TILLERY:	25 what number 21 is.
Page 255	Page 257
1 Q. You indicated a minute ago there was a plausible	1 A. Would you like me to do that or
2 mechanism for paraquat causing damage neurological	2 Q. Yes, please.
3 damage in the substantia nigra portion of the human	3 A. Well, I just will take a little while to read this,
4 brain; do you remember?	4 if I may.
5 A. I do.	5 Q. My questions will be general in nature.
6 Q. How long has Syngenta been aware of that mechanism?	6 A. Okay.
7 A. We have been aware that paraquat can cause what is	7 Q. This is a patent, right?
8 called oxydative damage because of its redox cycling	8 A. It is. It is, yes.
9 capability for many years. What we still don't know is	9 Q. And it shows the "Inventors/Applicants" as John
10 whether that potential and I think it is important to	10 Doe and that is actually a man's name, right?
11 talk about this as potential to have to express that	11 A. Yes, correct.
12 effect, that mechanism, in a particular region of the brain,	12 Q. And he works for Syngenta?
13 that that is still why it's plausible but not a proven	13 A. He did work for Syngenta.
14 hypothesis.	14 Q. Okay. And then there is a person named Nicholas
15 Q. Did ICI know that as well?	15 Sturgess; correct?
16 A. ICI have known that paraquat has that mode of action	16 A. Yes.
17 that I have just described, yes.	17 Q. And Kim Travis, right?
17 mac 1 mave just described, yes.	18 A. Yes.
18 Q. At least for the time you were there, right?	
	19 Q. They all work, or both worked, at one point
18 Q. At least for the time you were there, right?	
18 Q. At least for the time you were there, right? 19 A. Yes.	19 Q. They all work, or both worked, at one point
<ul> <li>Q. At least for the time you were there, right?</li> <li>A. Yes.</li> <li>Q. Okay. Has Syngenta ever tried to market a treatment</li> </ul>	<ul><li>19 Q. They all work, or both worked, at one point</li><li>20 A. That is correct.</li></ul>
18 Q. At least for the time you were there, right? 19 A. Yes. 20 Q. Okay. Has Syngenta ever tried to market a treatment 21 for Parkinson's disease?	<ul> <li>Q. They all work, or both worked, at one point</li> <li>A. That is correct.</li> <li>Q for Syngenta?</li> </ul>
18 Q. At least for the time you were there, right? 19 A. Yes. 20 Q. Okay. Has Syngenta ever tried to market a treatment 21 for Parkinson's disease? 22 MR. NARESH: Objection, scope.	<ul> <li>Q. They all work, or both worked, at one point</li> <li>A. That is correct.</li> <li>Q for Syngenta?</li> <li>A. That is correct.</li> </ul>

Page 258 Page 260 I this patent to involve? 1 Q. And that also includes ICI? 2 A. It would have started in the -- when ICI was the 2 A. Well, in very broad terms, this was a - the patent 3 company, yes. That is correct. 3 was based on -- again I use the word "hypothesis", that this Q. So you tried an alternative product --4 particular agent that is the subject of this patent could 4 5 5 have utility in the treatment of Parkinson's disease. But A. We --Q. Or a means of improving the safety of the product? 6 I believe -- I believe -- that its actual use has actually 6 7 A. We did. 7 never come to pass. But I maybe wrong about that, because 8 Q. What did you do? 8 this work originated with Syngenta but I believe was then A. We tried to develop formulations of paraquat which, 9 9 passed on to another company. 10 if accidentally or deliberately, were ingested, would not be 10 Q. So would it be fair to say that the patent deals 11 with the treatment by expanding the effectiveness of 11 absorbed by the stomach as readily in order to be able to 12 allow for more effective and quicker treatment. 12 levadopa and other treatments in the substantia nigra of the 13 Q. And this was a form of emetic, wasn't it? 13 human brain? A. That was the hope in bringing this forward. 14 A. Emetic was one of the agents that we used. 14 Q. And this was 2006, done by Syngenta employees while 15 Q. And this contemplated a larger ingestion, for 16 example, a teaspoon or more of paraquat? 16 they were on duty? 17 A. It certainly contemplated that scenario, yes. A. Yes. 17 18 Q. Someone accidentally or perhaps even intentionally 18 Q. And as a consequence of that, if you look at 19 taking the product, you were designing a product that caused 19 exhibit 22, they did, as is typical, assign their patent 20 them, in addition to paraquat, to vomit to eliminate this 20 rights to Syngenta, didn't they? 21 21 product from their body and perhaps save their lives? A. Yes. A. Because at that time that was considered by medical 22 Q. Okay. 23 experts to be something that would have potential utility in 23 Do you know what the Brock theory is, sir? 24 the way in which you have described. A. I have an outline understanding of it, yes. 24 Q. Do you understand whether it includes the olfactory Q. With respect to the active ingredient of paraquat, Page 259 Page 261 1 would it be safe to say that since 1962, when it was first 1 bulb as a route of access to the mid-brain? A. It certainly includes that, yes. 2 used in the UK, and then three years later in the 3 Q. Has the olfactory bulb been implicated as an initial 3 United States in 1965, has the molecule been the same? 4 site of Parkinson's disease pathology? A. As far as I'm aware, the molecule is the same. Q. And so far as you know, there's been no effort to A. It has. As what is called one of the prodromal 6 symptoms, where -- the loss of smell. 6 change the molecular structure of that chemical --O. Do you know if Chevron quit producing and selling A. I'm not --8 paraquat because of the likelihood of it causing Parkinson's 8 Q. -- in order to affect or change the potential health 9 disease? 9 effects on users or consumers of the product? A. I -- I'm not aware of any attempt to change the 10 MR. NARESH: Objection to scope. 11 A. I cannot comment on behalf of Chevron. 11 fundamental structure of the molecule. 12 BY MR. TILLERY: Q. If you wanted to test a hypothesis that repeated low Q. ICI and Chevron were working a joint venture at that 13 dose exposures to paraquat over several years could cause of 13 14 time, weren't they? 14 potentially cause Parkinson's disease, how would you do 15 MR. NARESH: Same objection. 15 that, sir? 16 MR. NARESH: Objection to form. 16 A. They were. A. Well, the normal toxicological practice would be to 17 BY MR. TILLERY: Q. You don't know why Chevron told ICI that they no 18 see if you can see effects in an appropriate laboratory 19 animal model, and to consider what the appropriate routes of 19 longer wanted to sell -- manufacture and sell the product? A. I don't know why they -- they said that, no. 20 exposure and duration of exposure should be. 20 Q. Okay. Did you ever attempt to develop any 21 21 BY MR. TILLERY: 22 formulation of paraquat products with the intent of reducing 22 Q. More granularly, how would you do it? 23 the exposure of users to paraquat? Again, when I say "you" 23 MR. NARESH: Same objection. 24 BY MR. TILLERY: 24 I mean Syngenta. Q. In other words how would you design this, if you A. Yes, we did.

- 1 were the lab lead scientist assigned to this product? How
- 2 would you do that?
- 3 MR. NARESH: Same objection?
- 4 A. Well, you would first of all have to ascertain what
- 5 end point, what effects you would want to detect in
- 6 that animal model, regardless of the factors I have just
- 7 been mentioning, and therefore you would want to see whether
- 8 the hallmarks of Parkinson's disease that you see in a human
- 9 could be seen and detected in such an animal model. So that
- 10 would include the pathology in the relevant part of the
- 11 brain, levels of dopamine and other such factors.
- 12 BY MR. TILLERY:
- 13 Q. Would your proposal include looking at the role of
- 14 alpha synuclein in the development of Parkinson's disease?
- 15 MR. NARESH: Same objections.
- 16 A. It could. But as I said earlier, we are still
- 17 unsure of exactly what role alpha synuclein has. So one
- 18 would, I think, include that with some caution because it
- 19 might be difficult to interpret the findings.
- 20 BY MR. TILLERY:
- 21 Q. How many studies has Syngenta done of alpha
- 22 synuclein impact by paraquat?
- 23 A. We have not done very much in the way of addressing
- 24 specifically alpha synuclein ourselves.
- 25 Q. Have you done one study?

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- 1 A. I don't recall if we have done one study. We may
- 2 have done. I don't recall.
- 3 Q. You don't remember ever seeing one?
- 4 A. Not -- I don't remember now seeing a Syngenta study
- 5 where we have looked at --
- Q. Have you -- sorry.
- 7 A. No, it's fine.
- 8 Q. Have you ever asked a third party to do a study that
- 9 evaluated the role of alpha synuclein in the development of
- 10 Parkinson's disease with respect to paraquat?
- 11 A. We have had conversations with other scientists
- 12 about alpha synuclein, but again I can't recall that we've
- 13 ever asked a third party to include this in any of their
- 14 experiments.
- 15 Q. Is alpha synuclein included in the tests you did in
- 16 the paraquat mouse model, such as the Breckenridge line of
- 17 studies?
- 18 A. No, I don't believe it is included.
- 19 Q. Has paraquat been shown to cause an upregulation of
- 20 alpha synuclein in laboratory animals?
- 21 A. I believe that in some other -- in some studies that
- 22 other researchers have done, that that is the case.
- 23 Q. And for the record, would you describe briefly what
- 24 upregulation of alpha synuclein means?
- A. It means that there is a change -- usually meaning

- 1 an increase, when you talking about upregulation -- to the
- 2 expression or the amount of alpha synuclein in a particular
- 3 part of the body.
- 4 Q. Is Lewy body pathology a pathological hallmark of
- 5 Parkinson's disease?
  - A. I think that is generally true.
  - Q. Does alpha synuclein misfolding comprise the
- 8 majority of proteins in the Lewy bodies?
- 9 A. Again I think that is largely seen to be true, yes.
- 10 Q. And Parkinson's disease -- strike that question.
- 11 Can paraquat cause a misfolding of the alpha
- 12 synuclein?
- 13 A. I'm not aware that there's any clear cut evidence of
- 14 that.
- 15 Q. And there has been no test done by Syngenta to
- 16 verify it one way or another?
- 17 A. We have certainly not looked at that specific
- 18 parameter.
- 19 Q. Did Lewis Smith and Charles Breckenridge seek
- 20 approval to perform exactly those studies?
- 21 A. We -- I certainly recall that we had discussions
- 22 within our health scientists team about this on more than
- 23 one occasion. But as I said earlier, the view was that
- 24 although it was one possible avenue of research, the overall
- 25 decision was that it was too uncertain that we would be able
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- 1 to interpret the findings.
- Q. And just so we are clear, when I mentioned those two
- 3 scientists, Charles Breckenridge was until recently in what
- 4 role at Syngenta?
- 5 A. He was a senior toxicologist in our North American
- 6 toxicology department.
- 7 Q. And you described Lewis Smith, but he was in
- 8 a similar position in the UK; correct?
- 9 A. He had a number of senior roles in product safety
- 10 and in the company more widely.
- 11 Q. So two very high ranking scientists in the Syngenta
- 12 organization sought that.
- Who did they need approval from in order to secure
- 14 the approval to do the test and to get the funding?
- 15 A. Discussions of that sort, where we were proposing
- 16 possible lines of research, were discussed within the
- 17 paraquat health scientists team, which Lewis Smith was
- 18 initially the -- the head of that team, and subsequently
- 19 I became the head.
- 20 And we would, ourselves, make recommendations -- in
- 21 some cases a strong recommendation -- about which line of
- 22 research we should take and they were then further discussed
- 23 with a group of more senior leaders in the company called
- 24 the Paraquat Issues Leadership Team.
- 25 Q. And who sat on that committee you are referring to?

6 (Pages 262 - 265)

- A. The Paraquat Issues Leadership Team included -- and
- 2 this is not an extensive list -- the head of research and
- 3 development, a senior attorney -- a senior lawyer --
- 4 a senior person in the marketing department, other people in
- 5 R&D, and the head of regulatory affairs.
- Q. And let's assume they agreed that these studies
- 7 should be undertaken. Was that the final authority or did
- 8 they need to seek approval from yet a higher level in the
- 9 company?
- A. In normal terms, experiments would not require any 10
- 11 further approval.
- Q. Is the Syngenta executive committee involved in any
- 13 of this process?
- A. Only occasionally when there are some specific
- 15 circumstances where we feel that we would like their
- Q. Not just their opinion, their approval; correct? 17
- 18 A. And sometimes -- sometimes their approval.
- 19 Q. And for the record, describe what the Syngenta
- 20 executive committee is?
- A. The Syngenta executive committee, now called the
- 22 Syngenta executive team, is the most senior group of leaders
- 23 in the organization. So it is chaired by the Chief
- 24 Executive Officer.
- 25 Q. These are the people who make the final decisions in

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- 1 the company; correct?
- MR. NARESH: Objection to scope and form.
- A. They make the strategic decisions for the company.
- 4 Of course, a lot of decision-making is delegated to
- 5 appropriate organizations within the company.
- 6 BY MR. TILLERY:
- Q. Is there any higher form of authority at the company
- 8 than the Syngenta executive committee?
- A. Well, the chairman of the executive committee
- 10 reports to the Syngenta -- or did report to the Syngenta
- 11 board, so in that sense there is a higher authority.
- O. Could you tell me the names of the people on the
- 13 paraquat leadership team?
- A. So the Paraquat Issues Leadership Team. 14
- Q. Yes. You referred to it as PILT?
- A. Yes, the PILT, that's right. 16
- 17 Q. Okay?
- A. Well, that's quite a difficult thing to do. It has 18
- 20 so ....
- Q. So it's different. I'm not trying to put you 21
- 22 through a memory test, so okay.
- 23 A. Yes.
- 24 Q. Is there a group now?
- A. There is a group which acts in that same capacity,

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- 1 although it's generally actually not used in the same way as
- 2 it was before. It's a smaller group of people now who can
- 3 help with this.
- Q. Was the Syngenta executive committee involved in
- 5 approving the studies that resulted in the Breckenridge and
- 6 Minnema published studies?
- A. The executive committee were informed about that at
- 8 a point in time, but they were not -- we did not need to
- 9 seek their approval to do those tests.
- Q. Okay, but they were told about it? 10
- A. I personally reported to them at one time, 11
- 12 certainly, yes.
- Q. Irrespective of whether or not they get involved at
- 14 a level of approving or disapproving, are they informed of
- 15 these types of studies at paraquat?
- A. They are informed about the broad direction of the
- 17 program, and from time to time they are given some detail
- 18 where that is considered to be appropriate.
- Q. Doesn't the Syngenta executive committee approve the
- 20 entire Syngenta research project budget?
- 21 A. They -- the Syngenta executive committee would
- 22 certainly approve the R&D budget, that is correct.
- 23 Q. Okay. What studies has Syngenta performed -- or had
- 24 performed -- which investigated whether paraquat causes
- 25 upregulation? Did we cover that?

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- A. We covered that.
- Q. All right, forget that.
- Now, you mentioned head injury before and I told you 3
- 4 we would come back to that. Do you think head injury is
- 5 a risk factor?
- A. Well, I think there is certainly some evidence that
- 7 suggests that, which is why I mentioned it. And head injury
- 8 appears to be a potential risk factor for other
- 9 neurodegenerative diseases, not just Parkinson's.
- Q. Can you tell me the mechanism that you believe
- 11 causes head injury to become a risk factor for Parkinson's
- 12 disease?
- 13 MR. NARESH: Object to the scope, the form.
- 14 Go ahead.
- A. No, I can't tell you that. Because that's, again,
- 16 a level of knowledge which I've never really explored.
- 17 BY MR. TILLERY:
- Q. And you mentioned earlier that more sporadic cases
- 19 existed for a long period of time and the names have changed 19 of Parkinson's disease, other than those that you said were
  - 20 early onset, they start around -- they average around 60?
    - A. Again, I think that I wouldn't -- I would say that
  - 22 early onset Parkinson's is generally something that would be
  - 23 in people who are under the age of 60. Parkinson's disease 24 as a whole is a disease of older age.
    - Q. And is age itself -- aging itself -- a risk factor

7 (Pages 266 - 269)

- 1 for Parkinson's disease?
- 2 A. Indeed, that is probably in itself the biggest risk
- 3 factor.
- Q. And why is that? What is it doing in terms of the
- 5 causative effects of Parkinson's disease, from your
- 6 standpoint?
- A. Again, really as a layperson in the clinical aspects
- 8 of this, I would simply say that as you grow older things
- 9 like repair processes and normal functioning of the body
- 10 will tend to be less effective, thus leading us to be prone
- 11 to a number of diseases.
- Q. Let me ask you in terms of the research: you have a
- 13 specific committee at Syngenta that deals with Parkinson's
- 14 and paraguat, right?
- 15 A. We have a -- a health science team, yes.
- 16 Q. And that health science team has a name that applies
- 17 to paraquat and Parkinson's studies, right?
- 18 A. Correct.
- 19 Q. What is that group called?
- 20 A. The paraquat health scientists team.
- Q. And that explores and investigates the relationship
- 22 between paraquat and Parkinson's, at least in part; correct?
- 23 A. It does.
- Q. All right. Now, that committee and you -- you are
- 25 heading it, that committee, or you did; right?
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- A. I still do.
- Q. You understood that typical onset in the absence of
- 3 a genetic -- strong genetic -- predisposition to have onset
- 4 irrespective of any kind of external toxicant, okay, like an
- 5 environmental factor, paraquat for example, would occur
- 6 normally much earlier than 60 years, you knew that?
- 7 A. Early onset Parkinson's disease occurs before 60, 8 yes.
- Q. Okay. And you understood that in the literature 10 that often ranged from late 20s to 30s and 40s?
- A. It --11
- 12 Q. You knew that, right?
- 13 A. We knew that, yes.
- 14 Q. All right.
- 15 But the traditional kind where scientists are
- 16 investigating the effects that are not generated by some
- 17 genetic predisposition, but instead by environmental
- 18 factors, are in the sporadic group that typically -- not
- 19 always but typically -- start around age 60; you knew that?
- A. I would say it was generally above 60. I think that
- 21 Parkinson's --
- 22 Q. Over 60, perhaps --
- 23 A. Certainly well over 60.
- Q. And for those of us who are over 60, okay, the stage
- 25 of life would be like, what, the last fourth of our life,

- 1 typically?
- A. That's about right, yes.
- Q. Right, okay. Now if we are using the model human
- 4 model -- and we are talking about people exposed to paraquat
- 5 or exposed to any other external toxicant and looking at
- 6 those, and they typically wouldn't develop the condition
- 7 until their 60s or later, can you tell me if you are using
- 8 animal models whether it is appropriate to use a very, very
- 9 young animal?
- 10 MR. NARESH: Objection to form, scope.
- 11 Go ahead.
- 12 BY MR. TILLERY:
- Q. What I mean by that is let's say a mouse that lives
- 14 for two years. We talked yesterday about mice and they were
- 15 dying and you said that typically could be the end of their
- 16 lives, two years, right? And these were six to eight week
- 17 old mice that you were using in the studies, right?
- 18 A. When we first started to administer paraquat, that
- 19 is correct.
- Q. Okay. And can you extrapolate the effects of
- 21 paraquat as a toxicant in these mice that are six to eight
- 22 weeks old to the outcomes from the same exposure in the
- 23 natural environment for people who have an onset at age 60
- 24 or later?
- 25 A. Toxicology is always based on an understanding that

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- 1 the animal model cannot be necessarily an accurate mimic of
- 2 the human being. And you sometimes have to compensate
- 3 for example, for the factor that you have just mentioned --
- 4 by exaggerating the way in which you expose the animals to
- 5 a substance, to give very high doses, for example.
- And yes, you can use different ages of animals, and
- 7 we ourselves did use older animals than six to eight weeks
- 8 in some of our experiments. But you are never in a position
- 9 to accurately replicate what might happen in the human
- 10 being, and, if I may just add, it's not clear when the
- 11 disease of Parkinson's disease -- of Parkinson's actually
- 12 starts in the human being.
- Q. Let's talk about that for a second. Let me ask you,
- 14 what age does a six to eight week old mouse translate to in
- 15 terms of the human being?
- 16 A. A mouse would normally have a life span of around
- 17 18 months.
- Q. Okay. So a six to eight week old mouse is, what,
- 19 just passed a -- not even a teenager yet, in human terms, 20 right?
- 21 A. If you want to extrapolate that, yes.
- 22 Q. If you take the study out for four weeks or six
- 23 weeks, you have moved them up to maybe the beginning of
- 24 their teenage years in human terms, right?
- 25 A. Yes.

- 1 Q. Have you ever in your life read any accounts of
- 2 people who were in their teens contracting Parkinson's
- 3 disease that was not caused by some genetic predisposition?
- A. No.
- 5 Q. All right, thank you.
- 6 Does well water cause Parkinson's disease?
- 7 A. I don't know. But there is, again, a hypothesis
- 8 that it could, due to the presence of microorganisms in the
- 9 well water.
- 10 Q. Or due to the presence of pesticides?
- 11 A. What I have seen is that microorganisms in well
- 12 water have been hypothesised.
- 13 Q. But you have not done research to determine that; is
- 14 that correct?
- 15 A. No, we have not.
- 16 Q. Do you know what percentage of people with
- 17 Parkinson's disease have genes that give rise to the disease
- 18 without any environmental factor?
- 19 A. I wouldn't be able to answer that.
- 20 Q. Are you aware of any geographical areas or
- 21 occupational groups that have a greater than expected
- 22 incidence of Parkinson's disease?
- 23 A. Again, I'm not a expert in this field. So again in
- 24 broad terms, I sometimes read that there are such effects
- 25 but they are not remarkable. There is nothing that strikes
- atriless.

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- l you as being very clear in that area.
- 2 Q. So would a -- let's say a odds ratio of two or three
- 3 or four to one, that odds ratio for developing Parkinson's
- 4 disease, would that be something that would get your
- 5 attention?
- 6 A. It's, again, an area where you would have to consult
- 7 with epidemiologists as to what a significant odds ratio
- 8 would be. But certainly, yes, again in general terms, odds
- 9 ratios of that sort you would want to look at to see whether
- 10 you could understand where that might have come from.
- 11 Q. And for the court and ladies and gentlemen of the
- 12 jury, what that means, by odds ratios of those types, means
- 13 odds ratio 2 means that you are twice as likely to get
- 14 Parkinson's disease, right?
- 15 A. That's correct.
- 16 O. Three, three times more likely?
- 17 A. Yes.
- 18 Q. Four, four times more likely?
- 19 A. Yes.
- 20 Q. Is that what your understanding is --
- 21 A. That's my -- that is what odds ratio means.
- 22 Q. What is a potentially referable finding?
- 23 A. This is associated with the United States
- 24 Environmental Protection Agency legislation, which in
- 25 shorthand is called 6(a)(2), where findings in, for example,

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- 1 in toxicology studies but not exclusively in toxicology
- 2 studies, may need to be reported to the US EPA.
- 3 Q. And does Syngenta have a committee known as the
- 4 Potentially Referable Finding Committee?
- A. It does, and that is a committee which is based in
- 6 our United States organization.
- 7 Q. You mentioned using high doses of testing chemicals
- 8 or tested chemicals in animals to exaggerate the exposure to
- 9 make up for your inability to perfectly replicate real world
- 10 exposure; do you remember that?
- 11 A. I do.
- Q. Right. How would that make up for using animals
- 13 that were the equivalent of teenagers at the end of the
- 14 study?
- 15 A. I am not claiming that it necessarily would. I was
- 16 making a broad point there that toxicology studies, because
- 17 they can never accurately replicate what happens in a human
- 18 being's lifetime, will take actions such as exaggerating the
- 19 amount that is given to the animal, but not exclusively
- 20 that.
- 21 Q. You agree with me that it would not make up for that
- 22 difference of using young animals, would it?
- 23 A. You can't say that it would; equally, you can't say
- 24 that it would not.
- 25 Q. Hasn't it been Syngenta's position that the high

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- I doses in your paraquat mouse study are not relevant to real
- 2 world exposure?
- A. That is a different question. Because what our
- 4 argument there is, is that it's the route of administration
- 5 which is particularly of concern. Which I have to say is
- 6 a view also shared by the US Environmental Protection
- 7 Agency.
- 8 Q. And you actually suggested that to them, didn't you?
- 9 A. We certainly came to that view ourselves, because
- 10 here, for the record, we are talking about injecting
- 11 paraquat into the intra-peritoneal cavity, which was clearly
- 12 a very big exaggeration, if you like, of the way --
- 13 Q. You have done that consistently for years in
- 14 studies, haven't you?
- 15 A. We did that for two reasons. One for the reason we
- 16 just indicated so that we are not trying to -- not -- look
- 17 to see whether the mouse might have the capability of
- 18 showing Parkinson's pathology, but also because our -- and
- 19 more importantly -- because our research efforts were
- 20 directed to see whether the finding that other people have
- 21 shown using this route of exposure is repeatable.
- 22 Q. Did you suggest that to the US EPA or did they
- 23 suggest it to you?
- 24 A. I -- neither applies.
  - Q. So you didn't go to the US EPA and suggest that

9 (Pages 274 - 277)

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1 intra-peritoneal injections of mice for studies of paraquat

2 are not appropriate, you never suggested that, is that what

2

3 you are telling me?

4 MR. NARESH: I will object to the scope.

5 A. I may have misunderstood your question at first when

6 you used the term "suggest". We certainly gave an opinion

7 to the EPA that as a route of administration it was

8 certainly not physiological.

9 BY MR. TILLERY:

0 Q. And you gave that opinion before they ever

11 published a similar statement publicly, right?

12 MR. NARESH: Same objection.

13 A. I believe that would be correct in terms -- at the

14 time, yes.

15 BY MR. TILLERY:

6 Q. Does your position with respect to the route of

17 exposure being the issue mean that high doses themselves are

18 not a concern?

19 A. No, high doses are - in of themselves are still

20 appropriate to consider. So we also did -- the Minnema

21 paper that you referenced was where we gave paraquat through

22 a more normal route of exposure, in their diet, but that was

23 still at high doses.

24 Q. I'm going to come back later on the issue of

25 potentially referable findings, okay. But I wanted to at

1 MR. NARESH: Objection to scope.

2 A. Again, I can't give you an accurate number.

3 BY MR. TILLERY:

4 Q. If I told you it was over 32, would you dispute

5 that?

6 MR. NARESH: Same objection.

7 A. I would not dispute that.

8 BY MR. TILLERY:

9 Q. Okay.

10 So the potential neurotoxic health effects of

11 paraquat are required to be reported to regulatory

12 authorities, correct?

13 A. It's not quite as straightforward as that. The

14 reporting requirements are -- also say that the finding has

15 to be new. A new finding. So if it is deemed already to be

16 known by the agency, then that requirement is not -- is not

17 in place

18 Q. Well, more specifically, would you agree that

19 withholding scientific findings from the regulatory agencies

20 about the neurotoxic effects of paraquat would be

21 inconsistent with compliance with the regulatory

22 authorities?

23 MR. NARESH: I will just object to this. It

24 calls for a legal conclusion.

You can answer to the extent you know.

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1 least inquire before the rest of this deposition today and

2 just see if we can summarize, without getting into all of

3 the details which we will touch later.

A potential referable finding refers to some adverse

5 effect, doesn't it?

A. It does.

7 Q. And your committee evaluates whether certain adverse

8 effects require reporting them, correct?

9 A. That is their responsibility, yes.

10 Q. And there's regulatory authorities all over the

11 world which you have an obligation to report to, right, not

12 just the US regulatory authority?

13 A. That is true.

14 Q. And those include where you sell, manufacture,

15 market paraquat?

16 A. Yes.

17 Q. How many of those countries are there?

18 MR. NARESH: Object to scope.

19 A. Where we -- where we market paraquat?

20 BY MR. TILLERY:

21 Q. Yes.

22 A. I am not able to give you answer.

23 BY MR. TILLERY:

24 Q. How many countries -- strike that.

In how many countries has paraquat been banned?

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A. If the -- if all the criteria had been addressed and

2 we believed that the -- we needed to report, then we would

3 certainly always have done so.

4 BY MR. TILLERY:

5 Q. You understood -- and I again mean Syngenta -- that

6 when the US Congress amended FIFRA -- you know what FIFRA

7 is?

8 A. I do.

9 Q. In 1972, it adopted a very broad reporting

10 requirement, typically referred to as a section 6(a)(2)

11 requirement, right?

12 MR. NARESH: I will object. It calls for a legal

13 conclusion --

14 A. Indeed, 6(a)(2) is what I referred to in my earlier

15 answer.

16 MR. NARESH: Steve, can I have -- to the extent

17 that I suspect we are going to have a number of objections

18 to the extent calling for a legal conclusion, can I just

19 have a standing objection as to that?

20 MR. TILLERY: Absolutely.

21 BY MR. TILLERY:

22 Q. Do you understand that section 6(a)(2) requires

23 pesticide registrants like Syngenta to report to the

24 Environmental Protection Agency information concerning --

25 and I'm quoting:

10 (Pages 278 - 281)

- "Any unreasonable risk to man or the environment." 1
- 2 Of their products? Did you know that?
- 3 A. I did know that.
- Q. Okay. And do you know that FIFRA section 14(b)
- 5 authorizes criminal prosecution of a registrant who
- 6 knowingly violates FIFRA?
- A. I did know that.
- Q. All right. Sections 12(a)(2)(n) and (q) make it
- 9 unlawful for a registrant:
- "... to fail to file reports required by the
- 11 subchapter."
- 12 Or to:
- 13 "Falsify all or part of any information relating to
- 14 the testing of any pesticide including the nature of any
- 15 observation made or conclusion or opinion formed submitted 15
- 16 to the administrator or that person knows will be furnished
- 17 to the administrator."
- 18 Did you know that?
- 19 A. I did know that.
- O. You are also aware that false statements to the EPA
- 21 are also unlawful under the Criminal False Statement Statute 21 retained by the registrant and was likely to receive such
- 22 which provides:
- 23 "Whoever falsifies, conceals or covers by any trick,
- 24 scheme or device a material fact or makes an immaterially
- 25 false fictitious or fraudulent statement or representation,
  - Page 283

- 1 or makes or uses --..."
- (Fire alarm test)
- 3 BY MR, TILLERY:
- Q. "... or makes or uses any false writing or document
- 5 knowing the same to contain any materially false, fictitious
- 6 or fraudulent statement ... or shall be fined under this
- 7 title or imprisoned for not more than five years."
- Did you know that?
- 9 A. Yes, I did.
- Q. That is 18 USC section 1001. You know that, right? 10
- A. I don't know all the detailed numbers. 11
- 12 Q. But you knew in general --
- 13 A. I know in general what this says --
- 14 Q. You can't lie about this stuff and you can't
- 15 withhold information, you knew that?
- A. I knew that. 16
- Q. If you've got information, you got to turn it over, 17
- 18 right?
- 19 A. I know that.
- Q. It is an absolute obligation to do it, if you are
- 21 selling a product that they are in control of in terms of
- 22 regulation and that can cause harm to the consumer, right?
- 23 MR. NARESH: Object to scope.
- 24 BY MR. TILLERY:
- Q. Is that correct?

- Page 284 A. It is correct. But I would repeat that there are --
  - 2 there is detailed guidance there on exactly what that means
  - 3 in terms of the findings.
  - Q. I am actually going to get into this, okay.
  - You are aware that the EPA regulations require
  - 6 registrants to report information that is relevant to the
  - 7 assessment of the risks or benefits of one or more specific
  - 8 pesticide registrations currently or formerly held by the
  - 9 registrant.
  - 10 Correct?
  - A. Yes. 11
  - 12 Q. And of course paraquat is one of those because
  - 13 Syngenta is a primary registrant of the chemical paraquat,

  - A. It is.
  - 16 Q. In the United States and elsewhere, correct?
  - 17
  - 18 Q. And you knew that information is relevant to the
  - 19 assessment of the risks or benefits if it includes the
  - 20 conclusions or opinions of a person (i) who is employed or

  - 22 information, (ii) from whom the registrant requested an
  - 23 opinion or conclusion, or (iii) who is a qualified expert as
  - 24 described in the codafel(?) regulations.
  - 25 You knew that as well?
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- A. We did. 1
- Q. Okay. You knew that conclusions and opinions of
- 3 Syngenta employees and retained experts relevant to the
- 4 assessment of the risks or benefits of a regulated chemical
- 5 must be reported to the US EPA?
- A. Yes, yes. 6
- 7 Q. Did you know that?
- 8 A. Yes.
- 9 Q. Okay. How long have you known this?
- 10 A. Personally, I've known this since the 1990s when
- 11 I was --
- 12 Q. Okay. Syngenta knew that EPA regulations require
- 13 that codafel(?) regulations section 159.165 makes
- 14 mandatorily reportable adverse findings in toxicological
- 15 studies not withstanding similar findings in prior studies:
- 16 "If relative to all previously submitted studies
- 17 they show an adverse effect."
- And then it lists a number of things: in a different
- 19 organ or tissue of the test organism; at a lower dosage;
- 20 after a shorter exposure period; after a shorter latency
- 21 period; at a higher incidence or frequency; by a different
- 22 route of exposure; in a different strain, sex or generation
- 23 of test organism.
- 24 You knew that too?
- 25 A. That's right. Those are the qualifications I was --

- 1 Q. Those are the ones you were talking about?
- 2 A. Yes, yes.
- 3 Q. Would you agree that an adverse effect finding is
- 4 a completely -- in a completely different species is
- 5 a highly relevant mandatory reportable adverse effect
- 6 finding under 40 CFR 159.165?
- 7 MR. NARESH: Objection to form.
- 8 A. In a different -- excuse me, in a different species,
- 9 yes.
- 10 BY MR. TILLERY:
- 11 Q. Okay. You also knew that the EPA has a catchall
- 12 regulation that makes "Other information" mandatorily
- 13 reportable. A registrant must submit "information other
- 14 than as described", in the section I just quoted 159.165: if
- 15 the registrant knows or reasonably should know that if the
- 16 information should prove to be correct, EPA might regard the
- 17 information alone or in conjunction with other information
- 18 about the pesticide as raising concerns about the continued
- 19 registration of a product, or about the appropriate terms
- 20 and conditions of registration of a product. Right?
- 21 MR. NARESH: Objection to form.
- 22 A. Yes. But if I could say at this point --
- 23 BY MR. TILLERY:
- Q. Just tell me this: were you aware of that rule, 40
- 25 CFR 159.165?

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- 1 A. Well, the script -- the last few words that you read
- 2 out, I am less familiar with because my responsibility was
- 3 largely to deal with toxicological information or opinion
- 4 given to us by experts.
- 5 Q. What I'm asking is did you recognize this to be your
- 6 duty at Syngenta?
- 7 MR. NARESH: Objection, asked and answered.
- 8 A. In broad terms, of course, yes.
- 9 BY MR. TILLERY:
- 10 Q. Okay. Syngenta never got a pass for compliance with
- 11 these rules, did it?
- 12 MR. NARESH: Objection to form.
- 13 A. Would you repeat the question?
- 14 BY MR. TILLERY:
- 15 Q. Syngenta never got any kind of exoneration or pass
- 16 from compliance with the rules?
- 17 A. You mean an exemption? No.
- 18 BY MR. TILLERY:
- 19 Q. Yes, exemption?
- 20 A. No, they didn't.
- 21 Q. Okay. At all relevant times Syngenta was required
- 22 to fully comply with all of the rules that I just read to
- 23 you about paraquat, wasn't it?
- 24 A. That is correct.
- 25 Q. Would you agree with me that in case of any doubt

- 1 about whether to make a report to the US EPA under any of
- 2 these laws, the most responsible way to proceed would be to
- 3 file a report?
- 4 A. That is correct. And I will have to say that that
- 5 is absolutely the philosophy that I was encouraging.
- 6 Q. Okay.
- A. If in doubt, we put it into the system to decide
- 8 whether we should be submitting.
- Q. I move to strike the answer as unresponsive.
- 10 Would you agree with me that in the case of any
- 11 doubt about whether to make a report to the US EPA under any
- 12 of these laws, the most responsible way to proceed is to
- 13 file the report?
- 14 MR. NARESH: I will object as asked and answered.
- 15 BY MR. TILLERY:
- 16 Q. Would you agree with that?
- 17 A. It is. But I still believe that that is and should
- 18 be done in accordance with understanding the specific
- 19 requirements that you have been reading out.
- Q. Were there others at Syngenta that argued the other
- 21 side of this position?
- 22 A. Let me, at this point, say that the final decision
- 23 for this was taken by the US PRF committee that I mentioned
- 24 before. I personally was not a member of that committee.
- 25 My responsibility was actually to give information to that
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- 1 committee from studies or opinion that my department or my
- 2 team were aware of or had found.
- 3 Q. So you may have never made a final report decision
- 4 yourself?
- 5 A. I was never in the position of being part of that US
- 6 committee that made those decisions.
- 7 Q. Right. And who was?
- 8 A. They were employees of ICI-Zeneca Syngenta in
- 9 North America.
- 10 Q. And who was on the US PRF committee?
- 11 A. Rather like the answer to the previous question, the
- 12 personnel have changed over the years so I could give
- 13 a number of --
- 14 Q. It depends on the year is what you are saying?
- 15 A. It depends on the year, yes, yes.
- 16 Q. What are you saying is you could make
- 17 recommendations but whether they followed them and reported
- 18 it wasn't within your wheelhouse so to speak?
- 19 A. It was not my accountability to do that.
- 20 O. Accountability, right. And would you agree with me
- 21 that in case of doubt there should be a report made?
- 22 A. That was very much the philosophy of what -- what
- 23 I was responsible for was what we called an approach
- 24 process. So we had a PRF approach committee in my function
- 25 and it -- absolutely, people were encouraged that if in

12 (Pages 286 - 289)

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- 1 doubt they brought that for my committee to look at, and
- 2 then we again would pass most of that information on to the
- 3 US committee.
- 4 Q. How many times has a 6(a)(2) report about paraquat
- 5 been considered but rejected in terms of advancement to the
- 6 US EPA by either the PRF committee or someone above them?
- A. I wouldn't want to speculate on that number. So
- 8 I don't want to answer that question, because I don't --
- 9 I don't know.
- 10 Q. Okay. You know it's happened, don't you?
- 11 A. The word "rejected" is perhaps not quite the word
- 12 I would use. Certainly a decision has been taken that
- 13 certain findings did not meet those criteria that you read
- 14 out
- 15 Q. Right. That would be certainly something that you
- 16 would put in a document perhaps. Would that be done by you
- 17 or by the PRF committee or by the SEC?
- 18 A. By the US PRF committee who made that final
- 19 decision.
- 20 Q. And would they make that decision or would that have
- 21 to be approved by the managing board of the company?
- 22 A. My understanding is that that would be the
- 23 accountability of the US PRF committee.
- 24 Q. Okay
- 25 Would you agree that science is built on the sharing

- 1 MR. NARESH: Same objections.
- 2 A. As a general statement, I think that is true.
- 3 BY MR. TILLERY:
- 4 Q. On the other hand, awareness of scientific studies
- 5 and findings helps redirect precious efforts and dollars and
- 6 avoids unnecessary delay and expense?
- 7 MR. NARESH: Same objections.
- 8 A. Yes.
- 9 BY MR. TILLERY:
- 10 Q. Okay. Scientific results establishing possible
- 11 links between heavily used products and very serious health
- 12 effects are all the more important to disclose because of
- 13 the potential enormous cost and suffering to human victims
- 14 specifically and to our society generally.
- 15 Would you agree with that statement?
- 16 MR. NARESH: Same objection.
- 17 A. Yes, I would agree with that.
- 18 BY MR. TILLERY:
- 19 Q. Okay. Would you agree that scientific research is
- 20 often a cumulative process built on the knowledge learned
- 21 from laboratory and epidemiological studies. Disclosing all
- 22 scientific research is vital to this process and failing to
- 23 do so interferes with the advancement of objective research
- 24 and knowledge?
- 25 MR. NARESH: Same objection.

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- 1 of information; that scientists generate knowledge building
- 2 on the information produced and shared by other scientists?
- 3 MR. NARESH: Objection to form, scope.
- 4 A. I think that's a very sound description.
- 5 BY MR. TILLERY:
- 6 Q. Okay. You would agree with it?
- 7 A. Yes.
- 8 Q. Would you agree that science flourishes best in
- 9 conditions of the open and public exchange of ideas,
- 10 methods, findings and interpretation; openness facilitates
- 11 vetting new findings and new theories through continued
- 12 study and analysis?
- 13 MR. NARESH: Same objection.
- 14 A. I would have to agree with that.
- 15 BY MR. TILLERY:
- 16 Q. Would you agree that the absence of disclosure of
- 17 scientific information inevitably causes society to be the
- 18 loser?
- 19 MR. NARESH: Same objections --
- 20 A. It could -- it could be one consequence.
- 21 BY MR. TILLERY:
- 22 Q. You would agree also that secrecy regarding
- 23 scientific findings diminishes our ability to both identify
- 24 public health and safety hazards and to prevent harm from
- 25 them?

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- A. I would -- I would add one qualifier if I may at
- 2 this point. What is just as important is that the sharing
- 3 of information must be done so in a way in which the quality
- 4 of that information is also properly understood because --
- 5 BY MR. TILLERY:
- 6 O. The quality of the studies?
- 7 A. Whether it is preliminary findings or whether it is
- 8 confirmed findings.
- 9 Q. Would you say that would also be sharing information
- 10 about whether the sponsor of a study or the people paid for
- 11 a study or to do a study had a financial interest in the
- 12 outcome?
- 13 A. Some people would believe that that was an important
- 14 factor. And I have no problems in transparency of that
- 15 issue.
- 16 Q. Right. Would you agree that the importance of
- 17 public disclosure of adverse effects of chemicals is
- 18 especially true when studies link that chemical to
- 19 a pervasive and progressive disease like Parkinson's
- 20 disease?
- 21 MR. NARESH: Same objections.
- 22 A. I think that that would be not unreasonable.
- 23 BY MR. TILLERY:
- 24 Q. Okay.
- What is neurotoxicity? What does that mean?

13 (Pages 290 - 293)

1 A. Neurotoxicity is the effects of agents on the 2 nervous system. 3 Q. How would you define neurotoxicity? 4 A. It is toxicity to the parts of the nervous system, 5 the nerves, the brain and so on, and to neurological 6 function. 7 Q. Let me propose a sort of a textbook definition of 8 neurotoxicity and see if you agree with it so that we can 9 agree to use it for the next round of questions I'm about to 10 ask you. 11 A. Okay. 12 Q. Neurotoxicity is a form of toxicity in which 13 a biological, chemical or physical agent produces an advers of peripheral nervous system. It occurs when exposure to 16 a neurotoxic halters the normal activity of the nervous 17 system in such a way as to cause damage to nervous tissue. 19 of the nervous system. 20 Do you understand that? 21 A. I do. 22 Q. Does that make sense to you? 23 A. It makes sense. 24 Q. Okay. Can we use that definition for the purpose of 25 this line of questions?  Pege 295 1 A. I am fine with that. 2 Q. Is paraquat neurotoxic? 3 A. I benefive that that is not yet shown to be the case. 4 Q. So your answer is it is not? 5 A. At this point in time, it is not? 6 Q. Okay. In the Charles River black mouse, does 7 paraquat kill dopaminergic neurons, under the 10 definition it would be neurotoxic at least as to the 12 Charles River black mouse, right? 3 A. I some laboratory experiments, some investigators, 9 but not all, have found — have found that. 10 Q. When did you first learn that paraquat was 15 Q. When did you first learn that paraquat was 16 A. When some of the publications from other researcher. 17 MR. NARESH: We are going off the record at 17 THIS VIDEOGRAPHER: We are back on the record as 2 fill the Wide Park River Back on the record as of 1912. This is not one of the publications from the purpose of 2 to 19 MR. TILLERY: 10 Q. When did you first learn that paraquat was 11 A. Okay. 11 A. J do. 12 Q. When did you first learn that paraquat was 12 Q. When did you first learn that paraquat was 13 A. I flade the the control of the publications from other re	Page 294			Page 296
2 MR. TILLERY: Let's go off the record for 3 Q. How would you define neurotoxicity? 4 A. It is toxicity to the parts of the nervous system, 5 the nerves, the brain and so on, and to neurological 6 function. 7 Q. Let me propose a sort of a textbook definition of 8 neurotoxicity and see if you agree with it so that we can 9 agree to use if for the next round of questions I'm about to 10 ask you. 11 A. Okay. 12 Q. Neurotoxicity is a form of toxicity in which 13 a biological, chemical or physical agent produces an advers 13 a biological, chemical or physical agent produces an advers 15 peripheral nervous system. 16 a neurotoxin alters the normal activity of the nervous 17 pystem in such a way as to cause damage to nervous 15 state. 18 This can eventually disrupt or kill neurons and other parts 19 of the nervous system. 20 Do you understand that? 21 A. I do. 22 Q. Does that make sense to you? 23 A. I make sense. 24 Q. Okay. Can we use that definition for the purpose of bits lim of questions? 25 A. At this point in time, it is not. 26 Q. Okay. In the Charles River black mouse, does 27 paraquat kill dopaminergic neurons in the substantia nigra? 28 A. In some laboratory experiments, some investigators, by but not all, have found—have found that. 29 Q. So your answer is it is not? 30 A. If that were a consistent and reproducible finding, 14 yes. 31 A. When did you first learn that paraquat was 32 MR. TILLERY: 33 a minuted 34 minute were a consistent and so on, and to neurological 34 minute of questions of the central and/or 15 peripheral nervous system. 35 of the record at 5 19-15. 4 (Crerce?) 36 A. It am fine with that. 37 (Okay. This is not of the central and/or 15 peripheral nervous system. 39 of the record at 5 19-15. 4 That is correct. 30 A. Okay. 31 A. If the tread on this consistent and so on the purpose of the solution was a defendent on the US Syngenta of the US Syngenta of the US Syngenta of the US Syngenta of the record as 6 to let US PA? 4 A. It and fine the trouble of the trecord as 6 to let US PA? 5 A. It	1		1 r	
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25 neurotoxicity, could be repeated and therefore could 25 Q. And Nick Sturgess is the person that you described				

Page 298 Page 300 1 yesterday in the deposition. He was the former technical --1 "Literature Developments of Concern." 2 senior technical expert product safety at Syngenta; correct? 2 It lists a number of them. One, the first one it A. That is correct. 3 starts with, is Fredriksson et al 1993, right, do you see Q. Okay. He served as senior technical expert in 4 that? 5 product safety from 1989 to 2018. Is that also correct? 5 A. I do. A. Those dates sound familiar. I can't be sure those 6 Q. It is listed as a literature development of concern, 7 are absolutely accurate, but I think that that's correct. 7 isn't it? Q. Okay. And for this presentation, and from this 8 A. It is. 9 9 exhibit, Mr. Sturgess presented an introduction to paraquat Q. And the study found behavioural effects in mice 10 and Parkinson's disease, and the summary comments as well. 10 given oral doses of paraquat, right? 11 Okav? 11 A. Correct. 12 A. Yes. 12 Q. And it found reductions in striatal dopamine in mice 13 Q. Is that what --13 given oral doses of paraquat too, didn't it? A. That's what that says, yes. 14 A. That's what this says. 15 O. And Dr. Marks was a research scientist at Syngenta 15 Q. So this was a presentation that the Syngenta 16 CPL in the neurotoxicity group in the investigating 16 scientists were presumably making to other people at 17 toxicology section; correct? 17 Syngenta? 18 A. That is correct. 18 A. I'm not sure exactly where this presentation was 19 Q. And she worked for Syngenta? 19 made. 20 A. She did. Q. But we weren't given any information as well. Had Q. And Dr. Marks presented the part of this 21 we been given that in discovery, I would have given it to 22 presentation referenced as "In vivo studies with paraquat", 22 you. 23 right? 23 A. Right. 24 24 A. That is correct. Q. So you would have it. Q. Now if we go to 328, Dr. Sturgess in his 25 A. Okay. Page 299 Page 301 Q. This is as best I have. You have to go to your 1 presentation said that: "Paraquat is unlikely to be neurotoxic owing to the 2 lawyer to get more information. 3 fact that it has a chemical structure and physical MR. NARESH: I will object to all this. 4 properties (charged, polar molecule) which mean it will not 4 BY MR. TILLERY: 5 readily cross the blood brain barrier ..." Q. So based upon where we are right now with the Correct? 6 document, is that what you would think the situation would 7 A. That's what that says. 7 be? 8 Q. That's what it says. MR. NARESH: Just for the record, I object to the Syngenta, however, knew that paraquat crossed the whole attorney commentary. 10 blood-brain barrier when this presentation was given, didn't 10 Could you please just ask your question again? 11 it? 11 BY MR. TILLERY: A. As we discussed yesterday, it depends on how you Q. Yes. Does it appear to be a presentation by 13 define "readily", yes. 13 Syngenta scientists to other Syngenta employees? 14 Q. But it did cross it? A. It appears to be a presentation by Syngenta A. Of course. 15 scientists, but I don't know to whom this particular 16 Q. All right. 16 presentation was made. 17 If you go to the next page, Dr. Sturgess actually 17 Q. Okay. All right. 18 refers to the radio-labeled paraquat studies that we talked 18 Okay. Continuing on, and this would be 331 --A. Yes. 19 about yesterday, didn't he? 19 20 20 A. Yes. Q. - and this was again under the topic heading: 21 Q. And he said "some of this material gets into the 21 "Recent Literature Developments of Concern." 22 brain"; he acknowledges that, right? 22 Right? 23 A. Yes. 23 A. Yes.

15 (Pages 298 - 301)

Q. And here it says, by Dr. Sturgess, there is a note

24

25 that:

25 entitled:

Q. Yes. Now if we go to 330, the following page, it's

24

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	Page-302-		Page 304	
1	"Two US based research groups have produced a series	1	more toxic pesticides, but they campaign against pesticides	
2	of publications since 1999 implicating paraquat in	2	generally.	
3	a Parkinson's disease"	3	Q. That's how you see them, right?	
4	Model in the mouse, right?	4	A. Yes.	
5	A. It does.	5	Q. And they really, really burn up over those that	
6	Q. And that references a Cory-Slechta Group and that is	6	cause horrible, long-lasting miserable deaths too, right?	
7	Rutgers, New Jersey?	7	MR. NARESH: Objection to form.	
8	A. Correct.	8	A. They will certainly	
9	Q. And the Di Monte Group at the Parkinson's Disease	9	BY MR. TILLERY:	
10	Institute in Sunnyvale, California?	10	Q. They don't like those at all?	
11	A. Correct.	11	A. They will certainly focus on those that they	
12	Q. And he's the person that you mentioned yesterday as	12	perceive in that manner.	
13	the person who educated, I think Dr. Louise Marks about	13	Q. Right. Okay. So were they at that time writing an	
14	stereology, right?	14	open letter for a ban of this chemical across all of the	
15	A. Yes, she visited Dr. Di Monte in his institute.	15	European Union?	
16	Q. At his facility?	16	A. I can only read what I've got in front of me. At	
17	A. Yes.	17	the time that this was written, I was not familiar with	
18	Q. And he acquainted her with techniques about how to	18	this.	
19	do that?	19	Q. Okay. But you are the corporate designee and you	
20	A. He did.	20	are sitting there as the two Syngenta entities, so I have	
21	Q. Okay. Continuing, the studies observed	21	nobody else to ask.	
22	neurotoxicity in paraquat in three biological endpoints that	22	A. Well, I they clearly this suggests they did	
23	are referenced: loss of neurones from the substantia nigra;	23	write such an open letter.	
24	loss of dopamine from the striatum; and reduction in	24	Q. They wrote a letter dated August 4, 2003, saying	
25	locomotor activity. Correct?	25	they wanted it banned in Europe; right?	
	Page 303		Page 305	
1	That's what Dr. Sturgess is telling the people in	1	A. That's what this suggests, yes.	
2	the audience?	2	Q. And you know that it was banned in Europe?	
3	A. Yes, he was saying that those were the endpoints	3	A. It was subsequently, um, deregistered in Europe.	
4	that were looked at in those studies.	4	Q. That's right. Isn't that about the same?	
5	Q. In those studies that he's reporting. Okay.	5	Let me ask you this: can you sell it in Europe?	
6	If you look at the next three slides in the	6	A. We are not able to sell it in Europe.	
7	presentation, all three of these fall under the heading:	7	Q. Okay.	
8	"Recent external pressures on paraquat quoting links	8	A. And	
9	with Parkinson's disease."	9	Q. I view that as a ban.	
10	Do you see that?	10	A. Well, we voluntarily withdrew our registration.	
11	A. I do.	11	Q. Okay. So you just, out of the goodness of your	
12	Q. Now, one of them, the first one, is a reference to		heart not because everybody was trying to ban your chemical,	
ı	PAN Europe. Do you remember that?		like the open letter from PAN Europe, you just decided not	
14	A. Yes.	14	to engage, right?	
15	Q. Where that was a group of people who had as their	15	MR. NARESH: I will object to the form.	
l	position or their mission statement to fight against	16	A. The situation in Europe is much more complicated	
17	, ,		than you portray it.	
l	health. Did you understand that?	18	BY MR. TILLERY:	
19	A. This is the Pesticides Action Network, as it says.	19	Q. Okay. Well, let's continue on. Let's look at the	
20	Q. What do they do?	20	next one.	
21	A. They are an NGO, a nongovernmental organization,	21	What is the next page?	
22		22		
1	be used as little as possible.		yes.	
24	Q. Well, at least the ones that kill people, right?	24		
25	A. They have concerns obviously more concerns about	25	were asked to prove that it was safe, didn't you?	

CONFIDENTIAL Page 306 Page 308 A. No, we withdrew it because of what it says here, Now -- now let's go to 335 if we can. This is 2 that the process that the EU had gone through in the new 2 a slide entitled: 3 legislation for registering pesticides was considered by 3 "Research Activity at Syngenta CTL Strategy Being 4 Sweden to have been a process that had not been followed 4 Followed." 5 through appropriately. 5 Okay. You agree? Q. They actually filed a lawsuit, didn't they? 6 A. Yes. 7 A. That, I believe, is the case. 7 Q. All right. And it starts off with a first bullet Q. And that's, if you look at 333, that page --8 point: 9 "Establish whether there is a sound scientific basis 10 Q. -- "Swedish government is suing the [European Union]10 ..." 11 Commission", right? 11 For claims, right? A. That's right. 12 A. Yes. 13 13 Q. And they filed a law suit? Q. And second one: 14 14 A. Yes. "If findings are not reproducible, aim to publicly Q. They decided that day, 6 February 2004, to sue the 15 15 refute the claims in the literature by offering our own 16 EU Commission for their decision about paraquat in 16 alternative experimental findings." 17 pesticides in the European Union, didn't they? 17 Right? 18 MR. NARESH: Objection to form. 18 A. That's what that says. A. They did. And I would like to reiterate that it was 19 Q. Did Syngenta at that time and earlier have a group 20 suing the EU because they had not followed the process 20 whose job it was to monitor publications about its products? 21 correctly. A. Not knowing the exact date of this, but this 22 BY MR. TILLERY: 22 preceded what I have been referring to as the paraquat 23 health science team --23 Q. Well, look at what Mr. Sturgess says. He says: "The suit means that the EU Court of Justice is 24 Q. Irrespective of whether it is paraquat, I am talking 25 trying the government's partition to nullify the 25 about products in general: did it have a group of people Page 307 Page 309 1 commission's decision." 1 whose job it was to monitor publications that were -- that Right? That's what Mr. Sturgess says, if you could 2 were published about their products? 3 just answer that question. A. It - it did not, as far as I am aware, have A. That's -- that is what that says, yes. 4 a specific group whose objective was to do that. We Q. Okay. That's what he's submitting. 5 expected the scientists who were engaged in either having Were you there at this meeting? 6 6 responsibility for products or particular areas of science A. I don't know if I was. 7 to monitor the literature. O. Okay. Q. So you had groups of scientists - of these 2000 9 Now go to the next page. It says at the top: 9 chemists and other scientists that you had, you had these 10 "Recent external pressures on paraquat quoting links 10 groups who had portions of them assigned particular products 11 with Parkinson's disease." 11 to monitor? 12 Right? A. I am just talking specifically about what we now 13 A. Yes. 13 call the product safety organization, where we were 14 Q. And that was: 14 looking -- where we were expecting our researchers to be "Stockholm to seek ban on paraquat herbicides By 15 15 aware of the appropriate literature. 16 Nicholas George." Q. If you look at the next bullet: 17 Who is Nicholas George? 17 "If findings are repeatable, Syngenta CTL generated A. I don't know. But that -- this page suggests he may 18 18 data will be used to build a defensive position for 19 have been a journalist. 19 [paraquat] based on establishing a no effect dose (under 20 Q. A journalist from the Financial Times seeking --20 various dosing regimens) in the C57B16 mouse model, based on 21 strike that. 21 a biological endpoint -- neuronal cell loss in the A journalist from the Financial Times quoting 22 substantia nigra."

23

24

Right?

A. That's what that says.

Q. So Dr. Sturgess was coming up with a game-plan to

A. Okay.

Q. Okay.

24

23 Stockholm seeking a ban on paraquat herbicides, right?

Page 312 1 refute findings that you made in your own laboratories that 1 people who were engaged in this conversation. 2 duplicated what was done in the public literature, right? Q. Right. And continuing on with that same bullet, he A. I would not put it that way. What the intent here 3 says: 4 was to say if the finding that we are talking about here was 4 "... since the detection of any [paraquat] in the 5 brain (no matter how small) will not be perceived externally 5 indeed repeatable, as would always be the case with any 6 toxicological finding, you don't simply say you have that 6 in a positive light." 7 Correct? 7 finding, at very high doses quite often, and you leave it at 8 that. You actually say at what dose levels do you stop 8 A. That's --9 seeing that finding? You go down the dose levels --9 Q. Is that what he says? Q. Okay. 10 A. That's what it says. 10 11 A. -- to find a "no effect" level. 11 Q. All right. 12 Q. Have you seen this before? 12 A. But I would like to add --13 A. I have may have done. I don't today recall whether 13 Q. Excuse me, sir: is that what it says or not? 14 I have or not. 14 A. That's what it says. 15 Q. Okay. So -- and you don't remember being here, 15 Q. All right. So at this time, based upon what he 16 right, at this meeting? 16 said, Syngenta knew that any amount of paraquat in the A. Because I don't exactly know which meeting this was 17 brain, "no matter how small", would be perceived negatively 17 18 Q. Okay. Let's go to the last point that Dr. Sturgess 18 outside the company; correct? That's what he was saying? A. That is what he was saying. 19 made, which says: 19 20 20 "Avoided measuring PQ levels in the brain ..." Q. All right. 21 So Syngenta was avoiding measuring PQ levels in the 21 So the research program at Syngenta CTL described 22 here, Syngenta simply didn't do studies to determine how 22 brain, right? That's what he says? A. At that point clearly that was what some people felt 23 much paraquat was getting into the brains of animals and 24 they did that intentionally? 24 was the right thing to do. 25 Q. Right. And to, in other words, when you do 25 A. That's what I was about to follow on by saying. The Page 313 Page 311 1 laboratory analysis avoid measuring that level in the brain? 1 record shows that in our research program which followed A. That would not be our position today, and it wasn't O. Not followed -- excuse me. 3 MR. NARESH: Steve, you have to stop interrupting 3 our position --4 him --Q. Well, what it -- excuse me, sir. A. -- at a later time. MR. TILLERY: Now that is -- we are not going to Q. Excuse me. I move to strike your answer as 6 do this. You are not going to do it. You may try to 6 7 unresponsive. 7 override and state another answer. Not with me. Okay. You 8 Did he at that time say --8 are not going to do it. I'm not going to let you. 9 MR. NARESH: Hang on, Steve, your question So here's what you are going to do, you are going to 10 was: when do you do laboratory --10 answer my questions, or we are going to do this -- and this 11 is for you, counsel -- we are going to terminate it, if you 11 MR. TILLERY: No. 12 MR. NARESH: -- analysis avoid measuring that 12 want it that way, and you will go to St. Clair County 13 level in the brain, and he was trying to answer your 13 Illinois and finish this in front of our judge. 14 question. 14 Now I know you have prepared him very well. Okay. 15 MR. TILLERY: I said did he -- "avoiding 15 But you are going to answer my questions, not what your 16 measuring PO levels in the brain", is that what he said? 16 counsel told you to say. MR. NARESH: That wasn't your question --17 A. Can I just say my counsel has not told me to say 17 18 MR. TILLERY: Well, I will withdraw the question 18 that --19 and I will ask him. 19 BY MR. TILLERY: 20 BY MR. TILLERY: 20 Q. Well, here's what we're going to do. I want you to 21 Q. He said, Dr. Sturgess said: 21 answer my specific --22 "Avoided measuring PQ levels in the brain, ..." 22 MR. NARESH: Steve, you've got to stop 23 interrupting him. 23 That means Syngenta was avoiding measuring paraqua

24

25

MR. TILLERY: -- question.

MR. NARESH: You have interrupted him over and

24 levels in the brain, doesn't it?

A. At that point in time, that was the opinion of the

----

- 1 over again.
- 2 MR. TILLERY: No, I wasn't talking to him about 3 anything else.
- 4 MR. NARESH: You just interrupted him again.
- 5 MR. TILLERY: I want you to answer my question 6 and my question only. Not something else.
- 7 MR. NARESH: Why don't you ask your question
- 8 again? Ask your question again. I don't think -- the
- 9 question you are asking in your mind is not the question
- 10 that's showing up on the transcript.
- 11 MR. TILLERY: Well, maybe --
- 12 MR. NARESH: He's answering the question that
- 13 you're asking. Why don't you ask your question --
- 14 MR. TILLERY: I'm reading it, and I have it right
- 15 here, okay.
- 16 MR. NARESH: The one that you just asked was the
- 17 one he was answering and you interrupted him.
- 18 MR. TILLERY: So --
- 19 MR. NARESH: So why don't you try it again --
- 20 MR. TILLERY: What we are going to try is this --
- 21 and we are going to continue it for a bit -- and then we are
- 22 going to see what the judge says.
- 23 MR. NARESH: Ask your question.
- 24 MR. TILLERY: It is 10 to 5 there right now, and
- 25 we will go to the court and see what the judge says whether
  - Page 315
- 1 or not -- and we can email the rough to the judge and see if
- 2 the judge feels that this deposition should go forward.
- 3 MR. NARESH: That's fine. Ask your question.
- 4 BY MR. TILLERY:
- 5 Q. So I'm asking you, sir, to answer my specific
- 6 questions and not volunteer information. If you want to do
- 7 that at the trial, called by Syngenta as a witness, that is
- 9 Do we have an understanding, clearly what I want at 10 least?
- 11 A. I understand what you are saying.
- 12 Q. All right. Thank you.
- 13 Syngenta knew at that time -- at the time this was
- 14 done, this presentation -- Syngenta knew that any amount of
- 15 the brain -- strike that.
- 16 Syngenta knew at that time that any amount of
- 17 paraquat in the brain, no matter how small, would be
- 18 perceived negatively outside the company; correct?
- 19 A. It is correct that that was the view at that time.
- 20 Q. Right. And Syngenta at that time, as reported by
- 21 Dr. Sturgess, didn't do studies to determine how much
- 22 paraquat was getting into the brains of animals, correct?
- 23 A. It is correct to say that at that time that is the
- 24 case.
- Q. And those studies couldn't -- strike that.

- 1 Those studies could have been done at that time,
- 2 couldn't they?
- 3 A. They -- further studies could always have been done
- 4 at any time.
- 5 Q. Right. But Syngenta had not been doing them, had 6 they?
- 7 A. That's not quite true, if I may say so. There had
- 8 been studies done by Syngenta earlier than this time.
- O. That we have talked about?
- 10 A. Which included measuring paraquat in the brain.
- 11 Q. Okay. Now if you would go to 36 -- I'm sorry, yes,
- 12 to 36 -- and that is:
- 13 "Research Activity at Syngenta CTL in vivo Studies."
- 14 And that references Louise Marks, do you see that?
- 15 A. I do.
- 16 Q. Okay. And the first bullet says:
- 17 "Repeat of published in vivo experiments with
- 18 [paraquat] alone being dosed to C57Bl6 mice."
- 19 Right?
- 20 A. It does.
- 21 Q. What does that mean?
- 22 A. It means to repeat the studies done by, for example,
- 23 the researchers that were referred to in earlier slides,
- 24 Di Monte and Cory-Slechta, whether paraquat if given to
- 25 the -- this particular strain of mice may cause the same
  - Page 317

- 1 effects.
- Q. Okay. "In vivo" just means live animals, right?
- 3 A. It means -- to live mice in this case.
- 4 Q. So Dr. Marks' research was intended to repeat the
- 5 independent research in the published literature and
- 6 determine whether she could reproduce the neurotoxic effects
- 7 in the mouse; correct?
- 8 A. That was correct, yes.
- 9 Q. Okay. The last bullet, if you would see on the very
- 10 last one on that page, notes Syngenta intended:
- "... to seek peer review of our findings."
- 12 Correct?
- 13 A. Correct.
- 14 Q. Did Syngenta ever seek peer review of any of
- 15 Dr. Marks' findings?
- 16 A. No, it didn't at the time that they were conducted
- 17 because the, er --
- 18 Q. Did I ask you about "because"?
- 19 A. Yes, right.
- 20 Q. Okay. Read back my question to this gentlemen,
- 21 please.
- 22 COURT REPORTER: "Did Syngenta ever seek peer
- 23 review of any of Dr. Marks' findings?"
- A. I don't believe that we did.
- 25 Q. Thank you.

Page 318 Page 320 1 Did Syngenta publish any of Dr. Marks' studies 1 conducted paraquat mouse research, correct? 2 anywhere? A. That is correct. 3 MR. NARESH: Objection to form. Q. Did that group include Drs. Sturgess and Marks? A. I don't believe that Dr. Marks' studies specifically 4 A. That is correct. 5 were ever published. Q. Okay. And on this slide, Syngenta is concerned 6 whether the findings that paraquat is neurotoxic that have 6 BY MR. TILLERY: 7 Q. Okay. Now, let us go to next exhibit number 98, 7 been made in the independent published literature are 8 please, our internal number 98. 8 accurate. Next exhibit is 24, counsel. Would that be a fair statement? 10 (Exhibit 24 marked for identification). 10 A. I would use the word "repeatable". 11 A. Thank you. 11 Q. And that means, if they are not repeatable, there 12 MR. NARESH: Is this the first page of the 12 would be some question about whether they are legitimate? A. That is right. That is normal scientific practice. 13 document? 13 14 BY MR. TILLERY: 14 Q. And replication in science is kind of the gold 15 Q. It is. 15 standard, isn't it? 16 Is this another presentation so far as you can tell, 16 A. It is the hallmark of quality science, of course. 17 sir? 17 Q. And if they are not replicable in laboratories that A. This looks like it is another paraquat 18 18 are well-run and well-organized and using the same 19 presentation -- PowerPoint presentation, yes. 19 technology and people who don't distort and alter the 20 Q. PowerPoint? 20 results intentionally or not intentionally --21 A. A PowerPoint presentation. 21 A. Yes. 22 Q. And this has a date of -- can you see a date on it? 22 Q. -- then if they get those results and keep repeating 23 We may see one. 23 them at different labs, it becomes more or less an A. I don't immediately see one. 24 24 established fact among the scientific community; right? 25 Q. It discusses work to be done at CTL with paraquat in 25 A. That is -- you have described the scientific process Page 319 Page 321 1 the mouse, right? 1 well, yes. 2 A. Starting at 628, it's moving into the in vivo Q. Okay. Let's turn to, if we can -- actually on that 3 studies that we were just discussing. 3 same list, if you don't mind, going down it says: Q. Right. The studies that Dr. Marks undertook, is 4 "Are their findings repeatable?" 5 that correct? 5 It asks that question. A. This looks like it is the case. 6 A. Yes. Q. And who authored the presentation? 7 Q. And then it says: A. I can't see an author on the copy that you've given 8 "If so can we offer a mechanistic explanation for 9 me. 9 their results?" 10 Q. Okay. If you wouldn't mind turning to 633 of that 10 Right? 11 document. 11 A. Yes. Do you see that page, sir? 12 Q. What is a "mechanistic explanation" as you 13 A I do 13 understand it referenced in that slide? Q. Okay. The first bullet in this PowerPoint A. Again, not knowing exactly what point in time this 15 presentation is entitled -- it's under "Investigative 15 was, I believe the most likely explanation for what they 16 Toxicology Input," correct? 16 meant here was to say if you see -- let me call them 17 A. Correct. 17 discrepant results, one laboratory has seen this, another 18 Q. And it says: 18 laboratory has seen something different so they are not 19 "Investigative toxicology is involved in 19 repeatable -- in an ideal world you would like to understand 20 establishing whether there is a sound scientific basis for 20 why. So is there an explanation, a mechanistic explanation, 21 the claims by some research groups that exposure to paraqua t21 as to why one lab has seen something and another has not? 22 causes Parkinsonian like [symptoms] in animal models." 22 That's what I suspect may have been --23 Correct? 23 Q. Actually look at it again, sir. It says the exact 24 A. Correct. 24 opposite. It says: 25 Q. And Investigative Toxicology is a group at CTL that "Are their findings repeatable?"

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- 1 And it says:
- 2 "If so can we offer a mechanistic explanation ..."
- 3 So in other words, they are saying here that if we
- 4 repeat their same findings, can we offer an explanation?
- 5 Correct?
- 6 A. Oh sorry, yes, I do -- sorry, there's -- I should
- 7 have looked at this more carefully. You are quite right.
- 8 As written there, I think what I said --
- 9 Q. As written here it means --
- 10 A. Yes.
- 11 Q. -- that they are saying, the presentation: if we
- 12 reproduce the results, we better come up with a mechanistic | 12
- 13 explanation for why we are reaching the same results.
- 14 A. Right. So I think that's true. I mean, what I also
- 15 said is equally true, but yes, you are right, as written you
- 16 would need to understand what the mechanism they are --
- Q. I mean, what is the final bullet? Read that one
- 18 into the record.
- 19 A. "If findings are not reproducible, can we refute the
- 20 claims in the literature and offer alternative experimental
- 21 findings?"
- 22 O. Was that the course of Syngenta at that time: when
- 23 the findings were not reproducible in their labs, they could
- 24 refute the claims in the literature and offer alternative
- 25 experimental findings in the literature; was that the
  - Page 323

- 1 standard?
- 2 A. The standard is if the -- if findings are not
- 3 reproducible, then you don't necessarily just leave it at
- 4 that. That's why I made my previous answer, if I may say
- 5 so, which is to say that you do need to understand why that
- 6 might be the case, and not just assume that we are right and
- 7 somebody else is wrong.
- 8 Q. But it says here very clearly:
- 9 "... can we refute the claims in the literature and
- 10 offer alternative experimental findings?"
- 11 A. Yes.
- 12 O. That's what they intended to do --
- 13 A. That's a question --
- 14 Q. -- if they didn't reproduce the results?
- 15 A. That is a question at the time.
- 16 Q. Right. Now please turn to 638 on that document.
- 17 It's entitled "Paraquat and Parkinson's Disease
- 18 Investigative Toxicology Research", isn't it?
- 19 A. It is.
- 20 Q. The first bullet says:
- 21 "The issue around the claims that paraguat exposure
- 22 and Parkinson's disease are linked needs to be addressed if
- 23 the future Syngenta aspirations for the product are to be
- 24 realized."
- 25 The future aspirations for the product mean selling

- 1 it on the market and making profits from the sale, don't
- 2 they?
- 3 MR. NARESH: Objection to scope.
- 4 A. That's an assumption which you can certainly take
- 5 from the way that's written.
- 6 BY MR. TILLERY:
  - Q. Yes. You would not disagree with that
- 8 interpretation, would you?
- 9 A. I think that is one plausible interpretation.
- 10 Q. That is probably the most plausible, would you
- 11 agree?
- 12 A. It may well have been.
- 13 Q. Okay. So Syngenta's aspiration for products,
- 14 paraquat products, would not be realized if the link between
- 15 paraquat exposure and Parkinson's disease was established;
- 16 is that right?
- 17 A. That's what you would infer from that.
- 18 Q. So going to the next bullet:
- 19 "Data generated will be used to build
- 20 a scientifically robust, defensive position for paraquat in
- 21 response to the issues already in the scientific literature,
- 22 and to questions raised by the media, customers and
- 23 regulatory authorities."
- 24 Is that what that says?
- 25 A. That's what that says.

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- 1 Q. Okay. Now let's go to 641 of that document. The
- 2 third bullet says:
- 3 "External publication of findings at scientific
- 4 meetings to assist our influencing strategy."
- 5 Do you see that?
- 6 A. Yes.
- 7 Q. And "influencing strategy" was a strategy
- 8 intending -- intended to influence publications, scientists
- 9 around the world, wasn't it?
- 10 A. As written that would be what it suggests it -- yes,
- 11 yes.
- 12 Q. Okay. And Syngenta's paraquat mouse research was
- 13 intended to influence independent researchers regarding the
- 14 safety of paraguat, wasn't it?
- 15 A. It was intended to ensure that we understood the
- 16 validity of those findings that other researchers had
- 17 published, including the aspects, as it said earlier, about
- 18 repeatability.
- 19 Q. And it says very clearly in bullet three there --
- 20 were you at this presentation, sir?
- 21 A. I don't know that I was.
- 22 Q. All right. It says very clearly in this bullet,
- 23 the:
- 24 "External publication of findings at scientific
- 25 meetings to assist our influencing strategy."

Г	Page 326		Page 328
1	Right?	1	(Exhibit 25 marked for identification)
2	A. Yes, but I can say that	2	BY MR. TILLERY:
3	Q. Can you answer that question?	3	Q. Can you identify exhibit number 25, please?
4	A. Yes, that's what it says.	4	A. Again, this is a PowerPoint presentation on paraquat
5	Q. And scientific meetings are meetings where	5	and Parkinson's disease.
	Syngenta's people would go with boards or presentations and	16	Q. It's another presentation or excerpt entitled:
7	speak and present to scientists around the world the	7	"Paraquat & Parkinson's disease."
8	findings from their studies; right?	8	Right?
9	A. Yes, yes.	9	A. That's right.
10	Q. And you have done that yourself, haven't you?	10	Q. And the front page says:
11	A. I have.	11	"Paraquat and Parkinson's Disease Experimental
12	Q. Okay. And what's the purpose? It is to get that	12	Strategy."
13	information your position or your findings out, right?	13	A. Correct.
14		14	Q. And it says:
15	-	15	"Carry out in-house research to further our
16	BY MR. TILLERY:		understanding of paraquat and it's role in Parkinson's
17			disease models to ensure safety in use."
	referenced here as "spring 2003", there was a strategy that	18	And it says:
11	had been adopted by paraquat sorry, strike that.	19	"Use these data to gain a presence in the
20			International Scientific Community and promote a balanced
1	by Syngenta scientifics meetings within them to influence		view for the use of paraquat as a non selective herbicide."
	other scientists around the world?	22	
23		23	
	fact that the science behind this issue is still a work in	24	
1	progress.		paraquat mouse research at CTL; correct?
23		23	
1	Page 327  Q. Okay. Would you see where it says read where it	1	Page 329  A. I believe that that is correct, yes.
	says that in bullet 3, what you just said?	2	
		I -	second bullet the top of this one says, the first line
3			
4		5	says: "Paraquat & Parkinson's Disease."
5		100	-
6	, B	6	And then the second bullet says:
7		7	"Threats to paraquat from recent scientific
	BY MR. TILLERY:		literature."
9	•	9	A. That's right.
10		10	, ,
	it says.		to manufacture and sell paraquat, weren't they? Is that
12			a fair reading?
13	influencing strategy adopted, okay?	13	A. That would be an ultimate consequence that was
14	, , ,		intended.
15	"influencing strategy" meant.	15	` ,
16			scientific literature would cause paraquat to be banned,
17	does it?	17	correct?
18	A. The document does not say that.	18	A. If the if the evidence eventually came together
19	Q. All right, okay.	19	to make to lead to that possible conclusion.
20	The bottom line is the paraquat mouse research by	20	Q. Okay.
21	Syngenta was intended to convince others outside of Syngenta	21	If you go to the next page. This presentation, if
22	that paraquat was safe, correct?	22	you look at the next page and that is 484239, you see that?
23		23	A. Yes.
24	findings were replicable in order for a judgment to be made	24	Q. Also refers to the Di Monte group at the Parkinson's
1		25	•

25 Institute in California?

25 about that point.

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	Page 332
1 A. Yes. 1 Q. And the author was was Louise M	larks?
2 Q. And both groups had shown paraquat was neurotoxic in 2 A. Yes.	
3 the C57B16 mouse; correct?  3 Q. And she also served as the study direction of the study	ector and
4 A. They had seen findings which suggest that that was 4 principal investigator?	
5 a possibility.  5 A. That is correct, yes.	
6 Q. Syngenta considered the work by Dr. Cory-Slechta and 6 Q. And Mr. Sturgess served as a contrib	outor to the
7 Dr. Di Monte to threaten its aspiration for paraquat product 7 report and study reviewer, correct?	
8 sales, didn't they?  8 A. That is correct.  9 A. The findings, if they had if indeed they were  9 O. Okay. And that's the same Dr. Nick	C+
2 cany	Sturgess we navi
10 replicable could lead to a view being taken on the safety 11 of paraguat. That is correct. 11 A. It is.	
	initiated
12 Q. And that would ultimately lead into the decision 13 that it would not be allowed to be used? 13 on April 17, 2003?	was minated
14 A. That was always one possible outcome, yes, as we 15 said before. 14 A. Yes. 15 Q. And the experimental phase terminal	ted Angust 21
16 Q. That's a fair interpretation of this slide?  16 2003; correct?	ieu Augusi 21,
17 A. Yes.	
18 Q. If you go to 889 - 18 Q. And that just means the experiments	on these mice
19 MR. NARESH: 889? 19 were terminated at that time?	on mose mice
20 (Exhibit 26 marked for identification) 20 A. That's right.	
21 A. Thank you. 21 Q. But the study report was not issued to	intil four years
22 BY MR. TILLERY: 22 later	antin rour yours
23 Q. We've handed you what's been marked as plaintiff's 23 A. That's	
24 exhibit number 26. 24 Q July 21, 2007; right?	
25 Do you see that, sir? 25 A. That is correct.	
Page 331	Page 333
1 A. I do. 1 Q. Okay. And do you have knowledge	
2 Q. Can you identify what this document is? 2 delayed for four years?	or why it was
3 A. It's an internal research report from Syngenta. And 3 A. I have some knowledge of that.	
4 specifically from Syngenta CTL.  4 Q. Okay. Who has all of the knowledge	e? Dr. Marks?
5 Q. Okay. Could you repeat read the report title and 5 A. Dr. Marks would be able to give you	
6 date? 6 than me.	
7 A. It's: 7 Q. You talked to her recently. Did she to	talk to you
8 "Paraquat Dichloride Hydrate. 8 about this?	,
9 "Investigating reported paraquat-induced 9 A. Not specifically about this point.	
10 neurotoxicity in the Alderley Park C57 black mouse: The 10 Q. Okay. Dr. Marks issued this report of	luring her last
11 neurochemical and pathological effects on the dopaminergic 11 week of employment with Syngenta, didn't	_
12 system of 3 weekly injections of 10mg/kg 12 A. I can't comment on that accurately.	
13 1,1'dimethyl-4,4'bipyridinium (Paraquat)." 13 2007 was, I believe, the last year of her em	ployment.
14 Q. And this is a report of a study that Dr. Marks did, 14 Q. Okay. The study was designed to inv	vestigate the
15 right? 15 reproducibility of claims in the literature of	f what?
16 A. That's correct, yes. 16 A. Urn, of the ability of paraquat to cause	se damage to
17 Q. It says "Author(s): L. Marks"?   17 the substantia nigra in the mouse brain.	
18 A. Correct, yes. 18 Q. Okay. And that's exactly what she w	as designing
Q. That was conducted by Syngenta at its CTL laboratory 19 this study to do, right?	
20 in Alderly Park; right? 20 A. Yes. And this was one of there we	ere more than
21 A. That is correct. 21 one study performed, just to add.	
22 Q. The study was part of the paraquat mouse research 22 Q. Okay. And other independent labora	
23 program at Syngenta that was discussed in the presentations 23 observed loss of striatal dopamine and the l	_
24 we just looked at, correct?  25 A. That is right, yes.  26 neurons in the substantia nigra of mice given 25 A. Correct.	en paraquat

CONFIDENTIAL Page 334 Page 336 O. Yes. And who maybe were innovative, creative and Q. -- and she was trying to replicate those studies? 1 2 doing sound scientific work? A. That is correct. 3 Q. Okay. And it involved dosing male C57Bl6J mice with A. Absolutely. Q. Okay. And that's why Dr. Sturgess, who was one of 4 paraquat once a week for three consecutive weeks, correct? 5 the advisers to this study, recognized that work and A. That is correct. Q. And the dose was 10 milligrams per kilogram body 6 nominated her for that award; right? A. Yes. 7 weight of the test animals; is that also correct? O. Okay. The studies in the independent literature to A. That is also correct. Q. The administration of paraguat resulted in a small 9 that point had reported that paraquat was neurotoxic using 10 an optical fractionator stereology to count dopaminergic 10 reduction in dopaminergic cell number, correct, in the 11 cell loss; right? 11 substantia nigra portion of the brain? A. Yes. A. Yes. What it says precisely is a small but 12 Q. They had used the same technology or similar 13 non-statistically significant reduction in dopaminergic cell 13 14 technology? A. Yes, similar technology is the best way to describe Q. And she found that it was not statistically 15 15 16 significant? 16 it. Q. All right. Now let's go back, if we can, to 2905 17 A. Yes. 17 18 here. 2905. Q. Okay. And the dopaminergic cell number in the study was counted -- counting -- strike the question. 19 You see the heading "Stereology", 3.9? 20 20 The dopaminergic cell number in this study was Q. Okay. You have seen this study before, haven't you? 21 counted using a technique called stereology, wasn't it? 21 22 22 Q. Specifically, she used an optical fractionator 23 Q. You read this in preparation --24 A. I have seen this study before. 24 method for stereology, didn't she? A. That is correct. 25 Q. And you read it in preparation. It is all in your Page 335 Page 337 Q. What is that? 1 reliance materials. A. It's essentially a device -- a microscopic device --A. I certainly have read this study relatively 3 that allows you to accurately identify the region of the 3 recently. 4 brain that you are looking to investigate and to count the O. Right. In preparation for this deposition? 4 5 number of cells. So it is quantitative microscopy, in other A. Not specifically for this, actually, no. 5 Q. Okay. So under the heading "Stereology" --6 Q. And she was actually nominated for what is called 7 A. Yes. Q. -- you see where it says "All cell counts"? I'm 8 the Ashby Prize because she was the first scientist at 9 Syngenta to use that technique, right? 9 going to read that into the record, and you tell me if 10 A. Now you mention it, I think that is correct. 10 I have read it correctly when I'm finished, okay: Q. And she was nominated by Dr. Sturgess --"All cell counts were carried out with the help of 11 11 12 A. I think that is correct, yes. 12 an interactive computer system and stereology software 13 Q. -- for the Ashby Prize. And she was one of the 13 (Digital Stereology, Kinetic Imaging, UK) connected to a 14 Zeiss Axioplan microscope. The stage itself was not 14 finalists for the prize. Correct? 15 A. I think -- yes, I think that's right. 15 automated and had to be moved from sampling point to Q. Okay. And the reason being that she came up with 16 sampling point." 17 this. And she had not yet been to Sunnyvale but she used 17 Is that correct? 18 this optical fractionator; right? 18 A. That's what it says.

22 literature. Okay?

23 A. Yes.

19

Q. And it says at the very last part of that page, if

Q. Okay. And if you go to 2910, at the bottom there,

20 Dr. Marks reports that the optical fractionator method was21 used by the majority of studies in the independent

25 you read it:

Back in 2003, that is correct.

22 recognize scientific achievement.

24 thought had done a very good job?

A. A good technical job, yes.

Q. Okay. What is the Ashby Prize?

A. It was a prize which was initiated in CTL to

Q. Okay. In other words, to reward people who you

19

20

23

"Our method..."

- 2 Do you see that sentence where she's talking about
- 3 this? This is within her study still, isn't it?
- 4 A. Yes, yes.
- 5 Q. Okay:

1

- 6 "Our method, in which the counting frame is moved
- 7 manually from sampling point to sampling point, has been
- 8 tested for sensitivity and has produced consistent values
- 9 for the total number of cells in control and MPTP treated
- 10 animals ... Our technique has been proven sensitive enough
- 11 to detect a 13.8% reduction in TH+ cell number following
- 12 MPTP administration and therefore should be sensitive enough
- 13 to detect the reported 25-30% loss ... observed following PQ
- 14 exposure: ..."
- 15 Do you see that?
- 16 A. I do.
- 17 Q. Now the last sentence of that, if you read that into
- 18 the record, that last sentence that starts "Nevertheless
- 19 ... " and continues to the next page?
- 20 A. "Nevertheless, even small differences in methodology
- 21 could lead to our system potentially being deemed less
- 22 accurate than the automated systems available and this may
- 23 explain in part the differences in total cell counts
- 24 obtained."
- 25 Q. So she was reporting in her report that she was

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- 1 using a manual system that could be the reason her cell
- 2 counts were different from the independent literature that
- 3 had already found that this chemical could produce loss of
- 4 dopaminergic neurones in the same mouse, right?
- 5 A. At that time, that was a reasonable possibility for
- 6 any discrepancy.
- 7 Q. And she was -- she was reporting that, right?
- 8 A. Yes.
- 9 Q. Putting that in the study. The independent
- 10 researchers had been using an automated system. She was
- 11 using a manual system. That's what she was saying?
- 12 A. That's what she said.
- 13 Q. Okay. And she said the automated set up may confer
- 14 a greater degree of accuracy to the counting process; do you
- 15 see that?
- 16 A. Yes, I do.
- 17 Q. All right. In contrast in this study, Dr. Marks
- 18 used a manual method to move the counting frame from
- 19 sampling point to sampling point, didn't she?
- 20 A. Yes.
- 21 Q. She goes on to say:
- 22 "It is therefore important to further investigate PQ
- 23 [paraquat] toxicity and attempt to replicate our findings."
- 24 Correct?
- 25 MR. NARESH: Where are you?

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- A. Where are you now, please? Yes, at the bottom of
- 2 the page.
- 3 BY MR. TILLERY:
- 4 Q. It's the bottom of the page.
- 5 A. Yes, I see, yes.
- 6 Q. Read it into the record, please?
- 7 A. Yes: "It is therefore important to further
- 8 investigate PQ toxicity and attempt to replicate our
- 9 findings."
- 10 Q. "Further input is required", I am reading now,
- 11 follow along with me, please?
- 12 A. Yes.
- 13 Q. "Further input is required to determine whether the
- 14 stereology set-up and parameters used in the present study
- 15 are accurate enough to detect the reported cell loss."
- 16 Is that right?
- 17 A. That's what it says.
- 18 Q. Okay. Was that the first optical fractionator
- 19 stereology study done at Syngenta?
- 20 A. This was the first one, other than the -- some of
- 21 the method development which I think this report refers to,
- 22 where we were trying to get the methods that we are now
- 23 describing to work appropriately.
- Q. And she was the first researcher at CTL to use that
- 25 stereology unit technique?

- 1 A. That is correct.
- Q. And she was credited with establishing the technique at CTL?
- 4 A. That's correct.
- 5 Q. And that's one of the reasons she was nominated for
- 6 the Ashby Prize?
- 7 A. I think that was certainly one of the factors,
- 8 I agree.
- 9 Q. Okay. I have her nomination if you want to see it.
- 10 That's up to you. If you wish to, I will give it to you --
- 11 A. I don't think I need to see that.
- 12 Q. All right, okay.
- 13 She was, you would agree, concerned that the
- 14 technique she used was not comparable to the technique used
- 15 by independent researchers in the published literature.
- 16 Would you agree?
- 17 A. She clearly wanted to make sure that we understood
- 18 where methodological differences could lie.
- 19 Q. Right. She was also concerned the technique she
- 20 used might be less accurate than the technique used by
- 21 independent researchers in the published literature?
- 22 A. Yes, and it is important that you --
- 23 Q. Can you just answer my question?
- 24 A. Yes.
- 25 Q. Okay. And she was also concerned that the manual

- 1 technique was not as accurate as the automated, newer
- 2 technique?
- 3 A. Accurate, but not necessarily sensitive. I think
- 4 those are -- those are two different issues here.
- Q. Okay.
- 6 Now, despite Dr. Marks' concerns about the accuracy
- 7 of this study, Syngenta published the results of the study.
- 8 We are going to refer to that first study by her number --
- 9 you assign numbers to studies at Syngenta, don't you?
- 10 A. Yes, we do.
- 11 Q. That number for that study was XM7229. Correct?
- 12 A. Correct.
- 13 Q. Okay. And Syngenta published the results of that
- 14 study, didn't they?
- 15 A. Can you remind me where we published that?
- 16 Q. I will, okay.
- 17 (Exhibit 27 marked for identification)
- 18 BY MR. TILLERY:
- 19 Q. What number is this document you are referring to,
- 20 sir, so we are clear?
- 21 A. The Bates number, do you want?
- 22 Q. No, the --
- 23 A. Oh, the reference --
- 24 Q. The exhibit number is 27?
- 25 A. Exhibit number 27.

- 1 of no impact, no loss of dopaminergic neurones in
- 2 a statistically significant way, right?
- 3 MR. NARESH: Objection to form.
- 4 A. Yes, that's what that says.
- 5 BY MR, TILLERY:
- 6 Q. And the abstract would have been published in the

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- 7 symposium materials, wouldn't it, is that right?
- 8 A. I don't know exactly what this particular annual
- 9 meeting's procedures are. Certainly this is not
- 10 a peer-reviewed publication.
- 11 Q. Absolutely. Is it customary that the abstract be
- 12 published in the symposium materials?
- 13 A. In some meetings, yes. In other meetings, no.
- 14 Q. And it is made available -- it's published to the
- 15 people who are there and there's a presentation made?
- 16 A. That is correct.
- 17 Q. Okay. The presentation would be -- would
- 18 announce -- that a Syngenta study showed that there was no
- 19 impact on the substantia nigra in that mouse, correct?
- 20 A. In this study that is correct, yes.
- 21 Q. Okay. All right.
- 22 Did Syngenta at any time report Dr. Marks'
- 23 reservation about the study technique using a manual system?
- 24 A. Well, I was not in this particular meeting so
- 25 I don't know whether Dr. Marks took the opportunity to make

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- Q. Thank you. Exhibit number 27 is an abstract for
- 2 a presentation at the Society for Neuroscience Annual
- 3 Meeting, October 23 through 27, 2004, in San Diego in
- 4 California?
- 5 A. That is correct.
- 6 Q. Okay. The title of that is:
- 7 "Lack of Effect of Paraquat on the Nigrostriatal
- 8 Dopaminergic System of the Mouse."
- 9 Correct?
- 10 A. Correct.
- 11 Q. It shows Louise Marks as the principal investigator
- 12 with that asterisk underlying her name?
- 13 A. That asterisk would represent that she was the
- 14 presenter of this.
- 15 Q. Oh, she was the presenter as well?
- 16 A. Yes, that's what --
- 17 Q. Okay.
- 18 A. -- the convention would normally suggest that
- 19 she was.
- 20 Q. And it says "a control group of mice received
- 21 injections of ... paraquat did not alter the concentrations
- 22 ..."
- 23 Do you see that?
- 24 A. Yes.
- 25 Q. It comes through and says it was basically a finding

- 1 that point.
- Q. Did Syngenta otherwise -- did anybody at Syngenta --
- 3 not just Dr. Marks, she made it clear in her entire study
- 4 which was, not to your knowledge, distributed to the
- 5 attendees at that Society for Neuroscience Annual Meeting,
- 6 was it?
- 7 A. This, if you are referring to the detail in this
- 8 report, no.
- 9 Q. It was kept highly confidential at Syngenta?
- 10 A. At this time, that report had not even been
- 11 finalized.
- 12 Q. That's right. It wasn't printed, right?
- 13 A. Right.
- 14 Q. Okay. So none of her reservations were announced,
- 15 to your knowledge?
- A. But normal scientific practice in a meeting of this
- 17 sort is that this will lead to conversations with other
- 18 research people, and I can't rule out that Dr. Marks may
- 19 have had such conversations about some of those technical
- 20 reservations.21 Q. I move to strike your answer as unresponsive.
- Would you read back my question to the witness?
- 23 COURT REPORTER: "So none of her reservations
- 24 were announced, to your knowledge?"
- A. Well, to my knowledge, that's true.

26 (Pages 342 - 345)

- 1 Q. Okay.
- 2 Do you know of anyone at Syngenta who ever publicly
- 3 stated or admitted that the manual cell counting method
- 4 Dr. Marks used could account for the differences in the
- 5 studies?
- 6 A. I'm not aware of any such occurrences.
- 7 Q. Was that ever reported to the US EPA?
- 8 A. Um, this --
- 9 Q. Her reservations?
- 10 A. Her reservations were not reported to the EPA, no.
- 11 Q. So the principal investigator acknowledged that her
- 12 manual counting technique was not as accurate as automated
- 13 techniques, and could explain the difference in results, but
- 14 it was never announced by anybody else at Syngenta to your
- 15 knowledge?
- 16 A. To my knowledge.
- 17 Q. Okay. Did you ever report her reservations about
- 18 her study technique to your knowledge?
- 19 A. Report in -- in what sense?
- 20 Q. In any sense. Publicly?
- 21 A. Well, I -- the only thing that I could offer there
- 22 is that Dr. Marks certainly did discuss that as part of her
- 23 discussions with Dr. Di Monte.
- 24 Q. Okay. So that's the public disclosure is to another
- 25 scientist who was teaching her how to improve her technique?

- 1 A. At that time, yes.
  - Q. Dr. Louise Marks was the report author?
- 3 A. Correct.
- 4 Q. Did she use different techniques?
- 5 A. I'd need to read the detail of, um, what she said in 6 here --
- 7 Q. Actually, let me withdraw that for a second. We
- 8 will get to it, okay. Rather than going through in
- 9 sequence, I would rather go through the whole thing in
- 10 sequence and then get to the different technique.
- 11 A. Okay.
- 12 Q. Dr. Sturgess contributed to the reported -- report
- 13 as a study reviewer as well, didn't he?
- 4 A. Yes, that is correct.
- 15 Q. Okay. And Dr. Marks reports that this study was
- 16 initiated on September 17, 2003?
- 17 A. Correct.
- 18 Q. And it terminated on December 22, 2003.
- 19 A. Correct.
- 20 Q. Okay. That just means the mice were terminated on
- 21 that day?
- 22 A. I'm not sure if that means that the experiment as
- 23 a whole was terminated on the 22 December --
- Q. Okay. The study report was issued three and a half
- 25 years later, June of 2007?

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- A. If you call that public. I mean, that is part of
- 2 normal scientific discourse as we have said many times.
- 3 Q. Okay, all right.
- 4 (Exhibit 28 marked for identification)
- 5 BY MR. TILLERY:
- 6 Q. We are giving you the full study as well as the
- 7 quotes that you may want to look at.
- 8 We have handed you plaintiff's exhibit number 28.
- 9 A. Correct.
- 10 Q. Okay. What is this document?
- 11 A. It's another research report from CTL of a study,
- 12 authored again by Dr. Louise Marks, again looking at the
- 13 effect of neurotoxicity in the same strain of mouse using
- 14 the same techniques that we were describing previously.
- 15 Q. So this is the second paraquat study that was
- 16 conducted at Syngenta by Dr. Marks, right?
- 17 A. You may be right. I don't have accurate knowledge
- 18 of the -- of the order of which these studies were done.
- 19 But this was -- there were four or five studies in total.
- 20 Q. And this is the study Dr. Marks recommended to try
- 21 to replicate the first study's findings that paraquat was
- 22 not neurotoxic; correct?
- 23 A. If this is the second study, that would be the case.
- 24 Q. Okay. It was part of the paraquat mouse research
- 25 program at Syngenta CTL?

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- A. That's because the reports of all of that series of
- 2 studies were written up together.
- 3 Q. And they were generated in the last week of her
- 4 employment?
- 5 A. As you said earlier, that is what you -- your
- 6 information suggests.
- Q. The study completion date is June 21, 2007?
- 8 A. The -- yes, in terms of writing the report --
- 9 Q. Instead --
- 10 A. -- yes.
- 11 Q. I should have said "the report completion date"?
- 12 A. Yes, yes.
- 13 Q. That would have been a more accurate question?
- 14 A. Yes, it would.
- 15 Q. Thank you. Okay. You have answered.
- Dr. Marks announced the study purpose on page 6791,
- 17 didn't she?
- 18 A. Yes
- 19 Q. And the purpose she announced is:
- 20 "The aim of this study was to assess whether at
- 21 a dose of 10 mg/kg, paraguat dichloride caused changes in
- 22 the concentrations of striatal dopamine and its metabolites,
- 23 and a loss of dopamine containing neurons in the
- 24 substantia nigra pars compacta when dosed i.p. ..."

25 That is intra-peritoneally.

Page 350 Page 352 1 "... to Charles River male C57Bl6J mice." A. Yes. 2 Is that correct? Q. Correct? 2 3 A. That is correct, and that part of the purpose is the 3 A. Yes. 4 same as the purpose of the same previous experiment. Q. Okay. Now she reported a 23.7 percent reduction in Q. It is exactly the same, isn't it? 5 5 dopaminergic neurons found in the study, and that was 6 A. Yes. 6 comparable to the other publications finding between 25 and 7 Q. Okay. And continuing on, she says: 7 30 percent reduction in dopaminergic neurons in the 8 "This study was conducted in order to determine the 8 substantia nigra; all right? 9 reproducibility of findings from an earlier CTL study ... A. Yes. 10 where no apparent effect of [paraquat] was observed at these 10 Q. And she refers in this to the McCormack studies, 11 toxicity endpoints. The stereology methodology used in the 11 didn't she? Do you see that? If you want to go to the top 12 present study has been modified from that detailed in ..." 12 of 6808 that will give you a reference. On the preceding 13 The study that she reports as XM7229. Is that the 13 page, as well. Bottom of the preceding page 6807 and to the 14 top of the page. Do you see that? 15 A. That's what we were talking about previously. 15 A. Yes, yes. 16 Q. And continuing on, she says: 16 Q. And she shows you the results from the preceding 17 "This was as a result of information obtained 17 page, reduced by 24 percent. It is comparable to the 18 following a lab visit to the Parkinson's Institute, 18 findings in publications observing a 25 to 35 percent 19 California, and discussions with Dino Di Monte's research 19 reduction in cell numbers in the substantia nigra? 20 group." 20 A. Yes. 21 Correct? 21 O. And she references studies and those -- one is 22 A. Indeed, as I have indicated. 22 McCormack et al, and that is 2002. 23 Q. And she was educated in the use of an automated 23 A. Yes. 24 stereology technique, correct? 24 Q. Can you tell me how to pronounce the second 25 A. That's right, as used in his laboratory. 25 scientist's name? Page 351 Page 353 1 Q. Right. A. We pronounced it Thiruchelvam. 2 Now what were the results of this study? I think Q. Thiruchelvam? 3 that is probably 6808? A. I don't know whether that's the right pronunciation, A. Actually, I was looking at the executive summary of 4 but that's the one we used. 5 that --Q. And that is 2002; and Thiruchelvam et al 2003; and 5 Q. Okay. 6 McCormack & Di Monte 2003. Right? 7 A. -- on 6790, where it states that on this occasion, A. Yes. 8 again, paraquat did not result in any significant reduction 8 Q. These were the studies by independent researchers in 9 in the concentration of dopamine or its metabolites, whereas 9 the published literature who had found paraquat to be 10 the positive control substance did. But on this occasion --10 neurotoxic in that mouse, hadn't they? 11 in this study, administration of paraquat did result in 11 A. Yes. 12 a statistically significant reduction, 23.7 percent. 12 Q. And these were published literature findings that 13 Q. 23.7 percent reduction? 13 CTL was trying to replicate? 14 A. Yes. 14 A. Yes. 15 Q. Okay. 15 Q. Okay. And this study, in fact, replicated those 16 A. In dopaminergic neuronal cells. 16 independent scientific findings? 17 Q. And she reported that as statistically significant? 17 A. On this occasion, that is true. 18 18 Q. Those were in peer-reviewed journals as well, 19 Q. And that finding is comparable with the findings 19 weren't they? 20 reported by independent laboratories who investigated the A. The publications that are cited here, yes. 20 21 effects of paraquat on the black mouse; correct? 21 Q. That she refers to? A. Absolutely. This is more, if you like, similar to 22 A. Yes. 23 the findings that you've described, yes. 23 Q. And then the last -- okay, she reports the results Q. So she, effectively, in your laboratories replicated 24 and compares them to the XM7229 study; do you see that?

28 (Pages 350 - 353)

A. Yes.

25 what the other scientists in the independent labs had done?

Page 354 Page 356 1 Q. Look on page 6808: 1 Dr. Marks had actually repeated the same manual technique on 2 "With respect to the apparent cell loss ..." 2 the second round analysis, and came up with the same results 3 3 as the first study. 4 Q. Okay. And Dr. Marks -- would you take a minute to When she used the automated technique --5 read that, please? 5 A. Right. A. Yes, I would like to do that, please. 6 Q. -- she got an accurate result because of the Q. Yes. And, sir, that whole page or at least the last 7 difference in techniques? 8 two paragraphs. Take your time. A. I don't understand that I actually knew that --A. Okay. 9 Q. But you do now? 10 Q. Have you read it? 10 A. But I do now. A. Yes. 11 O. All right. She re-examined the tissue with new, 12 Q. Dr. Marks attributes the failure to detect neuronal 12 improved stereology equipment and found the loss of neurons 13 cell loss in study XM7229 to differences in the stereology 13 in the substantia nigra that she reports here? 14 methodology, software and hardware used in that study; 14 A. Okay, that's fine. 15 correct? Q. Now, did -- strike that. 16 A. She does. 16 Did Syngenta send Dr. Marks to Sunnyvale? 17 Q. And she also reports that in the study that you have 17 18 in front of you, the newer one or the more recent one, 18 Q. Okay. Did Syngenta ever publish the results of the 19 XM7258, she: 20 "... used one of the most widely used and accurate A. Again, not that I remember, unless, like on the 21 stereology systems currently available and the methodology 21 previous occasion, it was at a scientific meeting. But I've 22 was refined to further improve the accuracy of the cell 22 no evidence for that. 23 count data." Q. Did Syngenta ever notify the Society of Neural 24 Correct? 24 Science where the first study was reported to tell them that 25 A. Indeed. 25 the first study was wrong? Page 355 Page 357 Q. "These changes to the stereology hardware and A. I have no evidence we did that. 2 software were implemented following ... " Q. Okay. Based upon what you have seen from these two 3 The visit and training by Dr. Dino Di Monte. Is 3 studies, would you agree with me that the results of the 4 that right? 4 first study was wrong? A. That is correct. A. The -- it points to the possibility that the first Q. And that was in the Parkinson's Institute in 6 study was wrong. 7 Sunnyvale, California? Q. Do you have any reason to dispute her statements A. That's right. 8 that the difference in automated versus manual technology 9 Q. The previous study used "a non automated stage and 9 accounted for the difference in the results? 10 used much older stereology software." 10 A. No reason to dispute that at all. 11 Correct? Q. Okay. Did Syngenta ever inform the Environmental 12 A. Yes. 12 Protection Agency about the loss of dopaminergic neurones 13 Q. Dr. Marks also notes that brain tissue in the 13 found in the study? 14 previous study had deteriorated and thus could not be 14 A. In this study, no, because they were not new 15 examined using the new, improved stereology equipment? 15 findings. 16 A. Correct. 16 Q. I am just asking whether they did. 17 Q. So what she did is she actually used the old 17 A. Right. 18 methodology on the second group of mouse brains to count, 18 Q. Did they? 19 didn't she? And when she did, she found negative results. 19 A. So far as I'm aware, they did not. 20 She would have reached the same conclusion, that's what she 20 Q. Okay. So you weren't aware that on December 13, 21 found. 21 three months ago, your counsel notified them of this 22 MR. NARESH: Objection to form. 22 study --23 A. Could you just repeat that? 23 A. I thought you meant at the time, sir, so I --24 BY MR. TILLERY: 24 Q. Oh, that would be the logical thing to do --Q. Of course. Did you understand or did you know that A. Right.

	Page-358	Ĺ.,	Page 360
1 O wo	uld be to tell them.	1	investigating the reported paraquat-induced dopaminergic
1	you think it would be appropriate to wait		neurotoxicity in the black mouse.
1	l a half 16.5 years to tell them?	3	
	NARESH: And I will object to the attorney	4	Alderley Park, right?
5 commentar		5	
6 BY MR. TI		6	Q. And the principal investigator was Louise Marks?
7 Q. We're	just asking you. Is 16.5 years an appropriate	7	
1	to make a report?	8	Q. And the study number is XM7371?
	eve it was still the correct decision at the	9	A. Yes.
10 time that th	ese findings were not reportable.	10	Q. This was a study that was part of the paraquat mouse
1	So when it changed and suddenly you decided	11	research program at Syngenta CTL, right?
	US EPA on December 13, 2019, sixteen and	12	
	after the report was finalized	13	
1	that was not a decision that I was involved in	14	
15 taking.		15	Q. The study was initiated on April 26th, 2004?
	. Would you have done that?	16	
1	ldn't want to comment on that. I'm not an	17	Q. And was terminated on November 17, 2004?
18 expert in w	nether these things should be done.	18	
	lon't want to go down that path, do you?	19	Q. And reported in June 2007?
20 A. I		20	
21 MR.	NARESH: I object to the form, argumentative.	21	discussing.
22 BY MR. T		22	Q. Right.
23 Q. Okay	. So can you explain to me why there was	23	If you would go to 911 in the "Study Design"
24 a 16.5-year		24	section, Dr. Marks reports that the purpose of the study was
25 A. I don	t want to venture in any speculative way,	25	to investigate whether the loss of dopaminergic neurons in
	Page 359		Page 361
1 because I'm	ot involved in that process.	1	the substantia nigra observed in XM7258 could be further
2 Q. Were	ou aware that I wrote your counsel a letter	2	enhanced by increasing the frequency of dosing; correct?
3 demanding th	at they notify the US EPA?	3	A. Correct.
4 A. I saw t	nat letter.	4	Q. And then if you go to the "Results" section,
5 Q. Okay.	That might account for why they did it a week		
		5	Dr. Marks reports dosing of paraquat resulted in
6 later, do you	think?		5 Dr. Marks reports dosing of paraquat resulted in 5 a statistically significant loss of dopaminergic neurons in
	think?  ARESH: Objection to form, argumentative.	6	
1	ARESH: Objection to form, argumentative.	6	is a statistically significant loss of dopaminergic neurons in  If the substantia nigra pars compacts of mice; correct?
7 <u>MR. 1</u> 8 BY MR. TIL	ARESH: Objection to form, argumentative.	6 7	a statistically significant loss of dopaminergic neurons in the substantia nigra pars compacta of mice; correct?  A. Correct.
7 MR. 1 8 BY MR. TIL 9 Q. Do you	ARESH: Objection to form, argumentative.  LERY:	6 7 8 9	a statistically significant loss of dopaminergic neurons in the substantia nigra pars compacta of mice; correct?  A. Correct.
7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul	ARESH: Objection to form, argumentative.  LERY: think there's a connection?	6 7 8 9	is a statistically significant loss of dopaminergic neurons in  If the substantia nigra pars compacta of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in  a greater magnitude of cell loss, correct?
7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.	6 7 8 9 10	is a statistically significant loss of dopaminergic neurons in if the substantia nigra pars compacta of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in a greater magnitude of cell loss, correct?  A. Correct.
7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7 12 Is this a good	ARESH: Objection to form, argumentative.  LERY: think there's a connection? in't want to comment on that.  ILLERY: Okay. Let's take a lunch break.	6 7 8 9 10 11 12	is a statistically significant loss of dopaminergic neurons in if the substantia nigra pars compacta of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in a greater magnitude of cell loss, correct?  A. Correct.
7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7 12 Is this a good	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.  ILLERY: Okay. Let's take a lunch break. time? Or we can keep going	6 7 8 9 10 11 12	is a statistically significant loss of dopaminergic neurons in  If the substantia nigra pars compacts of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in  a greater magnitude of cell loss, correct?  A. Correct.  Q. At the bottom of that page, that is on 911,  is Dr. Marks reports:
7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7 12 Is this a good 13 MR. 1 14 a second.	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.  ILLERY: Okay. Let's take a lunch break. time? Or we can keep going	6 7 8 9 10 11 12 13 14	is a statistically significant loss of dopaminergic neurons in  If the substantia nigra pars compacts of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in  a greater magnitude of cell loss, correct?  A. Correct.  Q. At the bottom of that page, that is on 911,  is Dr. Marks reports:
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7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7 12 Is this a good 13 MR. 1 14 a second. 15 THE 1	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.  ILLERY: Okay. Let's take a lunch break. time? Or we can keep going IARESH: Let's go off the record for	6 7 8 9 10 11 12 13 14 15	is a statistically significant loss of dopaminergic neurons in  If the substantia nigra pars compacta of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in  a greater magnitude of cell loss, correct?  A. Correct.  Q. At the bottom of that page, that is on 911,  Dr. Marks reports:  "These results support the findings of study XM7258  and demonstrate that paraquat, when administered to [C57B16]  is mice induces nigral, but not striatal, toxicity."
7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7 12 Is this a good 13 MR. 1 14 a second. 15 THE 1 16 17 THE	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.  ILLERY: Okay. Let's take a lunch break. time? Or we can keep going IARESH: Let's go off the record for  VIDEOGRAPHER: Off the record at 11:49. (Break taken.)	6 7 8 9 10 11 12 13 14 15 16	is a statistically significant loss of dopaminergic neurons in  If the substantia nigra pars compacts of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in  a a greater magnitude of cell loss, correct?  A. Correct.  Q. At the bottom of that page, that is on 911,  B. Dr. Marks reports:  "These results support the findings of study XM7258  and demonstrate that paraquat, when administered to [C57Bl6]  mice induces nigral, but not striatal, toxicity."  Correct?
7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7 12 Is this a good 13 MR. 1 14 a second. 15 THE 1 16 17 THE	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.  ILLERY: Okay. Let's take a lunch break. time? Or we can keep going IARESH: Let's go off the record for  IDEOGRAPHER: Off the record at 11:49. (Break taken.)  IDEOGRAPHER: We are back on the record at so now media number 3 in the deposition of	6 7 8 9 10 11 12 13 14 15 16 17	is a statistically significant loss of dopaminergic neurons in If the substantia nigra pars compacts of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in a greater magnitude of cell loss, correct?  A. Correct.  Q. At the bottom of that page, that is on 911, Dr. Marks reports:  "These results support the findings of study XM7258 and demonstrate that paraquat, when administered to [C57B16] mice induces nigral, but not striatal, toxicity."  Correct?  A. Correct.
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7 MR. 1 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. 7 12 Is this a good 13 MR. 1 14 a second. 15 THE 1 16 17 THE 1 18 12:08. This 19 Philip Botha 20 You ma	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.  ILLERY: Okay. Let's take a lunch break. time? Or we can keep going IARESH: Let's go off the record for  //IDEOGRAPHER: Off the record at 11:49. (Break taken.) //IDEOGRAPHER: We are back on the record at s now media number 3 in the deposition of m. // continue. // continue.	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	is a statistically significant loss of dopaminergic neurons in  If the substantia nigra pars compacta of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in  a greater magnitude of cell loss, correct?  A. Correct.  Q. At the bottom of that page, that is on 911,  Dr. Marks reports:  "These results support the findings of study XM7258  and demonstrate that paraquat, when administered to [C57B16]  mice induces nigral, but not striatal, toxicity."  Correct?  A. Correct.  Q. And nigral toxicity is a form of neurotoxicity,  isn't it, sir?
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7 MR. I 8 BY MR. TIL 9 Q. Do you 10 A. I woul 11 MR. I 12 Is this a good 13 MR. I 14 a second. 15 THE 16 17 THE 18 12:08. This 19 Philip Botha 20 You ma 21 (Exhii 22 BY MR. TIL 23 Q. I'm dir	ARESH: Objection to form, argumentative.  LERY: think there's a connection? In't want to comment on that.  ILLERY: Okay. Let's take a lunch break. time? Or we can keep going IARESH: Let's go off the record for  IDEOGRAPHER: Off the record at 11:49. (Break taken.) IDEOGRAPHER: We are back on the record at so now media number 3 in the deposition of in.  IV continue. In the deposition of the process of the record at so now media number 3 in the deposition of the process of the process of the process of the record at so now media number 3 in the deposition of the process	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	is a statistically significant loss of dopaminergic neurons in If the substantia nigra pars compacts of mice; correct?  A. Correct.  Q. But the increased doping frequency did not result in a greater magnitude of cell loss, correct?  A. Correct.  Q. At the bottom of that page, that is on 911, Dr. Marks reports:  "These results support the findings of study XM7258 and demonstrate that paraquat, when administered to [C57Bl6] mice induces nigral, but not striatal, toxicity."  Correct?  A. Correct.  Q. And nigral toxicity is a form of neurotoxicity, isn't it, sir?  A. It is an effect on that part of the of the brain, 2 yes.

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\_\_\_\_

- 1 neurotoxic, yes.
- 2 Q. Support the findings of it as well, at least in
- 3 mouse, right?
- 4 A. The findings are now becoming more replicable, yes.
- 5 Q. As a matter of fact, this result replicates the
- 6 studies in the independent literature she found as well,
- 7 correct?
- 8 A. It does. As did the previous one. Although,
- 9 interestingly, there was no exacerbation of the effect
- 10 compared to the previous study.
- 11 Q. All right. And if you go to 25, Dr. Marks reports:
- 12 "The present study has confirmed that administration
- 13 of 3 weekly injections of 10 mg/kg paraquat dichloride to
- 14 ... C57Bl6J mice, results in a statistically significant
- 15 reduction in the number of ... dopaminergic neurons in the
- 16 [substantia nigra] ..."
- 17 Correct?
- 18 A. That's what that says, yes.
- 19 Q. Yes. She further reports this reduction is
- 20 comparable with the loss reported in the public literature?
- 21 A. Yes.
- 22 Q. And she references several studies by independent
- 23 researchers, right?
- 24 A. Yes.
- 25 Q. And who does she list as the source: McCormack et al 25

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- 1 2002; McCormack & Di Monte 2003; correct?
- 2 A. Correct.
- 3 Q. Did Syngenta ever publish the results of this study
- 4 in a peer-reviewed journal?
- 5 A. I'm not aware that it did.
- 6 Q. Okay. Did the results of this study ever appear
- 7 anywhere in any public literature?
- 8 A. I am not aware of -- of whether that actually did
- 9 happen.
- 10 Q. Did Syngenta ever inform the United States
- 11 Environmental Protection Agency about the loss of
- 12 dopaminergic neurons observed in this study?
- 13 A. At the time of this study, there was -- this was not
- 14 reported to the EPA, that I do know.
- 15 Q. This was reported sixteen and a half years later
- 16 in December 2019; correct?
- 17 A. As you were indicating on the previous occasion,
- 18 yes.
- 19 Q. You saw that report, and you saw my letter demanding 19
- 20 that it be reported?
- 21 A. I saw your letter, yes.
- 22 Q. You saw my -- I'm sorry, strike that.
- You saw my letter and you saw the report that was
- 24 filed?
- 25 A. I'm not sure that I've seen the report.

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- 1 Q. Okay. Do you know who made the decision to file the
- 2 report?
- 3 A. I don't.
- 4 Q. Did Syngenta ever disclose the study to any other
- 5 regulatory agency around the world?
- 6 A. I -- I'm not able to answer that accurately. I am 7 not sure.
- 8 Q. Okay. You've dealt with other regulatory bodies
- 9 yourself, haven't you, outside the United States?
- 0 A. I have.
- 11 Q. You haven't dealt with the US EPA?
- 12 A. I have not engaged with the US EPA on this issue,
- 13 no.
- 14 Q. Okay. And you have engaged with other regulatory
- 15 authorities?
- 16 A. Yes.
- 17 Q. Okay. Which countries have you dealt with?
- MR. NARESH: You are asking him personally?
- 19 MR. TILLERY: Yes.
- 20 A. Right. So for me personally, I have had some
- 21 engagement with Brazil. But I have had -- there has been
- 22 indirect contact with other -- Australia by members of my
- 23 team, but not me personally.
- 24 BY MR. TILLERY:
- Q. Are those the only two countries that you know of

- 1 that -- that you interact with in terms of this?
- 2 A. Well, certainly in terms of personal interaction,
- 3 there were no other countries.
- 4 Q. Do you know of any other regulatory bodies in other
- 5 countries besides Brazil and Australia?
- 6 A. There are other regulatory authorities who will have
- 7 had -- where there will have been discussions about this
- 8 topic.
- 9 Q. You don't know whether this study was reported to
- 10 them?
- 11 A. I can't give you any indication of that, I am
- 12 afraid.
- 13 Q. Was it given to Brazil?
- 14 A. I don't think it was specifically given to Brazil.
- 15 Q. Was it given to Australia?
- 16 A. I don't believe so.
- 17 Q. Are you aware of any disclosures of Dr. Mark's study
- 18 results to any regulatory agency in the world?
  - A. I am not aware of that.
- 20 Q. When Dr. Marks -- strike that.
- 21 When Dr. Marks reported the results of the studies
- 22 to her superiors, her superiors did not want her to accept
- 23 the findings that paraquat causes neuronal cell loss in the
- 24 black mouse; is that a fair statement?
- 5 A. I would not say that was a fair statement because

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1	I don't know what your evidence is to - to back that up.	1	that evidence.		
2	Q. Okay, okay.	2	MR. NARESH: Steve, just so we have a clear		
3	Were you aware that her superiors wanted her to find	3	record, you mentioned the Marks studies. You are referring		
4	a flaw in her methodology?	4	to the three studies you have introduced as evidence?		
5	A. Again, I would not I would like to understand	5	MR. TILLERY: No, all of the studies. Every one		
6	what the basis of that is.	6	she did for Syngenta.		
7	Q. Okay. Before we get into the documents, because	7	MR. NARESH: Including the studies you have not		
8	I promise you I will after lunch I will share that with	8	yet introduced?		
9	you, I will were you aware that they were doing that?	9	MR. TILLERY: Yes.		
10	A. No, I was not aware that there was such - such	10	MR. NARESH: All right, then		
11	conversations were going on at the time.	11	MR. TILLERY: I'm going to go through them all.		
12	Q. Have you ever heard of a scientist being asked to	12	MR. NARESH: Okay. Well, I'm concerned that		
13	find search for flaws in her own methodology in order to	13	there might be confusion from the witness because you asked		
14	disprove her own scientific results?	14	some questions about disclosure to the EPA		
15	A. Well, put that way, I think that is something that	15	MR. TILLERY: Yes.		
16	you wouldn't expect. But you would expect that people would	16	MR. NARESH: and referred to the Marks		
17	be would say: are you really sure that the methodology	17	studies. And if you are referring to all, as opposed to the		
18	that you are using is actually being used as well as	18	ones you have introduced, I think there maybe some confusion		
19	possible?	19	on the record. So I don't know if you want to		
20	Q. But you've studied you've looked at these studies	20	MR. TILLERY: I don't want an incorrect record.		
21	and this is a scientist who has gone through who has	21	So if I if my question did was too broad and		
22	criticized her first result because it was manual technique,	22	encompassed it, I am willing to allow you to have him		
23	who has gone to the trouble of educating herself at	23	correct that so he's not impeached by it later.		
24	Sunnyvale, California, in a in a more automated technique	24	MR. NARESH: You want to do it now or later		
25	in order to enhance the accuracy of her scientific findings.	25	MR. TILLERY: We can do it later. Then you can		
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1	For that, she's been recognized with the highest prize for	1	use the hour time to fix that with him. I'm happy to let		
2			you do that.		
3		3			
4	Q. Okay. Now in that context, right, can you imagine		anticipate having more fulsome redirect than just on that		
5	a scientist being told, of that type, to discredit her own		question. Would you want me to do that, do all of it at the		
	findings?		conclusion of your examination, or do you want me to do that		
_7			at some other point?		
8	A. I would personally never put such a a proposal to	8	MR. TILLERY: Probably at the conclusion of the		
9	a scientist.	و ا	examination.		
10	BY MR. TILLERY:	10	MR. NARESH: I will reserve the right to do		
11	Q. You wouldn't do that, would you?	11	redirect on that point and all of the points at the		
12	-	12	conclusion of your deposition.		
13	Q. Okay. And that would be unethical, would you agree'		MR. TILLERY: I'm not saying that I agree that		
14			you are entitled to do that, so that you understand, okay?		
15	A. As you as you actually stated it, that would, to	15	MR. NARESH: Okay.		
16	my mind, be an inappropriate way of dealing with	16			
17	a scientist.	17	BY MR. TILLERY:		
18	BY MR. TILLERY:	18	Q. Were you aware that her superiors wanted Dr. Marks		
19	Q. All right.		to come up with other explanations for why paraquat could		
20	Do you, as Syngenta's representative who prepared to		have caused the same findings that were not consistent		
21	testify on the subjects that included what we are talking		with it being a potential cause for neuronal cell loss?		
22	about here today, need to know what evidence I have before				
23	you are able to testify about what Dr. Marks' superiors		the time. But such conversations were certainly had at		
24	wanted?		a later time which I was involved with, when we continued to		
25	A. As I said a minute ago, yes, I would like to see		find an apparent loss of dopaminergic neurons, and which		
_		_			

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- 1 indeed we have subsequently published.
- Q. Well, let us go to the next exhibit.
- 3 (Exhibit 30 marked for identification)
- 4 BY MR. TILLERY:
- 5 Q. Now, on that last point that you made, could you
- 6 tell me where Syngenta published a Syngenta study finding
- 7 loss of dopaminergic neurons after the use of paraquat?
- 8 A. Yes.
- 9 Q. Where?
- 10 A. In the neurotoxicology publication of Breckenridge
- 11 et al. One of the studies that was reported in that showed
- 12 an apparent loss of dopaminergic neurons.
- 13 Q. And which study specifically, could you tell us on
- 14 the record, please?
- 15 A. I would have to go back and look at the publication
- 16 to see exactly what study number it was referred to in that,
- 17 but it was -- I know the dose level was 15 milligrams per
- 18 kilogram of paraquat.
- 19 Q. Okay. Now look at exhibit number 50, please -- I'm
- 20 sorry, number 30.
- 21 A. 30.
- 22 O. Can you read into the record the title of this
- 23 document?
- 24 A. "Notes of discussions with Lewis Smith to brief him
- 25 on the latest Parkinson's disease findings on

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- 1 3rd December 2004".
- Q. And present were, can you tell us?
- 3 A. Lewis Smith, Nick Sturgess, Louise Marks and Mike
- 4 Clapp.
- 5 Q. And Nick Sturgess and Louise Marks presented the
- 6 latest findings, correct?
- 7 A. That's what the next line says.
- 8 Q. Okay. And the first bullet point of number 1
- 9 paragraph says:
- 10 "Is the loss of neurones indicating generalised
- 11 neuronal toxicity in the brain rather than a specific effect
- 12 in the Substantia Nigra? This is not ... clear, however
- 13 data from other brain areas (e.g. hippocampus) suggest that
- 14 it is specific, but it may be difficult to detect changes in
- 15 dopaminergic neurone number in other brain regions where the
- 16 density of dopamine containing neurones is lower than in the
- 17 [substantia nigra], thus making a loss of neurones more
- 18 difficult to detect."
- 19 Right?
- 20 A. Yes.
- 21 Q. Okay. Lewis Smith, who is listed here, is the same
- 22 Lewis Smith that we have been talking about, right?
- 23 A. He is
- 24 Q. And what was his role at that time?
- 25 A. I think in 2004 it would be when he was the head of

1 the Central Toxicology Laboratory.

- 2 Q. Who is Mike Clapp?
- A. Mike Clapp was the product toxicologist for -- based
- 4 at CTL who had paraquat as one of his product
- 5 responsibilities.
- 6 Q. Is he still employed with the company?
- 7 A. He is not.
- 8 Q. Where is he now?
- 9 A. He's retired.
- Q. Okay. The purpose of the meeting was to brief
- 11 Lewis Smith regarding the latest Parkinson's disease
- 12 findings from Dr. Marks; correct?
- 13 A. That's what the title suggests.
- 14 Q. Now if you would look at page 2 of that two-page
- 15 document, that's dated what, if you look at the bottom of
- 16 the second page?
- 17 A. 7 December 2004.
- 18 Q. 7 December 2004?
- 19 A. Yes, if this is an English document, the --
- 20 Q. Okay. All right.
- 21 Were Dr. Smith and Dr. Clapp, Louise Marks' and
- 22 Sturgess's superiors?
- 23 A. Dr. Smith, yes; Dr. Clapp, no.
- 24 Q. But Dr. Smith was their boss?
- 25 A. He was the head of the laboratory at that time.

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- 1 Q. He was the head of the entire operation?
- 2 A. I believe at that time that is correct.
- 3 Q. Okay. So if you would read this, does it report
- 4 that Dr. Smith wanted to have the research team investigate
- 5 other reasons for dopaminergic neuronal death in
- 6 paraquat-dosed mice?
- 7 A. I would just like to read it a little bit more if
- 8 Leould
- 9 Q. Sure, take your time.
- 10 A. Okay. Would you like to repeat the question?
- 11 Q. Of course, thank you.
- 12 The question -- the first question I would ask is
- 13 whether Dr. Smith wanted the research team to investigate
- 14 other reasons for doparninergic neuronal cell death in
- 15 paraquat-dosed mice? He was looking for other explanations?
- 16 A. He was suggesting that some methodological things
- 17 needed checking and that there were other hypotheses that
- 18 might explain the findings.
- 19 Q. Trying to think of other ways this could account for
- 20 the results?
- 21 A. Yes, to see -- yes.
- 22 Q. Okay. Right. That's what he was doing.
- 23 Because Syngenta had replicated the paraquat
- 24 neurotoxicity findings in the independent published
- 25 literature, correct?

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- A. Yes. 1
- 2 Q. And unless those findings could be attributed to a
- 3 cause other than paraquat, Syngenta had established a sound
- 4 scientific basis for the claims made in the public
- 5 literature that paraquat is neurotoxic; correct?
- A. That would be the implication of the replication and 7 confirmation.
- Q. And those claims were a threat to Syngenta's
- 9 aspirations for paraquat too, weren't they?
- 10 A. That would undoubtedly have led to discussions about
- 11 the -- paraquat and how it should be continued, I agree.
- Q. In fact, a threat to the bottom line of the company?
- 13 A. Well, that's a -- possibly what some people had in
- 14 mind. Certainly it wasn't, within the scientific community,
- 15 something that was prominent.
- 16 Q. Well, I mean, look at the last paragraph of the
- 17 conclusion. He says, second sentence, "HA."
- 18 Who is that? At that time, what is HA?
- 19 A. That would be "Health Assessment".
- 20 Q. "[Health Assessment] have a responsibility to create
- 21 the scientific understanding and there will be no intention
- 22 to slow down this understanding, although business risk will
- 23 need to be considered in the decision making process."
- 24 "Business risk" means selling paraquat, doesn't it?
- 25 A. It does.

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- 1 O. Right.
- A. But it did reinforce the point I was making about
- 3 creating scientific understanding, so I think it --
- Q. Right.
- 5 A. -- said the same as I did.
- Q. So HA at Syngenta had the responsibility to create
- 7 the scientific understanding regarding paraquat's
- 8 neurotoxicity?
- A. That's right. That was our accountability.
- 10 Q. The business threats which needed to be considered
- 11 in the decision-making process for creating the scientific
- 12 understanding of paraquat was that they could further prove
- 13 paraquat was neurotoxic. That was the business risk?
- 14 A. Of course.
- Q. Yes. There was a business risk that paraquat would 15
- 16 be banned in more countries if it were established by
- 17 additional tests; correct?
- A. I would put it differently. It was always our role, 18
- 19 in health assessment as it was called then, to -- to say if
- 20 there was a scientific basis for there being a risk
- 21 associated with the product, we would want that to be
- 22 understood by the business.
- Q. How many of these studies need to be repeated before
- 24 you're happy with the fact that this stuff causes brain
- 25 injury?

- A. That's a -- you can never put an exact number on
- 2 that. And don't forget, this was still very much at the
- 3 forefront of research which is why, um, Louise Marks
- 4 received that award, because, you know, this was new
- 5 technology. We were still understanding how it worked.
- Q. It was new technology with you. It wasn't new
- 7 technology around the world, was it?
- A. Even around the world, if we had -- conversations
- were made as an example when we spoke to Professor
- 10 Nyengaard, I think I mentioned his name yesterday, where
- 11 which said this is technology where we are all still
- 12 learning how to use it properly.
- 13 Q. Let me ask you: you knew that this automated
- 14 technology was already being used by the independent
- 15 researchers before this, right?
- 16 A. Yes.
- 17 Q. They had access to this; they were using it.
- 18 Do you know how long they had it in use before you
- 19 got it?
- A. I can't answer that question. 20
- 21 O. You don't know?
  - A. I don't know.
- Q. Let me ask you this. Do you think had you wanted to 23
- 24 get it at the time that these independent researchers got
- 25 it, you could have done exactly the same thing at CTL

22

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- 1 laboratory?
- A. Of course we could have done that, yes.
- Q. Sure. And hired the best researchers in the world
- A. We could. But there was no reason for us to do it,
- 6 because at that time there were no findings in the
- 7 literature. So things go in a -- in an order.
- 8 Q. Okay.
- And this technology, stereology, wasn't the first
- 10 technology the scientists could use to detect the death of
- 11 dopaminergic neurons in the substantia nigra, was it?
- 12 A. Well, there are some other pathological techniques
- 13 you could use, of course.
- 14 Q. Of course. And they long pre-dated stereology
- 15 techniques, didn't they?
- A. They are, but those pathological techniques are not 16
- 17 necessarily specific to the cells that you are -- that are
- 18 involved here.
- 19 Q. Okay.
- 20 THE VIDEOGRAPHER: In that case, we will go off
- 21 the record at 12:33.
- 22 (Break taken.)
- 23 THE VIDEOGRAPHER: In which case we are back on
- 24 the record as of 1:26.
- 25 You may continue.

34 (Pages 374 - 377)

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- 1 (Exhibit 31 marked for identification)
- 2 BY MR. TILLERY:
- 3 Q. Sir, we have handed you what's been marked as
- 4 plaintiff's exhibit number 31.
- 5 This is Bates range Syngenta 1981435. Do you see 6 that?
- 7 A. I do.
- 8 Q. Okay. And the top of this page says what?
- 9 A. "Thoughts On Options For Challenging The PQ and
- 10 C57Bl6 Mouse Model."
- 11 Q. And if you look on the second page, it's got
- 12 a reference to Nick Sturgess and Louise Marks,
- 13 6 December 2004. Do you see that?
- 14 A. I do.
- 15 Q. Okay. Are these notes Drs. Sturgess and Marks made
- 16 on December 6 regarding challenging the paraquat results
- 17 they had seen in the C57B6 mouse?
- 18 A. It suggests that this is a record of their
- 19 conversation.
- 20 Q. Okay. And these notes were made one day before the
- 21 meeting with Dr. Smith on the paraquat results in the C57
- 22 black mouse, weren't they?
- 23 A. They were made -- well, that meeting itself was on
- 24 3 December.
- 25 Q. On the 3rd?

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- 1 A. Yes. So the meeting minutes were dated 7 December,
- 2 but the title says that the meeting itself was on
- 3 3 December, if I have read this correctly.
- 4 Q. This meeting minutes says 6 December 2004. And you
- 5 read the other one as being --
- 6 A. I do, sir, yes.
- 7 Q. -- later?
- 8 A. Yes. Well, earlier --
- 9 Q. Earlier, right?
- 10 A. So the meeting here is earlier, yes.
- 11 Q. So Lewis Smith, from your prior review of the
- 12 meeting with Lewis Smith, was of the opinion that CTL should
- 13 aggressively challenge the results in the Marks studies; do
- 14 you agree?
- 15 A. And by "aggressively", it is to get on with it.
- 16 Q. Yes. He wanted them to aggressively challenge the
- 17 methodological issues with the --
- 18 A. That was one of the factors, yes.
- 19 Q. Okay. And did Lewis Smith ask Drs. Sturgess and
- 20 Marks, or both, to come up with ways to challenge the
- 21 paraquat mouse model in preparation for the briefing?
- 22 A. Which briefing are you talking about?
- 23 Q. Assuming you are right about the times, then it
- 24 wouldn't be a briefing: this would be a meeting that
- 25 occurred after they met with Dr. Smith, is that what you are

- 1 thinking
  - A. Well, I'm taking it to be that way. That they have
- 3 met with Dr. Smith, and maybe this was Dr. Sturgess and
- 4 Dr. Marks saying, "Well, where do we go from here?"
- 5 Q. So your meeting -- the first meeting with Dr. Smith,
- 6 and then this is notes of meetings that these two scientists
- 7 had a A and a second by Carlot and a second
- 7 had after they met with Dr. Smith, is that what you are
- 8 saying?
- 9 A. If the dates on these pieces of paper are accurate,
- 10 then you would conclude that.
- 1 Q. Okay. So if you look at the fifth bullet, it says
- 12 Drs. Sturgess and Marks note, on the fifth one down:
- "It has not been reported that C57Bl6J mice are more
- 14 sensitive to PQ induced toxicity than other strains of mice.
- 15 In fact, given that the animals have been obtained from
- 16 different suppliers including our own data, would suggest
- 17 that subtle differences between strains in their
- Transfer differences between strains
- 18 susceptibility to PQ are unlikely."
- 19 A. Correct, yes.
- 20 Q. So one of the things they were looking at was to try
- 21 to change the mice to come up with different results,
- 22 potentially?
- 23 A. One of the things they were looking at was asking
- 24 the question about is there strain sensitivity, which may be
- 25 important.

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- 1 Q. Okay. The next says:
- 2 "The only studies we are aware of involving
- 3 non-C57Bl6 mice with [paraquat] relate to studies
- 4 investigating PQ induced cell loss in alpha synuclein
- 5 over-expressing animals."
- 6 Correct?
- 7 A. Yes.
- 8 O. So Syngenta was aware of studies involving other
- 9 strains of mice where paraquat induced cell loss occurred,
- 10 right?
- 11 A. Yes.
- 12 O. And this was neuronal cell loss, correct?
- 13 A. Yes, that would be correct.
- 14 Q. And this paraquat induced neuronal cell loss
- 15 occurred in mice who were over-expressing alpha synuclein?
- 16 A. That's what the Swiss Webster was describing, yes.
- 17 Q. And over-expressing alpha synuclein means the same
- 18 thing as upregulation of alpha synuclein, would you agree?
- 19 A. It is expressing more of the protein, yes.
- 20 Q. You are aware that upregulation of alpha synuclein
- 21 is part of the Lewy body pathology in human Parkinson's
- 22 disease patients, correct?
- 23 A. Yes.
- 24 Q. Syngenta was fully aware of that fact in 2004 --
- 25 A. Yes.

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1 Q would you agree?	1 A. Yes.
2 When was that first known to be true?	2 Q. And then it cites another name you are going to have
3 A. I can't give you a date as to when that was first	3 to pronounce for me.
4 known.	4 A. Chanyachukul.
5 Q. Okay. The next bullet point says:	5 Q. We probably should spell that for the reporter,
6 "If we were concerned that the pigmented mouse was	6 please?
7 more sensitive to [paraquat] than other strains, one option	7 A. C-H-A-N-Y-A-C-H-U-K-U-L.
8 would be to dose 10mg/kg [of paraquat] to variety of	8 Q. " (work in part carried out at University of
9 different mouse strains including BALB/c, Swiss Webster and	9 Nottingham) investigated the effect of acute [paraquat]
10 CFI, and observe the extent of the neuronal cell loss."	10 exposure to Wistar rats, demonstrating neurochemical and
11 Right?	11 behavioural deficits, which were attenuated by the
12 A. Yes.	12 administration of L-valine."
13 Q. What are those?	13 Q. What is L-valine?
14 A. They are different strains of mice.	14 A. It is an amino acid.
15 Q. Okay. Then it says, "however" it goes on to say:	15 Q. "Also neurochemical, pathological and behavioural
16 "However, this would generate a PRF since no one	16 changes have been reported following intracerebral injectio
17 else has dosed [paraquat] to these strains."	17 of [paraquat] into rats."
18 A. That is absolutely correct.	18 Correct?
19 Q. And a PRF there means what?	19 A. Yes.
20 A. As we were discussing this morning, the potentially	20 Q. Do you agree with that statement?
21 referable findings under 6(a)(2).	21 A. Yes, those are published papers.
22 Q. So they didn't do that, because had they made the	22 Q. Okay. So Syngenta knew the same types of results
23 finding they would have had to report it?	23 would occur in rats as well, wouldn't it?
24 A. That doesn't say that. It says:	24 A. There was clearly a potential for that to be the
25 "However, this would generate a PRF"	25 case, yes.
Page 38	3 Page 385
1 Q. And do you know if they ended up doing that study	
2 A. I don't believe that they did.	2 "The options for challenging the [paraquat] mouse
3 Q. Okay. Do you think that the reason they didn't do	3 model would appear to be somewhat limited."
4 it is because it might generate a PRF?	4 Okay?
5 A. I don't know what the full reasoning was. It may	5 A. That's what it says.
6 have been taken into consideration but I wasn't involved it	1 6 Q. Dr. Sturgess and Dr. Marks considered the options to
7 these discussions.	7 be challenging strike that.
8 Q. Okay. Do you agree with their conclusion that there	8 Dr. Sturgess and Dr. Marks considered that the
9 was not strain sensitivity?	9 options to challenging the methodology of the paraquat mouse
10 A. I it depends whether you are looking at that	10 model appeared very limited, didn't they?
11 question as it was seen at that time or with the benefit of	11 A. Yes. And I think what was meant there is
12 hindsight, because with the benefit of hindsight more	12 challenging its relevance to human Parkinson's disease
13 research has shown that there is perhaps some strain	13 potential from paraquat.
14 difference in the sensitivity.	14 Q. What options for challenging the paraquat mouse
15 Q. Statistically significant strain sensitivity?	15 model did they provide?
16 A. That is on the borderline, I have to say.	16 A. Well, what was being discussed at the time, and
17 Q. Okay. Are PRFs something that Syngenta generally	17 certainly was discussed subsequently, was whether there were
18 wants to avoid?	18 more relevant models. The rat was discussed frequently
19 A. We don't avoid them if it actually is doing the	19 as as another option. Indeed we did go on to do a rat
20 right scientific study.	20 study ourselves.
21 Q. Okay. The next page flip this over fifth	21 Q. Well, didn't they say in the same bullet point
	22 there, they wrote:
22 bullet down says:	and there, they threte.
22 bullet down says: 23 "The reported PQ induced nigrostriatal toxicity is	23 "The best way of challenging the model would be

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- 1 So human relevance is much more going to be directed to how
- 2 you administer the compound, indeed.
- 3 Q. They are not challenges to the methodology of the
- 4 model, so much as changing certain aspects of the model?
- 5 A. Yes, it is back to what we discussed this morning:
- 6 the relevance of your model is always an important
- 7 consideration.
- 8 Q. What is NOEL?
- 9 A. A no effect level.
- 10 Q. What does that mean?
- 11 A. It is the dose that when you do a toxicology study
- 12 and you use more than one dose level -- so in other words
- 13 you feed or inject different concentrations of a chemical to
- 14 your animals -- it is the dose at which you saw no effects.
- 15 O. And the very next bullet point says:
- 16 "I still believe our best defence is to conduct an
- 17 exposure based risk assessment based upon a dietary/dermal
- 18 NOEL using the mouse model of neuronal cell loss."
- 19 Correct?
- 20 A. Correct.
- 21 Q. Best defense?
- 22 A. And that -- if I may, again I would say that that
- 23 was being positioned at the time on the assumption that the
- 24 effect is real. It is reproducible. You know, it would be
- 25 perhaps not easy to deny it with the information that was
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- 1 available at that time.
- 2 But is that model that's being used relevant to
- 3 humans because it is an injection model? And actually, even
- 4 if you do see an effect at a high dose, if you can find
- 5 a dose which is still orders of magnitude above anything
- 6 a human would be exposed to, then that would say that
- 7 that -- your concern would be reduced.
- 8 Q. I move to strike the answer as unresponsive.
- 9 So it says, my question was:
- 10 "I" ... believe our best defence is to conduct an
- 11 exposure based risk assessment based upon a dietary/dermal
- 12 NOEL using the mouse model of neuronal cell loss."
- Doesn't it?
- 14 A. Yes.
- 15 Q. And it says the word "defence", that was the
- 16 question I had. "Defence", do you see that?
- 17 A. Yes.
- 18 Q. And defense is defense against the fact that the
- 19 study showed damage to the substantia nigra and to the
- 20 production of dopamine by the dopaminergic neurons?
- 21 A. No, I disagree, sir. The defense at that time, I am
- 22 sure, was not to say we are trying to discredit the
- 23 possibility that you see the neuronal cell loss in the
- 24 conditions that we have been talking about; but actually to
- 25 say -- to, if you wish, discredit its relevance to human

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- 1 risk assessment. And that's why they used "exposure based
- 2 risk assessment" as a shorthand way of describing what
- 3 I just said to you.
- 4 Q. Well, aren't they really saying that Syngenta should
- 5 accept the results of the Marks studies and the findings of
- 6 independent researchers that paraquat causes neuronal cell
- 7 loss? Isn't that what they were suggesting?
- 8 A. I don't dispute that and actually agree with it.
- 9 Q. And you agree with it too?
- 10 A. Indeed. And as I said to you this morning, when we
- 11 continued our work and published the Breckenridge paper,
- 12 that was a position we were first in. We again replicated
- 13 that finding.
- 14 Q. And when you found that -- in the Breckenridge
- 15 paper, you found that it caused neuronal cell loss in the
- 16 substantia nigra, didn't you?
- 17 A. In one study at one dose level.
- 18 Q. In one study and one dose level in one type of rat,
- 19 I apologize --
- 20 A. Mouse.
- 21 O. A rat, right?
- 22 A. Mouse.
- 23 Q. Mouse, sorry, excuse me. In one type of mouse you
- 24 found it and it was attributable to paraquat exposure?
- 25 A. It appeared to be at the time. But then, as that

- 1 Breckenridge paper says, we did many more experiments as
- 2 part of that publication and in none of the others were we
- 3 able to replicate it nor were we able to see any evidence
- 4 that you would -- that other pathologists who we were now
- 5 consulting with said you should see if that was a genuine
- 6 death of cells. Because pathologists were telling us that
- 7 if cells were dying other things would happen around them.
- 8 Q. I just wanted to clarify one thing. My question was
- 9 really this -- I move to strike your answer as unresponsive.
- 10 My question was simply this: did you find damage in
- 11 that single mouse study that was reported there as a result
- 12 of paraquat exposure in the mouse?
- 13 A. Yes. In that single study, yes.
- 14 Q. Okay. And that was reported, correct?
- 15 A. As part of our publication.
- 16 Q. Okay, all right.
- Would you agree that instead of challenging the
- 18 results, Syngenta should use them as the basis for a human
- 19 health risk assessment of paraquat?
- 20 A. Now that we have done many more experiments,
- 21 including those we have just been referring to in
- 22 neurotoxicology, I believe quite strongly that our position
- 23 is that the replicability has not been established, so
- 24 I don't think it would be appropriate to do that.
- 25 Q. Okay.

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1	You see the next section says, bottom of the second	1	Page 392  MR. TILLERY: Yes, you do whatever you need.
1	page:	2	
3	"Potential experimental follow-ups suggested by		BY MR. TILLERY:
1	Lewis Smith include:	4	Q. The next exhibit is number 32, correct, sir?
5	"Can the changes observed be accounted for by tissue	5	
1	shrinkage owing to the diuretic effect of PQ? Suggests	6	
1	dosing with a diuretic to look for changes in cell	7	A. This is another study in the series of studies
1	counts."		conducted with the title "Paraquat Dichloride Hydrate",
9	Do you see that?	l	looking at, in this case, the time course and reversibility
10	A. Yes, yes.	10	
11	Q. Okay. And it says:		the administration of paraquat.
12	"Are the effects observed with the mouse model	12	
1	irreversible? Conduct a ip study"	13	
14	What does "ip" mean?	14	
15	A. Intra-peritoneal.	15	
16	Q. Intra-peritoneal study:	16	·
17	" at 3 x 10 mg/kg, and assess the extent of	17	dates were February 18, 2005, and the termination date
18	neuronal cell loss 7, 14, 28, and 90 days post final dose."	18	was September 1, 2005; right?
19	A. Yes.	19	A. Which I think it must be misprint no, it may not
20	Q. "This will confirm the loss detected so far is	20	be. I beg your pardon, forgive me. Yes, that is probably
21	irreversible."	21	correct, yes. Yes.
22	Do you see that?	22	Q. Okay. This study was designed to investigate the
23	A. I do.	23	time course and potential reversibility
24	Q. Okay. And those were suggested by Lewis Smith,	24	A. Yes.
25	apparently, from this report	25	Q of the loss of dopaminergic neurons in the
	Page 391		Page 393
1	A. From what this says, yes.	1	substantia nigra after three months of dosing; right?
2	Q. Okay.	2	A. Yes.
3	He suggested he being Lewis Smith suggested	3	Q. And using paraquat?
4	dosing mice with a diuretic to determine if the loss of	4	A. Well, if I may, I believe I would just like
5	neuronal cell loss could be attributed to the diuretic	5	a little time to double-check this.
6	effect of paraquat on tissue samples; right?	6	Q. Go ahead and take your time.
7	A. Yes.	7	A. Okay.
8	Q. That was one of the theories that they had for why	8	Q. If you look at 2793 under "Purpose"?
9	these results could have come back the way they did?	9	A. Yes. So I think I would just need to, if I've heard
10	A. Indeed, and it was	10	you correctly, slightly qualify. So paraquat was given as
11	Q. It's a diuretic?	11	three weekly injections but then it was not continued to be
12	A. It was included in the notes of that other meeting	12	administered. I believe the animals were then rested, if
13	we were talking about.	13	you like, and sacrificed at different time points.
14	Q. Right. And Lewis Smith has also suggested	14	
	conducting a paraquat mouse study with animal sacrifice at		at page 2793 by Dr. Marks was:
	7, 14, 28 and 90 days to confirm whether paraquat induced	16	,
1	neuronal cell loss was irreversible, whether it was		course and potential reversibility of nigrostriatal effects
1	permanent?		following 3 weekly injections of 10 mg/kg paraquat
19	A. Yes. And an experiment of that sort was actually	U	dichloride by assessing dopaminergic cell loss in the
	subsequently done.	20	
21	Q. It was done, wasn't it?	21	·
22	A. Yes.		dose of paraquat."
23	Q. Okay.	23	-
24	MR. NARESH: Steve, just as housekeeping thing,	24	•
25	can I move some of these	25	A. That's what I was qualifying, yes.

Page 394 Page 396 Q. In the previous studies, Dr. Marks had observed loss Q. The third Syngenta study to repeat the results of 2 of dopaminergic neurons in mice dosed with paraquat and 2 independent researchers' finding that paraquat is 3 sacrificed seven days later, correct? 3 neurotoxic? A. Yes. A. As specifically defined by the loss of dopaminergic Q. In this study she observed loss of dopaminergic 5 cells. There were other findings that were not seen. Like 6 neurons dosed with paraquat, didn't she? 6 the loss of dopamine has not been seen consistently in the Q. And the loss was statistically significant too, Q. But in the limited context in which I asked the 8 9 wasn't it? 9 question, to repeat the findings means replicate the 10 A. Yes. 10 findings? O. The study also measured the loss of dopaminergic A. In that area, that is correct --11 12 neurons 28 and 90 days after the last dose was given? 12 Q. So this is the third one in a row to replicate the 13 A. Yes. 13 work by independent researchers? Q. And the degree of dopaminergic neuron loss at 28 and 14 14 A. Can you just say that again? 15 90 days was similar to the loss at 7 days, wasn't it? 15 Q. By independent researchers? 16 A. That is correct. 16 A. Yes. 17 Q. In other words, the animals did not recover 17 Q. And it also means, for these purposes, that these 18 dopaminergic neuron function after a passage of 28 or 90 18 studies reproduce the findings of the independent 19 researchers? 19 days? 20 A. That's right. Using that measurement they stayed 20 A. They do. 21 the same, correct. Q. If you look at 2807, the first full paragraph, sir, Q. The loss of dopaminergic neuron function was 22 tell me when you are there. 23 permanent throughout the 90 days of the study? 23 Dr. Marks says: 24 24 "Our data would appear to be supportive of the A. That's right. 25 Q. It was not reversible, is what you found? 25 hypothesis that a sensitive subpopulation of dopaminergic Page 395 Page 397 1 neurons may exist which are vulnerable to paraquat induced A. Within that timescale, it did not reverse. 2 Q. The last paragraph, okay - and that is 2792 --2 toxicity." 3 Do you see that? 3 Dr. Marks says: "These results support the findings of two previous A. I do. 5 CTL studies XM7258 and XM7371 ... and demonstrate that 5 Q. Do you agree with that? A. That's what it says. 6 paraquat, when administered to C57Bl6J mice ... would appear 6 Q. Okay. Did Syngenta publish the results of this 7 to be capable of inducing nigral but not striatal toxicity." 7 Right? 8 study in any journal? 9 A. I'm not aware that we did. 9 A. Yes. 10 Q. And nigral toxicity is a form of neurotoxicity Q. Did Syngenta publish this anywhere, or post it, or 11 present it, or talk about it in any scientific symposium? 11 again? A. I'm not sure that we did that. A. Nigral is meant to be the substantia nigra. 13 Q. Okay. Are you aware of anybody ever saying they Q. The substantia nigra, yes, okay. The studies 14 suggest -- support -- the findings that paraquat is 14 did? 15 neurotoxic, don't they? 15 A. I'm not aware. Q. Did Syngenta ever disclose this study to any 16 16 A. They support that, that finding yes. 17 regulatory authority in the world, including the Q. Yes. This is the third Syngenta CTL study that 18 found that paraquat causes loss of dopaminergic neurons; 18 United States Environmental Protection Agency? 19 A. This study was the subject of a disclosure to the 19 correct? 20 EPA --20 A. Correct. 21 Q. And the third Syngenta CTL study where Dr. Marks 21 Q. You did report it, didn't you? 22 22 found the loss of dopaminergic neurons were comparable to A. We did. 23 Q. Okay. When did you file that report? 23 the loss reported by independent researchers in published A. I don't have the date to hand, so I would need to 24 scientific literature; correct?

25 check the record of that date.

A. Correct.

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1 Q. Okay. Why did you report this one?	1 A. They were you were telling me that they had been			
2 A. Because the conditions some of the conditions of	2 reported in some way in that time, yes. I have not seen			
3 the study were different to what had been used by other	3 that.			
4 researchers. So it fulfilled some of those detailed	4 Q. Okay, all right.			
5 criteria that we were talking about this morning under	5 (Exhibit 33 marked for identification)			
6 6(a)(2).	6 BY MR. TILLERY:			
7 Q. Do you not know when you filed it with US EPA?	7 Q. Do you have exhibit 33 before you, sir?			
8 A. I can't give you the date off the top of my head.	8 A. I do.			
9 Q. It certainly wasn't when the study was done, was it?	9 Q. Okay. Is this a report to the United States EPA?			
10 A. It was obviously after the study had been	10 A. Yes, this is a letter to the US EPA, yes.			
11 interpreted.	11 Q. Okay. Let me ask you, wouldn't the evidence for the			
12 Q. It was years before it was reported	12 neurotoxic effect of paraquat be stronger if all three of			
13 A. It was before it was reported, yes. Yes.	13 the studies done by Dr. Marks were reported?			
14 Q. All right. You reported it as an adverse finding?	14 A. I think there's there's certainly a reasonable			
15 A. Yes, as defined by 6(a)(2), yes. Yes, where	15 thing to to propose. And as I said, the approach			
16 adverse	16 committee suggested that was one possibility.			
17 Q. Adverse effect?	17 Q. And that was one of the reasons you told them,			
18 A. Adverse effect seen in because it was seen with	18 wasn't it?			
19 different experimental conditions.	19 A. It was, yes.			
Q. Why was it considered to be an adverse effect?	20 Q. Yes. Now, if you take a look at this document,			
21 A. Because we had, as we have been discussing,	21 number 33, what's the document date?			
22 concluded that we now appeared to have a replicable finding	g 22 A. February 24, 2006.			
23 showing loss of dopaminergic neurons which could be	23 Q. Syngenta made this disclosure under FIFRA 6(a)(2),			
24 interpreted as neurotoxicity. And the reason that it was	24 correct?			
25 reported not reported before, as we said, is because up	25 A. Correct.			
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1 until that point that was not a new finding. Now the	1 Q. The only study results reported in this letter were			
2 conditions of the experiment had changed which meant that it	2 XM7480; is that correct?			
3 was appropriate to report it.	3 A. That is correct, yes.			
4 Q. So when you made this report, why didn't you include	4 Q. The study itself, which referenced the two earlier			
5 the other two prior reports at that time?	5 positive studies with similar results, was not sent to them,			
6 A. When I was certainly involved in you remember	6 was it?			
7 I talked about the approach, the PRF approach committee this	7 A. Not in this in this letter, certainly.			
8 morning? So we discussed that. And in the record of that	8 Q. Do you know if the study itself has ever been sent			
9 meeting, it very clearly shows that we discussed the	9 to them?			
10 totality of those experiments not just this one in	10 A. I would need to check that. I don't know for sure.			
11 isolation.	11 Q. Okay. Would it be your recommendation to include			
12 And we proposed if my memory serves me right but	12 the entire study?			
13 it would be useful to check the record to the US PRF	13 A. As part of the normal process, it wouldn't			
14 committee that that bigger picture should be — should be	14 necessarily be the case. And sometimes studies of this sort			
15 included.	15 are sent to them for other purposes, but I can't comment			
16 Q. All of them?	16 about this specific.			
17 A. That was what I believe the record of our	17 Q. In Dr. Marks' conclusions, at the "Results" section			
18 communications	18 of study XM7480, she says the study results:			
19 Q. So the PRF committee recommended to the US people	19 " support the findings of two previous CTL			
20 that they report all of them? 21 A. That they could consider that, yes.	20 studies XM7258 and XM7371 and demonstrate that paraquat, 21 when administered to C57BL6J mice would appear to be			
	22 capable of inducing nigral but not striatal toxicity."			
23 A. I would have to check the record of that. 24 O. Well, you know that the earlier two studies were	23 That's what she says.			
	24 A. Where are you reading from?			
25 never reported until December 13, 2019; correct?	25 Q. That would be from the document you are looking at,			

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Page 402	Page 404	
1 the study	1 mouse was comparable to the findings reported in the	
2 A. Which page?	2 published literature, did you?	
3 Q. 492792?	3 A. Indeed. Because the 6(a)(2) regulations did not	
4 A. Okay.	4 require us to do so, because they were the same conditions	
5 Q. I will read that question over if you want it,	5 and therefore the finding was not new.	
6 because you were looking.	6 Q. Let me ask you let me ask you, would that be the	
7 MR. NARESH: Could you, please?	7 prudent thing to do and was that the reason you recommended	
8 A. Yes, I'm there, thank you.	8 that they do it?	
9 BY MR. TILLERY:	9 A. The reason that I recommended that they should	
Q. All right. Dr. Marks concluded in the results	10 consider including that in the letter was that it would	
11 section of that study that you are looking at that is	11 allow them to understand the totality of the program that we	
2 7480 you are looking at, right?	12 had done, which I didn't think was something which was	
3 A. I'm now looking at	13 unreasonable.	
4 Q. 1 am sorry, the study number?	14 Q. Would you think it would be unreasonable to wait 16	
5 A. Yes, the study number is	15 and a half years to do that?	
6 Q. 7480?	16 A. I can't comment on that. Certainly that was	
7 A. 7480, yes.	17 Q. You don't want to comment on that?	
8 Q. She stated in the study number and 792 is the	18 A. Well, I'm not able to comment on that, because I was	
9 page?	19 not involved in that decision process.	
20 A. Okay.	20 Q. Okay. Okay. Who was involved in that decision	
Q. That the results:	21 process?	
" support the findings of two previous CTL	22 A. I don't know.	
23 studies XM7258 and XM7371 and demonstrate that paraquat,	23 Q. Okay. You did not report to the US EPA in	
24 when administered to C57BL6J mice would appear to be	24 this February 24, 2006 letter that three different studies	
25 capable of inducing nigral but not striatal toxicity."	25 at CTL had replicated neuronal cell loss findings with	
Page 403	Page 405	
1 Right?	1 paraquat in the C57 black mouse, did you?	
2 A. That's right.	2 A. We did not.	
3 Q. Okay. That conclusion was not reported, was it?	3 Q. Who was on the US PRF committee at that time, or was	
4 A. It was not reported	4 there one? Was the PRF committee here?	
5 Q. To the US	5 A. The US PRF committee, which is who would be	
6 A to the US EPA.	6 responsible for writing this letter, would have included	
7 Q. Is that right?	7 a number of people whose names I wouldn't be able to say at	
8 A. No, it was not in its entirety. No, that's right.	8 this point in time who they exactly were.	
9 Q. Dr. Marks concluded about 7480, that:	9 Q. Would you think that would be Montague Dixon?	
0 "Our data would appear to be supportive of the	10 A. It may not have been Monty Dixon in 2006 but I would	
1 hypothesis that a sensitive subpopulation of dopaminergic	11 need to check.	
2 neurons may exist which are vulnerable to paraquat induced	12 Q. Would it also have been Janice McFarland?	
3 toxicity."	13 A. It could have been Janice McFarland. She was the	
4 She said that as well?	14 head of regulatory in North America at that time, but	
5 A. Yes.	15 I don't know.	
6 Q. Okay. But that report and that conclusion was not	16 Q. What did you send along, after the committee met	
7 contained within the February 24, 2006 report to the US EPA,	17 here and made their recommendations about these all of	
8 was it?	18 these studies being reported - did you send along any	
9 A. It was not.	19 specific writings or papers to the committee?	
Q. You did not report in this letter that paraquat was	20 A. Yes. As always we completed a proforma document.	
neurotoxic in three separate studies, did you?	21 Q. And sent it to them?	
2 A. We did not in this letter, no.	22 A. And sent it to them.	
	23 Q. And made that recommendation that they report the	
<ol> <li>Q. You did not report in this letter that you had</li> </ol>	23 Q. And made that recommendation that they report the	
4 conducted three studies with paraquat where the loss of	24 studies?	

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- 1 (Exhibit 34 marked for identification)
- 2 BY MR. TILLERY:
- 3 Q. We've handed you what's been marked as plaintiff's
- 4 exhibit 34. I will give you some time to look it over, sir.
- A. Okav.
- 6 Q. Tell me when you are ready to talk about the
- 7 document.
- 8 A. Okay.
- 9 Q. Okay. What is this, please?
- 10 A. This is the fifth in the series of reports -- of
- 11 studies conducted by Dr. Louise Marks. This one was looking
- 12 at the effects on -- in the nigrostriatal region, including
- 13 the substantia nigra, of a range of other compounds to the
- 14 same strain of mice. And these were compounds which were
- 15 toxic and -- were toxic compounds and they were given at
- 16 high doses as one line of research that was suggested in
- 17 that meeting that we were looking at earlier in this
- 18 discussion.
- 19 Q. Let me see if I can state this as a layperson would
- 20 in the best understanding I have of the study.
- 21 After the first couple of reports came back
- 22 positive, Dr. Smith suggested that perhaps it was the study
- 23 itself, the injection of the paraquat, that caused toxicity
- 24 throughout the body; that the toxicity itself could have
- 25 caused the results of seeing damaged or dead dopaminergic
  - Page 407
- 1 neurons, and that could account for this. That could be the
- 2 explanation why not only Dr. Marks but the other folks who
- 3 were publishing this in the sort of independent
- 4 peer-reviewed literature, correct?
- 5 A. That was the hypothesis.
- 6 Q. And let's figure this out about by getting away from
- 7 paraquat, and let's use other things in a toxic injection
- 8 format?
- 9 A. That's right.
- 10 Q. And then if they create toxicity sufficient to
- 11 actually kill the animal, or up to that point or close
- 12 to it, then we can see if the injection of them could result
- 13 in the same thing; correct?
- 14 A. That is correct.
- 15 Q. Have I said that accurately and fairly?
- 16 A. You have indeed, yes.
- 17 Q. All right. What were the results?
- 18 A. The results were that none of these compounds
- 19 induced the same effect on TH positive cells, the
- 20 dopaminergic neurons in the substantia nigra.
- 21 Q. So I'm looking at her discussion section. In the
- 22 discussion section on 939, she says:
- 23 "The aim of the present study was to determine
- 24 whether the degree of [dopaminergic] cell loss observed
- 25 following administration of [paraquat] to C57 black mice

- 1 could be attributed to a 'general toxicity' associated with
  - 2 dosing any compound at a high enough dose."
  - 3 Correct?
  - 4 A. That is correct.
  - 5 Q. All right. And her results were that it didn't.
  - 6 Now what did that mean for you as a scientist?
  - 7 A. It meant that we had --
  - 8 Q. Excuse me, I don't mean to interrupt you,
  - 9 I apologize to you. But when I asked that, I didn't say it 10 right.
  - I meant: what did it mean to you in terms of the
  - 12 reliability of the prior studies in terms of the toxicity
  - 13 being the cause, if you could explain?
  - 14 A. Well, it made it more likely that what we had seen
  - 15 with paraquat could be genuinely due to the -- to paraquat.
  - 16 Q. Right. Instead of just the overall toxicity to the
  - 17 body of this mouse?
  - 18 A. Yes, the stress -- in other words, putting it in
  - 19 a different way, the stress that you can cause in an animal
  - 20 if you are dosing anything at substantially high doses.
  - 21 Q. Yes. All right. And what you "had seen with
  - 22 paraquat", meaning the loss of dopaminergic neurons?
  - 23 A. Yes.
  - 24 Q. Okay
  - 25 (Exhibit 35 marked for identification)

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#### 1 BY MR. TILLERY:

- Q. Please take a look at exhibit number 35.
- 3 After you are familiar, I am going to ask you couple
- 4 of questions about it. If you go specifically to page 3432?
- 5 This is a presentation that Dr. Marks gave, isn't
- 6 it?
  - A. Yes, I believe that is the case.
- 8 Q. All right. If you look at 3432, she's discussing
- 9 the study that you just commented on, isn't she?
- 10 A. She is.
- 11 Q. And she concludes, in reference to that study, that:
- 12 "The data would suggest that [paraquat] induced cell
- 13 loss in the [substantia nigra] is not likely to be
- 14 attributable to a 'general toxicity' associated with dosing
- 15 a compound at high doses rather it suggests a selective
- 16 effect on vulnerable dopaminergic cells within the
- to effect on vamerable dopammergic cens within
- 17 [substantia nigra]."
- 18 Is that right?
- 19 A. That's right.
- 20 Q. You agree with that?
- 21 A. That was not an unreasonable conclusion at the time.
- 22 Q. What is the significance scientifically of the
- 23 effect of paraquat being selective?
- 24 A. Well, if it is selective to dopaminergic cells
- 25 within that region, then clearly that could lead to

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Page 410 Page 412 1 emphasizing a possible concern for Parkinson's disease. 2 Q. Please turn to the last slide. That would be --3 I think that is at 754. 3 (Exhibit 36 marked for identification) 4 A. Okay. A. Yes. 5 BY MR. TILLERY: 5 Q. Is that right? Q. This is a presentation or a summary of 6 A. That is correct. 7 a presentation at a meeting in Atlanta on February 13 and 7 Q. And that's a summary slide: paraquat and Parkinson's 8 14, 2008; correct? 8 disease literature findings; right? A. It was. A. That is correct. 10 Q. The first bullet says: 10 Q. This would have been a Syngenta meeting? 11 11 A. Yes. "Reports in the literature suggest that in a certain 12 Q. And it is "Paraquat & Parkinson's disease" as the 12 strain of pigmented mouse (C57Bl6), multiple i.p. [again 13 subject matter of the meeting? 13 that is intraperitoneal] injections of paraquat at 14 relatively high doses can result in a 30% loss of 14 A. Yes. 15 Q. Okay. And this would be an internal presentation 15 dopaminergic neurones in the substantia nigra." 16 about Syngenta's research into paraquat and Parkinson's Okay? 16 17 disease, right? 17 A. Yes. A. It was. But we were -- I was aware -- I was 18 Q. And then it says: 19 actually at this meeting, I believe. 19 "These findings have been replicated in Syngenta Q. Okay. 20 studies." A. And I believe also we did have people from outside 21 Is that what it says? 21 22 A. Yes, it does. 22 Syngenta in that meeting. Q. Okay. This meeting was held over two years after 23 Q. Then it says: 24 Dr. Marks had completed the paraquat mouse studies --24 "There are also claims that the effect can be 25 observed in another rodent species ... however Syngenta 25 A. Yes. Page 413 Page 411 1 Q. -- as you know. 1 studies have failed to repeat this finding." Did Dr. Sturgess give this presentation? 2 Okay? 2 A. Yes. And we have not talked about those studies but A. I don't recall who gave this presentation, whether 4 it was one person or more than one person. 4 that is true: in the Louise Marks period, we also looked in 5 the rat as well as the mouse, and we did not see such Q. Do you know who was in attendance? A. I -- there would be a number of people, including 7 Q. And then the final bullet says: 7 myself, Dr. Sturgess and Dr. Smith, and a number of other "We should be aware that there may be NHP data with 8 people. Q. And other of the people from Syngenta Crop 9 paraquat emerging in the near future that may replicate the 10 findings already reported in rodent species -- potential 10 Protection? A. I couldn't give you an exact list. I would need 11 relevance to humans." 12 All right? 12 check that. A. Yes. Q. If you turn to 742, please, at the top of this 13 14 particular slide it says: 14 Q. All right. 15 "Syngenta CTL Investigative Studies." A. I don't know if you will allow me to just restate 16 that I believe this meeting had some external people to 16 Right? 17 A. It does. 17 Syngenta -- we should check the record -- but I think if 18 that is the case, it shows we were being very transparent 18 Q. The first paragraph says: 19 about those findings with those people. 19 "In vivo studies -- replicating studies conducted in 20 the C57Bl6 mouse model with paraquat to validate the Q. To follow up on that point, meaning being very 21 literature claims." 21 transparent to the public? 22 Correct? 22 A. To other researchers engaged --23 23 A. Correct. Q. Which would be the public? 24 O. And that refers to the studies Dr. Marks conducted A. That's right, yes. Q. And transparency, to follow up on your point which 25 with paraquat in the mouse at CTL, correct?

ie one on

- 1 I allowed you to make to clarify, would mean that you wanted
- 2 to set the record straight and be honest and straightforward
- 3 with everybody?
- 4 A. We wanted to make sure that the scientific community
- 5 and, as you put it --
- 6 Q. And the public?
- 7 A. -- and the public knew that at that point in time we
- 8 had come to a conclusion that the findings appeared to be
- 9 replicable.
- 10 Q. Right. They were replicable?
- 11 A. At that time.
- 12 Q. At that point. And that was 2008, right?
- 13 A. Yes
- 14 Q. Was Dr. Cory-Slechta there?
- 15 A. That's what I was wanting to check, exactly who the
- 16 attendees were. We had a number of meetings and I can't
- 17 remember who was present at which.
- 18 (Exhibit 37 marked for identification)
- 19 BY MR. TILLERY:
- 20 Q. The next document is included in such a voluminous
- 21 format because only it includes one or two pages that are
- 22 relevant --
- 23 A. Okay.
- 24 Q. -- but I didn't want to include a bunch of --
- 25 I didn't want to include just a page or two of the document.

- 1 14th --
  - 2 A. Yes
  - Q. -- of 2008 was a summary of a meeting where you had

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- 4 invited people and you had been transparent. That's what
- 5 you told me.
- 6 A. To those people, yes.
- 7 Q. All right. Now I want to direct your attention to
- 8 this exhibit, which is marked as exhibit 37, okay? And
- 9 I want you to tell me if this is a clip from the Paraquat
- 10 Information Center, and what appears to be a --
- 11 A. Yes.
- 12 Q. -- page from the internet, right?
- 13 A. It is. It is from, as it says at the bottom,
- 14 from paraquat.com, yes.
- 15 Q. What is paraquat.com?
- 16 A. It's information resource which is provided for
- 17 customers and for the public generally to understand more
- 18 about the benefits, the use -- the appropriate use -- and
- 19 some aspects of the safety of paraquat.
- 20 Q. And, actually, it tells them about farming uses,
- 21 explains things, gives them references to application, to
- 22 its effectiveness, all kinds of information?
- 23 A. It does.
- Q. And it's designed for use by the consuming public?
  - A. Indeed. And especially the farmer and grower who

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- I So very little relevance to virtually all of it, but
- 2 I want to direct your attention to a particular section and
- 3 follow up to a statement that you just made on the record,
- 4 okay
- 5 If you would go to -- and feel free to refresh
- 6 yourself about any of this as you wish, it just wasn't
- 7 contained within this document -- but what I'm going to
- 8 direct your attention to is 86601.
- 9 Please take a look at that document. Again it is
- 10 86601.
- 11 A. Okay, got it. And, sorry, that was the one that you
- 12 printed out separately but --
- 13 Q. Go ahead --
- 14 A. -- thank you for --
- 15 Q. Go ahead and read that. Does it say "Paraquat
- 16 Information Center" at the top?
- 17 A. Yes, it does.
- 18 Q. All right. And when you are finished, you let me
- 19 know, please. Okay?
- 20 A. Okay.
- 21 Q. You had just clarified the record a minute ago and
- 22 said that a document that I had put in the record mark and
- 23 dated February 8, 2008, right?
- 24 A. Yes.
- 25 Q. Was the summary of a presentation -- February 13 and 25

- 1 may be using it.
- Q. The farmer and grower. The person like Freeman
- 3 Schmidt in this case, or Mr. Hoffmann or Mr. Mills or any of
- 4 these people who could -- who could, either by themselves or
- 5 with help, get on the internet and ask questions or do
- 6 research, correct?
- 7 A. Of course.
- 8 Q. Now look at this. And this is maintained by
- 9 Syngenta, correct?
- 10 A. It is certainly -- the content is certainly
- 11 maintained by Syngenta.
- 12 Q. Right. Whether it is housed by a third party, the
- 13 content is supplied by Syngenta?
- 14 A. Yes.
- 15 Q. And then it contains paraguat frequently asked
- 16 questions, doesn't it?
- 17 A. It does.
- 18 Q. And a frequently asked question is a question that
- 19 you would expect the people out there who buy your product
- 20 to perhaps want answered about that product?
- 21 A. Yes.
- 22 Q. One of those might be whether it causes me to get
- 23 sick?
- 24 A. Yes.
- Q. Whether it causes me to get Parkinson's disease?

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- 1 A. Yes
- 2 Q. Because there had been some rumblings, right?
- 3 A. There had.
- 4 Q. All right. Let's take a look at what Syngenta had
- 5 on its website three weeks before that meeting that you just
- 6 told me they were so transparent at, okay?
- 7 Let's look at this. First question:
- 8 "Is paraquat safe to farmers and their families?"
- 9 Next question:
- 10 "What is the safety of paraquat to farmers when used
- 11 long-term?
- "Has paraquat been found to cause cancer ...?
- "Does paraquat cause Parkinson's Disease?"
- 14 Do you see those?
- 15 A. I do.
- 16 Q. The answer given is:
- 17 "There is no scientific or reliable epidemiological
- 18 evidence so far to link paraquat with Parkinson's Disease.
- 19 Previous studies have demonstrated that paraquat does not
- 20 cross the blood-brain barrier easily, meaning that it does
- 21 not reach the specific location in the brain necessary to
- 22 produce Parkinson's symptoms.
- 23 Am I reading that correctly?
- 24 A. You are reading it correctly.
- 25 Q. I will continue:

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- 1 "Epidemiology studies in areas of high and long-term
- 2 paraquat usage have shown no increase in neurotoxic
- 3 incidents."
- 4 Right?
- 5 A. That's what it says.
- 6 Q. Now, were all those statements true?
- 7 A. Well, you have to remember --
- 8 Q. I am just asking you if they are true, in 2008?
- 9 A. In 2008, I think that it is still broadly true
- 10 because we were not yet seeing the totality of evidence that
- 11 was sufficiently convincing to say that paraquat was a clear
- 12 causative agent for paraquat -- for Parkinson's disease.
- 13 Q. In the preceding five years, you just had test after
- 14 test after test showing you that this chemical gets into the
- 15 brain -- the substantia nigra -- of the exact location where
- 16 paraquat can cause damage and cause Parkinson's disease,
- 17 didn't you?
- 18 A. Let me qualify --
- 19 Q. If you could answer that?
- 20 A. I need to answer it with a qualification, if I may.
- 21 Q. All right.
- 22 A. We had shown that paraquat had got potential to get
- 23 into the brain. That a small amount of blood would get into
- 24 the -- cross the blood-brain barrier into the brain. We
- 25 hadn't definitely looked in the substantia nigra. We had

Page 420 1 not teased out that area of brain and measured paraquat in

- I not teased out that area of brain and measured paraquat
- 2 that region.
- 3 Q. Do you think it mattered to the average farmer
- 4 whether you had teased that out --
- 5 A. No, of course not.
- 6 Q. Okay. Don't you think they are really worried about
- 7 whether or not this stuff can make me sick generally?
- A. Of course.
- 9 Q. And you think they might be concerned about whether
- 10 or not it is going to cause them to get Parkinson's disease?
- 11 A. Of course.
- 12 Q. Do you know what the Illinois plaintiffs said when
- 13 asked in their depositions whether they would have used this
- 14 chemical if they had known there was any chance of getting
- 15 Parkinson's disease? Do you know what they said?
- 16 A. I do not.
- 17 Q. Do you think that statement was transparent?
- 18 A. It was transparent in terms of it being a conclusion
- 19 that was appropriate at the time in that we did not
- 20 believe -- and indeed still do not believe -- that the
- 21 totality of evidence, not just the mouse models that we were
- 22 talking about earlier but also the epidemiology, has yet
- 23 come to a clear conclusion that paraquat is a causative
- 24 agent in Parkinson's disease.
- 25 Q. Didn't Dr. Marks conclude after repeated studies

- 1 that paraquat selectively targeted the substantia nigra?
- 2 A. She did. But that's not the same as saying that in
- 3 the conditions at which people would be exposed to paraquat
- 4 that that would pose a risk to those farmers and growers.
- 5 O. But telling them that it would cause this kind of
- 6 dreadful disease would impact the bottom line, wouldn't it?
- 7 MR. NARESH: Objection to form.
- 8 BY MR, TILLERY:
- 9 Q. If you told all the farmers in America that you --
- 10 had brought your product that it could cause them to have
- 11 Parkinson's disease, what do you think that would do to your
- 12 sales?
- 13 MR. NARESH: Objection to form, scope.
- 14 A. Well, it absolutely --
- 15 BY MR. TILLERY:
- 16 Q. Absolutely what?
- 17 A. If I may say, it is a bit like me saying to you if
- 18 you knew if you knew that you took twice the dose of
- 19 acetaminophen or paracetamol that your liver may pack up,
- 20 then you might be scared of taking paracetamol.
- 21 Q. You bet I would.
- A. Yes, and that is the truth of the matter. But we
- 23 don't suggest that you should stop using paracetamol.
- 24 Q. Isn't damage to the substantia nigra the part of the
- 25 brain associated with Parkinson's disease?

- 1 A. Yes
- 2 Q. How long did this statement appear on your
- 3 Parkinson's -- on your paraquat website?
- A. I am afraid I don't know the answer to that.
- 5 (Exhibit 38 marked for identification)
- 6 MR. NARESH: Steve, could we go off the record
- 7 and discuss this for a moment?
- 8 MR. TILLERY: Sure.
- 9 THE VIDEOGRAPHER: We are off the record at 2:34.
- 10 (Break taken.)
- 11 MR. NARESH: For the record we have discussed and
- 12 we are willing to let you go forward on questioning on
- 13 documents marked exhibit 38 -- which I assume will be
- 14 exhibit 39 -- which were marked 502D documents by Syngenta,
- 15 with all parties reserving the rights and to the extent that
- 16 we believe that any of the questioning calls for the
- 17 divulging of privileged or otherwise protected content, we
- 18 will object on the record.
- 19 MR. TILLERY: Okay. Back on the video record, 20 please.
- 21 THE VIDEOGRAPHER: We are back on the record as
- 22 of 2:57. This is now media number 4 in the deposition of
- 23 Philip Botham. You may continue.
- 24 BY MR. TILLERY:
- Q. What is the number of the exhibit in front of you

- 1 this. You were evaluating product safety in terms of
- 2 a mouse model?
- A. Yes. And it is a standard toxicological practice to
- 4 take things like the no effect level we were discussing
- earlier and to do risk assessments from that.
- Q. Okay. Do you see the names listed on this document?
- 7 I think, if you look at 14 --
- A. Yes. 8
- 9 O. -- who was the document's author?
- 10 A. It is the four people that you see on page 14.
- Q. And that's Nick Sturgess, Kim Travis, Andy Cook and 11
- 12 Phil Botham?
- 13 A. Correct.
- Q. You are one of those authors? 14
- 15 A. I am.
- 16 O. Okay.
- 17 Was this kind of document prepared regularly at
- 18 Syngenta?
- 19 A. This kind of document is somewhat atypical in that
- 20 we were taking a very precautionary approach, as I said
- 21 a few minutes ago, assuming that this is an effect of real
- 22 concern. But the principles of calculating no effect
- 23 levels, doing risk assessment, is standard practice.
- 24 Q. Why was the document prepared?
- 25 A. In order for product safety, the function that I was

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- 1 now, sir?
- 2 A. Exhibit 38.
- 3 Q. Okay. Do you know what 38 is?
- A. I know what the document is, yes.
- 5 Q. Yes. What is it?
- A. It's an internal -- i.e. product safety, the
- 7 department that I was responsible for evaluation of --
- 8 essentially doing a risk assessment of the possibility that
- 9 the findings that we have been discussing are real, and
- 10 therefore we were looking to see what margins of exposure
- 11 and safety margins would be -- occur if we assume that those 11
- 12 findings were real.
- Q. And when you say "findings are real", what is it, 13
- 14 more specifically, that you are referring to?
- A. We are referring to the findings we have just been
- 16 discussing around the loss of dopaminergic cells in the
- 17 brain.
- 18 Q. That paraquat causes Parkinson's disease?
- A. That paraquat causes in the mouse model a loss of 19 20 dopaminergic cells.
- 21 Q. So you are limiting your evaluation in this product
- 22 safety technical evaluation to the mouse model?
- 23 A. That's -- the calculations are based on the data
- 24 from the mouse model.
- 25 Q. Okay. What I'm trying to figure out is the scope of

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- 1 responsible for, to be fulfilling its duty of care to do
- 2 risk assessment.
- Q. Was it prepared for any litigation?
- A. It was not in any sense done for litigation --
- 5 purposes of future litigation.
- Q. Okay. On the first page, it says:
- 7 "There is consistent evidence..."
- Do you see that?
- A. Yes.
- 10 Q. Why don't you read that paragraph into the record?
  - A. "There is consistent evidence in animal studies for
- 12 the loss of dopaminergic neurones in the substantia nigra of
- 13 male [C57Black6J] mice when dosed with paraquat (at up to
- 14 one third of the median lethal dose) via the i.p. route."
- 15 Q. And the next, if you wouldn't mind, where it starts:
- "There is no evidence..."? 16
- 17 A. "There is no evidence to indicate that the observed
- 18 effect on neuronal cell loss is an artefact of the test
- 19 system, though this remains a possibility. Therefore it is
- 20 prudent to assume at this stage that the finding is real,
- 21 and that it is related to paraquat treatment in this strain
- 22 of mice."
- 23 Q. Okay. The next bullet reads, "In the absence..."
- 24 Would you read that?
  - A. "In the absence of evidence to the contrary, it is

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1 assumed that this finding is potentially qualitatively

- 2 relevant to man for the purposes of a re-evaluation of the
- 3 reference dose."
- 4 Q. What is a reference dose?
- 5 A. It is a dose that is used in order to determine
- 6 the -- again, the margin of safety as part of risk
- 7 assessment.
- 8 Q. And the sixth bullet reads, please check me for
- 9 accuracy:
- 10 "The estimated reference dose for neuronal cell loss
- 11 is ... less than the current sub-chronic and chronic
- 12 reference doses."
- 13 MR. NARESH: Steve, I think you misspoke.
- 14 MR. TILLERY: Really?
- 15 MR. NARESH: I think you missed a word.
- 16 MR. TILLERY: Okay, let me start over.
- 17 Thank you, counsel.
- 18 BY MR. TILLERY:
- 19 Q. Why don't you read it, the sixth bullet, where it
- 20 says "The estimated reference dose"?
- 21 A. "The estimated reference dose for neuronal cell loss
- 22 is a little less than the current sub-chronic and chronic
- 23 reference doses, but given the uncertainties of the
- 24 calculation Product Safety considers the difference not to
- 25 be significant."

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- Q. Okay. And the sub-chronic and chronic reference
- 2 doses were based upon damage to the lungs as an endpoint,
- 3 right?
- 4 A. That is correct.
- O. Product safety calculated the reference dose based
- 6 on neuronal cell loss in the substantia nigra pars compacta
- 7 as the endpoint, and that reference dose was lower; correct?
- 8 A. The reference -- we took the no effect level from
- 9 studies -- not our studies, actually, the studies of other
- 10 researchers we have spoken about -- as the no effect level
- 11 and then the reference dose is calculated by dividing that
- 12 by some usual factors.
- 13 Q. It was a lower number, wasn't it?
- 14 A. Yes, yes.
- 15 Q. The technical evaluation gives the position of
- 16 Syngenta's Product Safety department in September 2009?
- 17 A. That's correct.
- 18 Q. With respect to paraquat's neurotoxic potential in
- 19 the substantia nigra portion of the brain?
- 20 A. Correct.
- 21 Q. When did the product safety department or product
- 22 safety group -- what do you refer to it as?
- 23 A. It doesn't really matter, product safety team is
- 24 fine.
- 25 Q. Team?

1 A. Um-hm.

2 Q. When did the product safety team first adopt this

- 3 position?
- 4 A. I believe that this was the first time that we put
- 5 together the information in such a way.
- 6 Q. Was it the position of Syngenta's product safety
- 7 team in 2008?
- 8 A. Well, I don't think we had actually -- we certainly
- 9 hadn't done these kind of calculations in 2008.
- Q. Would it be different -- had you asked the same
- 11 group of professionals in 2008 for their answer, would they
- 12 have given you the same results?
- 13 A. It would have been the same.
- 14 Q. Would have been the same?
- 15 A. Yes.
- 16 Q. So the statement on the paraquat.com website
- 17 "paraquat does not reach" the substantia nigra pars compacta
- 18 is not all consistent with the position adopted in this
- 19 technical evaluation, is it?
- 20 A. It is not consistent, I would agree.
- 21 Q. Okay. The second paragraph on the second page,
- 22 starting with "A number", would you read that first full
- 23 sentence?
- 24 A. "A number of laboratories, including Syngenta CTL,
- 25 have observed a reduction in neuronal cell counts in

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- 1 dopaminergic neurones in the substantia nigra pars compacta
- 2 brain region following paraquat administration [using]
- 3 a dosing regimen of 10 mg/kg paraquat once or twice a week
- 4 for three weeks (McCormack et al, 2002; Barlow et al, 2004)
- 5 Cory-Slechta et al, 2005; CTL report number XM7258 ...)"
- 6 Q. So the CL studies referred to here are Dr. Marks'
- 7 studies, right?
- 8 A. That is correct.
- 9 O. And the third party or independent scientific
- 10 references are the same ones that Dr. Marks used in her
- 11 studies and referenced?
- 12 A. That -- that is correct.
- 13 Q. Did Syngenta share this document with the
- 14 United States Environmental Protection Agency?
- 15 A. I don't believe we did.
- 16 Q. Did Syngenta share this with any pesticide
- 17 regulatory agency in the world?
- 18 A. I cannot answer that. I don't know.
- 19 Q. Did Syngenta ever publish these conclusions and
- 20 share them with the public health committee?
- 21 A. I don't believe it did.
- 22 Q. Was this document restricted to internal use at
- 23 Syngenta?
- 24 A. It was largely intended to be our own internal
- 25 evaluation, as I said, as part of our duty of care.

- 1 Q. Okay. Now let's go to the next document which will
- 2 be 39.
- 3 (Exhibit 39 marked for identification)
- 4 BY MR. TILLERY:
- Q. Would you please take a minute and familiarize
- 6 yourself with this document?
- A. Okav
- 8 Q. Could you on the record please describe or identify
- 9 the document?
- 10 A. This is an update of the document we have just been
- 11 talking about. So it has the same title as the previous one
- 12 "A consideration of the Potential Implications for Reference
- 13 Doses" now dated draft July 2011. So just under two years
- 15 Doses flow dated draft July 2011. So just dilder two years
- 14 after the previous version.
- 15 Q. Does a final document have draft on it? They have
- 16 "draft" for years. They just keep putting the word "draft"
- 17 on it. Do you know why?
- 18 A. Because we were using draft to recognize that we
- 19 were still in the middle of a research program, so new data
- 20 were going to continue to emerge.
- 21 Q. Right. But you, as of the date of the issuance of
- 22 the document, it was at that point in time final?
- 23 A. With the information that was available at that
- 24 time. This was our best estimation of this situation, yes.
  - Q. All right. Okay.

will 1 study.

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- Q. Does this document give the position of the Syngenta
- 3 product safety with respect to paraquat's neurotoxic
- 4 potential as of July 2011?
- 5 A. I will qualify that if I may. It establishes as
- 6 I indicated a conservative position that paraquat could
- 7 cause the neuronal cell loss and therefore we were
- 8 establishing if that were the case whether we believed that
- 9 there were adequate margins of safety.
- 10 Q. Okay. The first bullet, if you read that,
- 11 "Executive summary."
- 2 A. "There is some evidence in animal studies for the
- 13 loss of dopaminergic neurones in substantia nigra of male
- 14 [C57 black 6J] mice when dosed with paraquat (at up to one
- 15 third of the median lethal dose) by the i.p. route."
- 16 Q. And the next, starting with "Recent"?
- 17 A. "Recent Syngenta studies have failed to consistently
- 18 replicate the findings reported in the literature of the
- 19 loss of dopaminergic neurons at doses of paraquat up to
- 20 10 mg/kg or at higher doses up to the maximum tolerated dose
- 21 (25 mg/kg). In addition, comprehensive neuropathology
- 22 studies have consistently indicated no evidence for neuronal
- 23 cell damage, cell loss or an inflammatory response following
- 24 paraquat exposure. It therefore remains a possibility that
- 25 the reported findings described in the literature on

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- And this document wasn't produced for litigation
- 2 purposes, was it?
- 3 A. It was not, in my understanding, no.
- 4 Q. Okay. Were you the head of this group?
- 5 A. Yes. By that time I was the head of the paraquat
- 6 health science team and also I had a leadership position in
- 7 the product safety organization.
- 8 Q. And the authors of this were Nick Sturgess, Kim
- 9 Travis, Andy Cook and you, is that right?
- 10 A. That is correct.
- 11 Q. And were others in attendance, do you remember?
- 12 A. By "attendance", this wasn't a meeting, this was
- 13 a document that was generated by that team working together.
- 14 Q. Okay. So there was no meeting to discuss the
- 15 content. It was just sent back and forth to reflect the
- 16 2011 --
- 17 A. It was a combination of the four of us having
- 18 discussions and also looking at various drafts of this
- 19 document.
- 20 Q. As a matter of fact, you anticipated that 18 months
- 21 later you would have a next review, right?
- 22 A. That's right. Because as it said there, and as
- 23 I indicated a few moments ago, we were in the middle of
- 24 a research program and we were doing what we thought was
- 25 going to be a very relevant study, which is the 90 day data

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- 1 neuronal cell loss are an artefact of the test system. It
- 2 is however prudent to assume at this stage that the reported
- 3 finding of neuronal cell loss is real, and that it is
- 4 related to paraquat treatment in this strain of mouse."
- 5 Q. And the recent Syngenta studies referred to in that
- 6 paragraph that you just read were experiments that would
- The second secon
- 7 later be published as the Breckenridge et al, 2013 study;
- 8 correct?
- A. That is correct.
- 10 Q. What does "artefact of the test system" mean in this
- 11 context?
- 12 A. Rather like some of the discussions we were having
- 13 earlier today, that there may have been other explanations
- 14 that could have explained why there was an apparent loss of
- 15 dopaminergic neurons. Technical -- technical reasons, in
- 16 other words.
- 17 O. The last sentence concludes:
- 18 "It is however prudent to assume at this stage that
- 19 the reported finding of neuronal cell loss is real, and that
- 20 it is related to paraquat treatment in this strain of
- 21 mouse."
- 22 Correct?
- 23 A. Yes.
- 24 Q. The next bullet reads:
- 25 "In the absence of evidence to the contrary, it is

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- 1 assumed that this finding is potentially qualitatively
- 2 relevant to man for the purposes of a re-evaluation of the
- 3 reference dose."
- 4 Correct?
- 5 Yes.
- 6 Q. On page 4, if you look at that, in the product
- 7 safety evaluation, is 44.0004?
- 8 A. I have that.
- 9 Q. Okay. It begins:
- 10 "The most consistent finding from the body of animal
- 11 studies reported in the literature is the loss of
- 12 dopaminergic neurons in the substantia nigra pars compacta | 12
- 13 of male C57Bl6J mice, when compared to control animals."
- 14 Correct?
- 15 A. Correct.
- 16 Q. Did Syngenta share this document with the
- 17 United States Environmental Protection Agency?
- 18 A. I don't know, but I don't believe so.
- 19 Q. Did it share this document with any pesticide
- 20 regulatory agency?
- 21 A. I am not aware that it did.
- 22 O. With the public health community?
- 23 A. I am not aware that it did.
- 24 O. Was it restricted to internal use?
- 25 A. That is my understanding of this document.

- 1 A. It's -- again, I wouldn't quite put it
  - 2 "incorrectly". As we said this morning, this was -- and is

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- 3 still -- a relatively new technique. Not that many people
- 4 used it. And I think the community as a whole, not just us,
- 5 was still learning that you could get different results
- 6 simply as an example that I was showing there how thick the
- 7 sections were that you put under the microscope.
- 8 Q. Right. But you did take note as the group, didn't
- 9 you, that Dr. Marks' results were consistently virtually
- 10 identical to laboratories doing the same test in different
- 11 parts of the world; right?
  - A. Of course, yes. Yes.
- 13 Q. Okay. And presumably doing it slightly differently,
- 14 following the same test protocol but different people,
- 15 different -- perhaps different protocols for the test, but
- 16 arriving at the same results. Did you take that into
- 17 account?
- 18 A. We took that into account. But I think as this also
- 19 said, we were, by this time as reported in Breckenridge et
- 20 al, given advice by again independent pathologists that you
- 21 needed to look in addition to just measuring the TH positive
- 22 cells, at other histopathological or pathological
- 23 measurements that you should see if those cells were
- 24 genuinely dying.
- 25 Q. What is a TH positive cell?

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- O. I'm going to go backwards. How does one arrive at
- 2 the conclusion that an effect noted by a study result is an
- 3 artefact of the test system?
- 4 A. How would one conclude that it was an artefact --
- 5 Q. How would you, as a scientist, conclude that?
- 6 A. By finding a technical explanation that it was due
- 7 to some way in which the effect was measured, for example.
- 8 Q. Have you ever done that?
- 9 A. We have done a lot of work to do -- to check that 10 out, yes.
- 11 O. What was the artefact of the test system that you
- 12 found?
- 13 A. We -- I'm not saying that we found an artefact as
- 14 such. What we found was that what the -- the results that
- 15 you got when you measured the number of neurons in that part
- 16 of the brain was very critically dependent on a number of
- 17 factors. Not just the stereology machinery we were talking
- 18 about this morning, but also the way in which you prepared
- 19 the material, the brain, how you cut it, how you stained it,
- 20 how -- whether you had -- were reading it blind to
- 21 treatment. So a number of factors seemed to be at play
- 22 here.
- 23 Q. Well, did you find that any of the preparation had
- 24 been done incorrectly in any of the studies of the public
- 25 health community?

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- 1 A. That is a dopaminergic cell for the purposes of the 2 discussion here, because dopaminergic cells express on their
- 3 cell surface an enzyme tyrosine hydroxylase, and that's
- 4 actually what you see when you stain -- it is a marker for
- 5 tyrosine hydroxylase.
  - Q. What is the purpose of that enzyme?
- A. That is involved in the utilization of dopamine.
- 8 Q. That is involved in using it, creating it, isn't it?
- 9 A. Yes, yes.
- 10 Q. That's what you need for that cell to be able to
- 11 help you?
- 12 A. Yes.
- 13 Q. Without it, it may be there -- may or may not be
- 14 showing up as dead or alive or one way or another, but
- 15 without it, it is obviously not able to help you --
- 16 A. If it is nonfunctioning.
- 17 Q. If it is nonfunctioning?
- 18 A. And there is a difference between not being able to
- 19 see it with the markers we were using and it necessarily
- 20 being nonfunctioning.
- 21 Q. You mentioned cut as well. Did you see any evidence
- 22 of a problem with the cut in Dr. Marks' studies?
- 23 A. We didn't obviously go back and look at Dr. Marks'
- 24 studies because the tissue was then too old to do that.
  - Q. You never evaluated hers and thought that they were

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Page 438 Page 440 1 "aha" moments when you looked at it and said you have got 1 done incorrectly? 2 the answer. Did you do that? 2 A. We were not able to do that. 3 MR. NARESH: I object to the form of the 3 Q. Okay. And you didn't find her prep was wrong? A. We were not able to do that. 4 question. I think if you would like him to answer the Q. You did not find that her staining method was wrong? 5 question, he was offering to give you more detail. MR. TILLERY: He was offering to repeat what he A. We are not saying that anything was wrong. 6 Q. Or that anything else she did was wrong? 7 said before. A. Let me say that one of the number of factors that A. We are not saying that anything she did was wrong. 9 I said before, one thing which came closest to being Q. What about McCormack or Di Monte, or any of these 10 other people? 10 a critical factor -- not necessarily the critical factor but 11 closest to it -- was actually for the pathologist to be A. I would say we would never have said that what they 12 blinded to treatment; to not know that he or she was looking Q. Maybe that's word is too harsh. Okay, that they 13 at control animals not dosed with paraquat versus those that 13 14 used an incorrect technique: did you ever find that anything 14 had been treated. 15 done scientifically by way of technique achieved an 15 BY MR. TILLERY: Q. And that would be the one thing you would point to? 16 unreliable result? 16 A. I think the issue is that we know that the A. No, that's why I said that very carefully. I said 17 17 18 particular -- particularly the stereology technique is 18 that that was the closest thing that we came to which could 19 subject to the variability that we were able to see when we 19 be the biggest factor. But we did not finally conclude that 20 started to look at various things like the thickness of the 20 any of these factors was the sole definite reason for that. O. Of all of them that you can think of, would you 21 tissues, how you looked down the microscope, at what depth. 22 There were lots of technical detail there which started to 22 think not being blinded would be the most telling 23 uncover variability which maybe other researchers apart from 23 explanation? A. Well, when we looked at what it said in the 24 ourselves were not aware of. 25 Q. That's what I'm trying to find out. What are those 25 publications of other people -- and actually what Dr. Marks Page 439 Page 441 1 that you found to be an explanation for why these consistent 1 herself said -- then it seemed to be that some of those 2 independent researchers and independent laboratories 2 studies were certainly not read blinded to treatment. 3 published in peer-reviewed journals and Dr. Marks reached 3 Either it said they weren't, or the matter was silent. 4 virtually identical results showing that the 5 substantia nigra was being impacted by paraquat? What did A. So that's why we wondered if that, indeed, may be an 6 you find that could explain the consistent results that they 6 important factor. 7 got? Q. And you are referring to the Minnema study, is that A. I would say the right thing to say is that we didn't 8 what you are --9 find a specific issue which said "yes, it's that which must 9 A. Yes, subsequently we have made that point in other 10 be responsible for the difference in the results". 10 papers. 11 What I'm saying to you is that the large body of Q. And that's a study that you rely on, too, isn't it? 11 12 evidence that we accumulated with other external 12 A. It is, yes. 13 pathologists gave us some possible explanations which I have Q. Okay. And that was one where a number -- the report 14 just been explaining to you, which could cause variability 14 was that a large number of the results were -- were not 15 in results. 15 blinded? 16 Q. Is that the extent of your answer as far as deep as 16 A. Yes, yes. 17 it can go and detail? 17 Q. And that was a significant finding for you? 18 A. I think that's probably adequate for now. A. I think it was certainly an important finding, 19 Q. That makes me nervous. Okay, I am trying to find 19 I agree, yes. 20 out if you have any specifics to answer my question. Q. Okay. But you never identify the flaw in the 21 A. Well, I can repeat what I said earlier. 21 paraquat mouse model itself which could lead you to conclude 22 Q. No, that's not necessary. You don't need to do 22 that the neurotoxic effects are an artefact of the test

50 (Pages 438 - 441)

23 system, right? That's right. Although if I may just speak

25 effect was real one would anticipate that had you dosed at

24 from a toxicological principles perspective, again if the

A. Okay, fine.

Q. I'm trying to find did you -- was there one of these

23 that.

24

1 higher dose levels -- which we did do, we went up to 25

2 milligrams per kilogram, as high as we could possibly go 3 without killing a lot of the animals -- that you would see

4 that effect. It is another factor which says "if this is

5 really real, you would perhaps see it in a more pronounced

6 form" and we didn't.

Q. You mentioned you got advice from independent

8 pathologists. Are you saying that the pathologists you took

9 advice from were not in any way compensated by Syngenta?

A. No, I am not saying that.

O. When you use the word "independent" do you include 11 11

12 people that you pay?

A. I do. Because although we paid them, at no time

14 were we sitting in their laboratory or sitting alongside

15 them when they were doing their microscope readings or

16 changing their reports.

Q. You are saying independent means that they are not 17

18 in your employ?

19 A. Indeed, and working independently from our

20 scientists.

3

4

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Q. Okay. Are you aware that other people refer to

22 independents as people who do not have a pecuniary

23 relationship with Syngenta, are you aware of that?

2 could be impacted one way or another.

You understand that?

8 product -- you have to report it?

Q. Why is that, do you think?

A. So that we are being transparent.

Q. Okay. That's what I am thinking.

21 my definition is that they are not paid by you?

Q. All right. Let's go to the next one.

A. Okay. That's fine.

A. Of course, yes.

A. Indeed.

15 their science?

A. Of course.

25 BY MR. TILLERY:

24 A. Of course.

25 O. Okay. And other independent people might be people 25 you?

O. That's why in peer-reviewed journal articles if any

6 part of your paying -- compensation, honorariums, anything

O. Don't you think it might be that those editors of

Q. So when we use the word "independent", your

20 definition is that they are not sitting in your laboratory;

(Exhibit 40 marked for identification)

13 those peer-reviewed journals want to make sure that the 14 people don't have another motive for what they found in

7 that is paid for by the company that is making the

Q. Can you identify and describe plaintiff's

2 exhibit 40?

3 A. Just give me a minute or two to check, please. Page 444

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Q. Of course, of course.

A. Okay.

Q. What is the document?

7 A. It is a PowerPoint presentation.

Q. And it is dated March 2, 2016?

A. That's correct.

Q. And it was done in Brazil? 10

A. That is correct.

Q. Okay. And did Syngenta sell paraquat in Brazil?

A. Yes. 13

Q. Okay. This is a presentation Charles Breckenridge

15 made to a expert panel at the Brazil pesticide regulator

16 ANVISA when the agency was considering banning paraquat, is

17 that right?

A. That is correct.

Q. And the topic here or the title is: "Does the animal

20 or human element support a causal relationship between

21 Paraquat use and Parkinsonism."

Correct?

23 A. Yes.

Q. You were asked to address that topic there, weren't

24

Q. And the agency was concerned about that connection? 3

Q. And they wanted you to come there and answer

6 questions about it, right?

Q. So if turn to page 18, the top of it is "ANVISA's

9 Question on PQ as a Model for Parkinson's Disease". If you

A. Can you just --

12 Q. What is your page reference at the bottom?

13 A. Did you say page 18?

15 A. That is 116230.

Q. Thank you. It is actually page 14 of the 16

17 PowerPoint, isn't it? It looks like. But if you look at

18 the Bates number, I think it is 6223.

19 A. Yes, I am on that page.

20 Q. All right. And it's at the top of that says:

"ANVISA's Question on PQ as a Model for Parkinson's

22 Disease."

21

23 Do you see that?

24 A. I do.

Q. Two questions are presented and they both ask about

Page 443 1 who don't have a financial interest to where the results

A. Yes, because the agency had asked a number of

2 questions.

A. They were.

A. That is correct.

10 can find that page, my number is cut off.

14 Q. I think so.

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1 animal studies investigating the relationship between

- 2 paraquat and Parkinson's disease, right?
- 3 A. Yes.
- 4 Q. And Syngenta's response is that animal studies
- 5 should produce a constellation of neurochemical,
- 6 neuropathological and motor symptoms observed in human cases
- 7 of PD or Parkinsonism; right?
- 8 A. Yes.
- 9 Q. And one of the neuropathological symptoms listed is
- 10 loss and neurodegeneration of dopaminergic neurons?
- 11 A. Yes.
- 12 Q. Now the last bullet says:
- 13 "Paraquat had no effect on these parameters in our
- 14 experiments after either [intra-peritoneal] ..."
- 15 And that references Breckenridge et al:
- 16 "... or oral administration at maximum tolerated
- 17 doses, (Minnema et al 2014)."
- 18 A. Yes.
- 19 Q. Did you inform ANVISA -- the expert panel of
- 20 ANVISA -- that Syngenta had observed the loss of
- 21 dopaminergic neurons in paraquat-treated mice in previous
- 22 studies?
- 23 A. I'm not sure whether that came up in the discussion
- 24 because I was not actually present in the meeting,
- 25 Q. Who did that presentation?
- Page 447

- A. Dr. Breckenridge.
- 2 Q. It looks like, if he didn't, he never told them
- 3 anything about Dr. Marks' studies, did he?
- 4 A. It is a possibility.
- 5 Q. Look at this document and show me where he --
- 6 A. No, there is nothing on the slide, I agree.
- 7 Q. There is nothing there that he said one single word
- 8 about it.
- 9 Would you agree with me that making that statement
- 10 without producing those studies and telling those people
- 11 about it was absolutely a misrepresentation?
- 12 MR. NARESH: Objection form, foundation.
- 13 A. I think that there's a reasonable argument that we
- 14 could have actually included the word "consistent" in that.
- 15 Then that would have included the reality of what we found
- 16 no consistent effect.
- 17 BY MR. TILLERY:
- 18 Q. Were you involved in drafting this presentation?
- 19 A. Actually, yes, I was. And it's a point I think
- 20 with -- sometimes these things happen with the benefit of
- 21 hindsight, it is probably something that we should have
- 22 done.
- 23 Q. Would you, as a scientist, tell me right now that
- 24 you should have put it in there, shouldn't you?
- 25 A. I think that's not unreasonable. But it doesn't

- 1 take away the overall conclusion that we were presenting.
- 2 Q. Right. You were trying to keep it from getting
- 3 banned, weren't you?
- 4 A. No. I would object to that. At no point did we
- 5 have a conversation where we said we would deliberately take
- 6 that information out.
- Q. Was it banned in Brazil?
- 8 A. No.
- 9 Q. Okay. Do they know today about those studies? Have
- 10 you told them?
- 11 A. I don't know whether any further communication on
- 12 those studies has been made.
- 13 Q. Are you still selling the product in Brazil?
- 14 A. We are.
- 15 Q. Okay. What do you think the reaction will be when
- 16 this case comes out, all of the information comes out, that
- 17 you didn't tell them?
- 18 MR. NARESH: Objection to form, scope.
- 19 A. I would still maintain that what we were presenting
- 20 here -- as one often does in science -- was an overall
- 21 weight of the evidence.
- 22 BY MR. TILLERY:
- 23 Q. Okay. So the weight of evidence you presented
- 24 happened to be in favor of continuing to sell it; the weight
- 25 of the evidence you omitted would be against continuing to

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- 1 sell it, right?
- A. Well, weight is weight, sir. The fact that we were
- 3 finding effects in some of the studies, as were other
- 4 people, was, in the context of this larger amount of
- 5 information, a smaller proportion of that weight of
- 6 evidence.
- 7 Q. You knew when you drafted this -- or helped draft
- 8 it -- that you were omitting Louise Marks' words, right?
- 9 A. I think if you were inferring that we made
- 10 a deliberate decision to do that then --
- 11 Q. No, excuse me. I move to strike that answer as
- 12 unresponsive.
- 13 A. That is fine.
- 14 Q. Did you know, when you drafted this, did you happen
- 15 to remember about Louise Marks' words?
- 16 MR. NARESH: Objection to form.
- 17 A. I think at the time these were drafted we were not
- 18 considering the Marks studies in our weight of evidence
- 19 thinking.
- 20 BY MR, TILLERY:
- 21 Q. Because they didn't reach the same conclusion, did
- 22 they?
- 23 A. At the time they were suggesting otherwise, yes.
- 24 Q. So you left them out?
- 25 A. I say again, I'm not aware that I or anybody else

52 (Pages 446 - 449)

Page 450 Page 452 1 deliberately left them out. A. Causal means that you've got direct evidence in 2 humans that there is a direct relationship between exposure 2 Q. Did you just forget about them? Did you happen to 3 forget about multiple studies of consistent results 3 to paraquat and the development of Parkinson's. 4 parallelling virtually identically the results of Q. What I'm asking you is, is the Syngenta position 5 independent researchers in published literature, did you 5 consistent with that today, that statement? A. I would say that today we would still say that human 6 just forget about them? 7 epidemiological information would carry more weight in that A. We were aware that ANVISA, because they had told us 8 that, were well aware that there was published literature 8 weight of evidence that I was describing --Q. That is not --9 showing that there was an effect in this mouse model. So 10 A. -- but animal model data are still part of that. 10 they were not blind to the fact that there was another part O. Well, then your answer to them was wrong, wasn't it? 11 of the weight of evidence that would suggest that that 12 should be taken into consideration. 12 A. No, because the important word there is "causal" --13 Q. No, the important word is the first one. Do you see Q. So you are thinking they knew about McCormack, they 14 that? 14 knew about Di Monte's results? A. I believe they had already told us about that in 15 MR. NARESH: Steve, stop interrupting him. 16 BY MR. TILLERY: 16 some of the responses they gave us. Q. What does the sentence say? "Only", that's what I'm Q. But they didn't know about the Marks studies, did 17 18 they? 18 asking. 19 19 A. I imagine that they didn't. MR. NARESH: Just please let him finish his 20 answers to your questions --Q. And you have never told them to this day, have you? A. I don't know. I would have to check that. I don't 21 MR. TILLERY: He's not answering it. 21 22 BY MR. TILLERY: 22 believe so. Q. All right. 23 Q. Just answer my question --24 A. Yes. 24 Has paraquat been phased out in Brazil? 25 MR. NARESH: Objection, scope. 25 Q. Is that statement --Page 451 Page 453 A. Not so far as I'm aware. 1 MR. NARESH: Why don't you withdraw your prior --2 BY MR. TILLERY: 2 BY MR. TILLERY: Q. If you look at the same page where you were under 3 Q. I will withdraw it. Let me ask you, here's what it 4 the questions that were asked by the regulatory authorities 4 says: 5 in Brazil? "Only human epidemiological evidence can be used to A. Mm-hm. 6 conclude that a causal relationship exists between Q. If you would like under "Response", the first 7 Parkinsonism in humans and paraquat exposure." 8 bullet. Read that into the record, and that response is to 8 Is that what it says? 9 which question? 9 A. That's what it says. 10 A. Well, there are two questions above: 10 Q. Is that Syngenta's position today? "Why could the results obtained in a study using PQ 11 A. It is Syngenta's position that human epidemiological 12 as a model for the induction of [Parkinson's disease] not be 12 evidence is the only evidence, if you like, that can 13 enough to consider such a substance as a potential causer of 13 definitively lead to a conclusion about causality. 14 [Parkinson's disease] or Parkinsonism in humans?" Q. Okay. 14 Q. So your response, the first bullet, responds to all 15 Would you go to the next page, sir, which is 116224? 16 There's "Questions #3 and 4", do you see that, at the top? 16 of that? 17 A. Well, there is a second question which is: 17 A. Yes. 18 "What would be necessary to conclude that the animal 18 Q. And then down at the middle of the page, it says 19 model studies show evidence of [Parkinson's disease] or 19 number 2: 20 Parkinsonism resulting from human exposure to [paraquat]? 20 "Establish that the results are reproducible." 21 Q. And your first bullet, would you read that? 21 A. Yes. A. "Only human epidemiological evidence can be used to 22 Q. Okay. And you said: 23 conclude that a causal relationship exists between "The results from such studies must be robust and 24 Parkinsonism in humans and paraquat exposure." 24 reproducible when investigators are blinded to treatment Q. Is that Syngenta's position today? 25 using confirmatory independent assessments both within and

1 between labs/research groups ..."

2 Okay?

3 A. Right.

4 Q. And then you say:

5 "In our experiments we have not been able to

6 reproduce the results reported by others."

7 A. Yes.

8 Q. That's an absolute misrepresentation, isn't it?

9 A. Well, in the context of the conversation we have

10 been having then clearly that, as we said before, did not

11 fully include the, um, the earlier findings of our lab, yes.

12 Q. You agree with me?

13 A. Yes. As I said before, yes. With the benefit of

14 hindsight, we might have put an additional clause in that to

15 qualify.

16 Q. Namely all of the tests --

17 A. "Consistently" or --

18 Q. All of the studies that Dr. Marks did which verified

19 the results of the independent researchers, correct?

20 A. That's something which we could have taken more

21 consideration of, yes.

22 Q. And put it in there and told the truth, right, okay?

23 MR. NARESH: Objection to form.

24 A. I still believe that the truth is based on that

25 overall weight of evidence, but that's, I think, a point we

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1 Q. And did you tell them that it had observed a loss of 2 dopaminergic neurons at lower doses in the Marks studies?

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Page 457

3 A. That isn't lower doses than the Marks studies.

4 Q. One of them had 10.0, do you know that?

5 A. Well, that's very marginal, I think, yes. Yes, yes.

6 I think with the -- the analytical and other factors

7 involved, 10 and 10.2 are essentially the same.

8 Q. So they are the same?

A. Yes.

10 Q. Okay.

11 Syngenta did not disclose to the Brazilian

12 regulatory authorities that it had estimated a reference

13 dose for paraquat based upon the loss of dopaminergic

14 neurons in the substantia nigra, did it?

15 A. It did not talk about the work we were talking about

16 here earlier.

17 O. Okay.

18 Syngenta also made a number of presentations to

19 update the United States EPA regarding its paraquat mice

20 research, didn't it?

21 A. I believe it did, yes.

MR. NARESH: I will object to the scope of this

23 line of questioning.

I think there is no (inaudible) about the

25 interaction with the EPA. You can ask him in his personal

Page 455

1 have covered before.

2 BY MR. TILLERY:

3 Q. Did you ever tell ANVISA that Dr. Marks' studies

4 provided evidence that dopamine were lost -- or had lost

5 dopamine function?

6 A. As I said earlier, I'm not aware that we did that.

Q. Did you ever disclose to the ANVISA panel in Brazil

8 that Syngenta CTL had replicated the loss of dopaminergic

9 neurons in the paraquat treated mouse that Di Monte's group

10 had observed?

11 A. I am not aware that we did that.

12 Q. Did Syngenta disclose to ANVISA that it had observed

13 loss of dopaminergic neurons at lower doses in the Marks

14 studies?

15 A. Lower doses than?

16 Q. Than the NOEL of 10.2 milligrams per kilogram per

17 day that you had identified?

18 A. On which study -- which study are you referring to?

19 Q. What is a NOEL again, sir?

20 A. A no effect level.

21 Q. Okay. Do you reference that here?

22 A. The "no effect level" is in the notes, 10.2

23 milligrams per kilogram.

24 Q. Per day?

25 A. Per day.

1 capacity --

22

2 BY MR. TILLERY:

3 Q. Okay. In your personal capacity is fine.

4 Did Syngenta ever disclose the full paraquat mouse

5 research program conducted by Louise Marks in those updates

6 to the US EPA?

7 A. I can't answer that question. I was not involved in

8 those presentations.

9 Q. Okay. Did Syngenta ever disclose in those updates

10 to the US EPA that CTL, the laboratory, had replicated the

11 loss of dopaminergic neurons the substantia nigra seen in

12 published literature?

13 A. Again, I was not involved in those presentations so

14 I don't know the answer to that question.

15 Q. Did Syngenta ever represent to the US EPA that they

16 could not replicate the loss of dopaminergic neurons seen in

17 the published literature?

18 A. So we were not able to replicate?

19 Q. Yes.

20 A. Yes, that --

21 Q. Did you tell them that?

22 A. That was the nature of the research that we've just

23 been talking about.

24 Q. Would that statement have been false?

25 A. Well, it depends on the context in which it was

54 (Pages 454 - 457)

	CONFIDENTIAL				
	Page 458		Page 460		
1	said.	1	Dr. Louise Marks in her last week of employment.		
2	Q. Well, in the context of having known that	2	A. So you want me to read everything right from the		
3	Louise Marks did these studies that replicated the prior	3	first email?		
	results?	4	Q. No, I just want you to read it yourself.		
5		5	A. Okay, that's fine.		
6		6	Okay.		
	detailed research which had failed to replicate the	7	Q. She issued her study reports on June 21, 2007,		
	findings.		didn't she?		
9		9	A. That's the date we saw earlier.		
	Louise Marks	10	Q. This email exchange is 2007, June 22nd, the		
			following day. Right?		
11	A. That I would need to check. Because, as I say, I have not been involved in all those communications.	11	A. Mm-hm.		
		l			
13		13	Q. And in her first email, she says:		
	the Marks studies and allow the agency to decide their	14	· · · · · · · · · · · · · · · · · · ·		
١	significance or relevance?	15	And she points out that that's her last week, okay?		
16					
	it earlier, is that one of those Marks studies was submitted	17	Q. And then she sends this to Barry Elliott. Who is		
18	to the EPA.		that?		
19		19	A. Yes. Barry Elliott by that time had taken over the		
	of doubt doing the right thing, in terms of being fully		role that Mike Clapp had, if you remember Dr. Clapp earlier		
21	transparent, as you said it's your desire to do have	21	So he was the product toxicologist for paraquat.		
22	pushed you to the direction of full disclosure?	22	Q. What did she send in that email?		
23		23	A. She sent details of the studies that we were		
24	with the benefit of hindsight, you could make that judgment	24	discussing earlier and that they the studies had been		
25	It would still and I would repeat not change our	25	issued, as we saw earlier, and that in accordance with		
	Page 459		Page 461		
1	conclusion that the overall weight of the evidence suggests	1	proper practice the raw material, the data and the slides		
	that their that paraquat does not have a reproducible		had been archived.		
i	effect on the substantia nigra.	3	Q. And she sent along XM7229, XM7258, XM7371, XM7480,		
4		4	XM7552, XM7570, XR7641; correct?		
	as unresponsive.	5	A. That's correct.		
6		6	Q. All of the study materials she sends along?		
	interests of full compliance in case of doubt, that it would	7	A. Yes.		
	be best to err in terms of being fully transparent with the	8	Q. And then this information is sent on by Barry		
	agency, the regulatory agencies, responsible for guarding		Elliott to a person named Sheldon Ros, right?		
	the public's interest; would you agree with that?	10	A. Mm-hm.		
	A. Yes, but they were aware of the Marks study that we	11	Q. And he says:		
11					
	talked about earlier through the 6(a)(2) process.	12 13	"Can you check this SAMSON part please."		
13	·		What is a SAMSON part?		
	agree it would be best to err towards inclusion and to make	14	A. SAMSON is essentially or was at that time our		
	them aware of all the findings?		document management system.		
16		16	Q. And he says to Mr. Sheldon Ros		
	a different judgment could be made which would incorporate	17	A. It is Ros Sheldon. It is a lady.		
	those findings as well.	18	Q. Okay. So says to Ros Sheldon:		
19		19	"We must control the accessibility of them to that		
20	that course, didn't you?		usual for any such investigate reports."		
21	A. With regard to reporting under 6(a)(2), I said it	21	Right?		
22	might be something that was considered, yes.	22	A. Yes.		
23	(Exhibit 41 marked for identification)	23	Q. And Ros Sheldon says:		
24	BY MR. TILLERY:	24	"They are all entered as Research reports not for		
25	Q. Please read this email exchange including	25	submission."		

CONFIDENTIAL Page 462 - Page 464 A. Yes. 1 1 2009 and 2011 documents discussing the impact paraguat would 2 Q. What does "submission" mean? 3 A. Submission to a regulatory authority. 3 A. No, that's different. No, we are talking about when Q. That means they are not to be submitted to the 4 studies are conducted, and we get the results and we have 5 regulatory authority. That's where they are filed? 5 interpreted them, whether the -- they would meet the A. And this, let me say, is absolutely normal practice 6 criteria of, or could potentially meet the criteria, of 7 and was nothing specific to these reports. 7 6(a)(2). Q. Okay. All right, got it. Q. Okay. I want to start over if we can. I want to But just coincidentally, they didn't get submitted 9 try to understand every single one of these different 10 to regulatory authorities, did they? 10 groups, subgroups, that impact paraquat. A. They did not, I believe. 11 A. Right. 12 MR. TILLERY: Thank you. We will take a break 12 Q. And I want to talk about them and then their 13 right now. 13 interrelationship with America, okay? 14 THE VIDEOGRAPHER: We are going off the record at A. Okay. 14 15 3:53. 15 Q. So let's start over, if we can? 16 (Break taken.) 16 17 THE VIDEOGRAPHER: We are back on the record as 17 Q. And let's go through each one of them. You have 18 a Paraquat Parkinson's group, what is that called? 18 of 4:08. You may continue. 19 BY MR. TILLERY: 19 A. So we have since 2008 --Q. Earlier in the day I told you that I would come back 20 Q. Okay, in 2008 --21 to the topic of potentially referable findings, remember 21 A. Yes, we created the paraquat health science team. 22 that? 22 Q. And you certainly by that don't mean the health of 23 A. Yes. 23 paraquat, do you? Q. Let's go back to the history of that group. When 24 A. No. No, we don't. 24 25 was the first time that Syngenta -- and by that I mean the 25 Q. Okay. So the paraquat health science team? Page 463 Page 465 1 definition we agreed to yesterday at the beginning of the 1 A. Yes. 2 deposition, to include all of the entities -- when was Q. Let's get them all down first --3 a potentially referable finding committee first created in A. Okay. 4 the Syngenta organization or by its corporate predecessors? 4 Q. -- and then let's come back and see how they A. Well, again, remembering that we have to make the 5 inter-relate. 6 distinction between the US PRF committee which is the one A. Right. 6 7 that is accountable for fulfilling the obligations of the Q. And then what's next? 8 law, I can't speak directly as to when that committee was A. Well, maybe the closest related to that, which we 9 formed because I was never part of it. But we certainly set 9 talked about yesterday, is the paraquat issues leadership 10 up the -- the approach committee within our function at the 10 team. 11 time that was required in order for us to start complying. 11 Q. The paraguat issues leadership team. 12 I can't give you a date for that either off the top of my A. Correct. And that was responsible for overall 13 head. 13 governance. Remember we discussed who authorizes studies, 14 Q. I didn't understand what you said, approach 14 et cetera. 15 committee? Q. Okay. When was that started? A. You remember I said this morning that the product A. I am not -- I can't give a date, precise date to 16 17 safety organization as we now call it met to consider if 17 that. As I say, 2008 for the health sciences team. I can't 18 findings were truly adverse as defined by the legislation, 18 remember when the PILT -- this is the PILT -- when that was 19 and then sent our recommendations to the US committee. 19 created. 20 Q. So the product safety committee? 20 Q. Before or after the paraquat health science team?

56 (Pages 462 - 465)

A. I think it would be around about the same time,

A. Right. So they -- they were tasked with our

25 research program on paraquat, particularly the health

21

23

24

22 actually, yes.

Q. Okay.

22 approach committee.

A. Yes.

A. That's the product safety -- what we call the PRF

Q. And that's the group that you discussed about your

Q. Okay, the PRF approach committee?

21

23

24

25

Page 466 Page 468 1 sciences team, with some governance from the PILT. 1 in different countries? A. Correct. Q. Okay. 3 A. Right. Now if you then look at the product safety 3 Q. And that might include, of course, the fact that as 4 function, which is the organization that I for a time was 4 Syngenta sells paraquat in multiple different countries --5 leading, a separate committee to what we have just been A. Yes. 6 talking about because it dealt with any potentially -- any 6 Q. -- it may include reporting or making reports in 7 those countries --7 findings from studies on any compounds that we were testing A. Yes. 8 or any information that we were getting from the outside 8 9 Q. -- about paraquat? 9 world, the PRF approach committee --10 A. Yes, yes. Q. PRS approach --11 Q. Okay. In how many countries is paraquat sold by A. PRF, potentially referable findings, approach 12 Syngenta? 12 committee was set up within what we now call product safety 13 13 in order to discuss whether the findings might meet the A. I don't have that figure in my head. 14 MR. NARESH: Object to the scope on that. 14 criteria for a 6(a)(2) as defined in that regulation we were 15 reading out this morning. 15 MR. TILLERY: Actually, it is one of his topics. 16 MR. NARESH: Which topic? 16 And they would send on their recommendations or 17 MR. TILLERY: I don't have the topic list. It is 17 their -- the outcome of their discussion to the US PRF 18 committee. So a separate committee -- this is coming to 18 right there in front, in your stack of papers. 19 your point -- was the United States PRF committee, and it 19 BY MR. TILLERY: Q. Does the Syngenta executive committee have anything 20 was that committee which had the accountability to make the 21 to do with this? 21 final determination of what was submitted to the US EPA. 22 A. With what, sir? O. And so it is potentially referable --23 23 A. Findings, yes. Q. With any oversight of paraquat? 24 A. Well, in the sense that it has oversight of the way 24 Q. -- referable findings committee? A. Yes. 25 in which paraquat is used and sold and marketed, of course, Page 467 Page 469 O. Now, so we have identified four different 1 as one of the key products in the company. 2 committees? Q. And as a result of that, the SEC that you identified A. Yes. 3 this morning and described in terms of their authority, Q. Are they the only ones that could have anything to 4 would be put on notice and -- about items that might have 5 do with paraquat? 5 some bearing on the sales of the product? A. Well, if we go back further in history, there were A. They would, yes. 7 other bodies --Q. Okay. And research concerning the product? Q. I will get to those. But right now, those are in A. Any significant research they would potentially be 9 existence? 9 informed about, yes. 10 A. Right now, those are indeed all in existence still. 10 Q. And how many members are on the SEC? Q. How many PRF committees are there in the entire A. At the moment less than ten. This has changed very 11 12 umbrella of Syngenta? 12 recently because we are now Syngenta Group so the numbers A. Well, there are other PRF committees in other 13 change actually from one -- almost from one year to another 14 regions. I believe, for example, although I don't have any 14 Q. Syngenta's headquarters are in Basel, Switzerland? 15 direct contact, that there may still be a European PRF 15 A. They are. 16 committee that has a similar task to the US to comply with 16 Q. And in what parts of the world are you located? 17 the appropriate legislation in the EU. 17 A. In virtually all parts of the world. Q. Well, is there one or not? Q. Okay. So you have operations in South America, and 19 the Pacific Rim, all over North America, Canada, Australia? 19 A. I don't know, because I no longer have any 20 interactions in that area. There certainly was for a --20 A. Yes. 21 a period -- significant period, when I was directly involved O. China? 22 with the PRF process. I no longer am directly involved with 22 A. Yes. 23 23 the PRF process. Q. Africa? Q. And they would then make potentially referable 24 A. Yes. 25 finding conclusions about notifying regulatory authorities Q. Is there an area of the world where you don't have

- 1 a dominant position in terms of agricultural chemicals?
- 2 MR. NARESH: Objection to form and scope.
- 3 I am not seeing it in the -- if you can point me to
- 4 something, I am just not seeing anything -- I am fine with
- 5 you asking questions in his personal capacity on Syngenta
- 6 sales, but I am not seeing it in the topics.
- 7 MR. TILLERY: No, no, I was talking to it -- well
- 8 okay.
- 9 BY MR. TILLERY:
- 10 Q. Go ahead.
- 11 A. Well, we are a leading crop protection company in
- 12 what we call all the four main regions of the world: Asia
- 13 Pacific; European -- Europe, Middle East and Africa;
- 14 North America and South America.
- 15 Q. Has there been any significant change in the way
- 16 Syngenta is managed since the acquisition by ChemChina?
- 17 MR. NARESH: Objection to scope.
- 18 A. We still have the Syngenta executive committee who
- 19 is responsible for the strategy and operation of Syngenta
- 20 and its associated businesses.
- 21 BY MR. TILLERY:
- 22 Q. But in terms of its leadership teams, its hierarchy
- 23 of responsibility, is it generally the same?
- 24 MR. NARESH: Same objection.

3 changed as a consequence of that.

12 had -- come in from time to time.

15 a causative agent in Parkinson's disease.

4 BY MR. TILLERY:

13

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25

19 us.

17 as well?

25 A. It is generally the same, although recently we have

2 are now part of that group, and the leadership team has

Q. Now the descriptions that you have given to me --

A. The team is -- the core team is certainly Syngenta

9 employees. But we have consistently, since 2008, included

10 in our teams and our team meetings external experts. Some

Q. And what is the overall responsibility of that team?

A. To address the issue of whether paraquat could be

Q. And you have involved outside lawyers in that team

A. Occasionally outside lawyers have come in to talk to

Q. Well, have you had lawyers from Fulbright Deloitte

Q. But actually, more than talk to you; right?

A. Perhaps you could clarify what you mean?

23 sit in on your meetings, presentations at science

A. That has occurred, yes.

11 have had a longstanding relationship with us, others have

6 you talked about the paraquat health science team -- is that

7 comprised of members of Syngenta employees only?

- 1 O. And they have actually made presentations?
- 2 A. Yes, that's true.
- 3 Q. All right. You have been there when they have made

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- 4 presentations?
- 5 A. Yes
- 6 Q. And they are there during scientific reports and
- 7 giving advice about the inclusion of information in those
- 8 reports; correct?
- 9 A. By reports, you mean what?
- 10 Q. Well, let's say this: PowerPoints with the rest of
- 11 the group, editing PowerPoints, are you aware they did that?
- 12 MR. NARESH: Objection to form.
- 13 A. I was not aware that external counsel were involved
- 14 in editing our PowerPoints.
- 15 BY MR. TILLERY:
- 16 Q. Would you think that that would be inappropriate?
- 17 A. 1 think under some circumstances it certainly would.
- 18 Q. Why? Why would you that having some outside lawyer
- 19 from some private law firm in America editing your reports
- 20 and telling scientists what they can and cannot say about
- 21 paraquat would be inappropriate?
- 22 MR. NARESH: Objection to form.
- 23 A. I don't believe in my experience that has happened.
- 24 BY MR. TILLERY:
- Q. Okay. So you certainly would not put up with it,

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- 1 formed this Syngenta Group which -- where other companies 1 would you?
  - 2 A. No.
    - 3 Q. Okay, what would you tell them?
    - 4 MR. NARESH: Objection to form.
  - 5 A. I would tell them that they are perfectly entitled
  - 6 to give advice about how we are made aware of the situation
  - 7 that exists in terms of things like potential litigation.
  - 8 But we -- we would not expect them to be saying "you do this
  - 9 experiment and not that experiment".
  - 10 BY MR. TILLERY:
  - 11 Q. Or that you say this about this chemical, or you say
  - 12 that about this chemical?
  - 13 A. Absolutely, absolutely.
  - 14 Q. You would think that that should rest within the
  - 15 discretion of the Syngenta scientists and leadership team
  - 16 within Syngenta; correct?
  - 17 A. That is part of the ethos of the team exactly, yes.
  - 18 Q. Right, right.
  - 19 Now, can you tell me in terms of the paraquat health
  - 20 science team, is it made up of people from around the world,
  - 21 or are you located in one particular geographic area?
    - 22 A. No, it's from more than one part of the world. So
  - 23 we have people -- or have had people, again there is history
  - 24 of people, some people being in it at one time and not at
  - 25 others -- but we generally have people from both Europe and

58 (Pages 470 - 473)

24 committees?

CONFIDENTIAL Page 474 Page 476 1 North America, particularly. Let's talk about -- I don't remember the name of the Q. Any other parts of the world besides Europe and 2 group that you headed up. 3 North America? A. Yes, yes. A. Generally speaking, no. It has largely been from 4 Q. What was the name of that group? 5 those two regions. A. It didn't have a particular name. I think you're Q. Has there been any specific accomplishment by the 6 referring to the documents where we were talking about 7 paraquat health science team in terms of the progression of 7 reference doses and so on. 8 your thinking about paraquat and Parkinson's disease? Q. It was you, Dr. Sturgess and --MR. NARESH: Objection to form. A. Dr. Travis. 10 A. Well, I think you have seen that the work program 10 O. Dr. Travis. 11 that we have conducted in the form -- and how it has been 11 A. And Mr. Cook. 12 published, the kind of experiments that we have done -- and 12 Q. And you had two documents, 2009 and 2011. What was 13 we spoke yesterday about experiments which are still in 13 the name of that group? 14 progress to completion and publication. A. Well, we didn't call ourselves -- there wasn't an So our achievements have been to conduct a large 15 official title. We were part of what we called a -- the 16 body of research and to put that into the public domain as 16 paraquat technical team, which was a subset of the paraquat 17 much as we can. 17 health science team. 18 BY MR, TILLERY: 18 Q. And how do you keep all these teams, committees, 19 Q. Have you received advice from any outside lawyers 19 groups, straight? 20 about what studies you should do? 20 A. That's part of my leadership responsibilities. A. Not in terms of what studies we should do, no. 21 Q. So that's the paraquat --22 Q. Okay. Again, would that fall into the realm of 22 A. Let's describe it as the paraquat technical team. 23 things that you would think would be inappropriate? 23 Q. Technical team? A. Unless there was a particularly good reason to -- to A. Yes. 24 25 give out that kind of advice then, generally speaking, 25 Q. Okay. Page 475 Page 477 1 I wouldn't want the science -- good science to be not And are you no longer on that team? 1 2 allowed to progress. 2 A. No, I'm still part of that team. Q. Would you agree with me that an outside lawyer who 3 Q. All right. Are you the head of that team? 4 is retained primarily to represent the company in terms of A. I still act to head that team, yes. Q. All right. And how long has that team been in 5 potential exposure from the sale of its product would have 5 6 different kinds of motives than that of a scientist whose 7 motives are to obtain an accurate objective reproducible A. It's been part of the modus operandi of the health 8 science team, i.e. being a group which feeds into the health 8 scientific result? 9 science team, for as long as the health science team has MR. NARESH: Objection to scope, form. 9 10 A. Call it motives, different agendas, what you will, 10 been in existence. Q. Okay. So in 2008 or thereabouts when the paraquat 11 of course, yes, that's true. 12 BY MR. TILLERY: 12 health science team started, you started a technical team to 13 Q. That seems pretty fundamentally correct, yes? 13 support it --A. We had something similar to what we've got now. Q. And that's the reason why you wouldn't want them 15 Different people -- some different people, but broadly 15 16 telling you what science to do, would you? 16 having the same --Q. Do you have marketing people on the paraquat health 17 MR. NARESH: Same objection. 17 A. And why in my experience, I don't recall ever having 18 science team? A. No. 19

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Q. Okay. Do you have marketing people on the paraquat

A. I -- I can't give you names off the top of my head.

25 And today the paraquat issues leadership team is a looser

22

23

24

21 issues leadership team?

Q. And who are those people?

A. Yes.

19 been told by lawyers not to do --

Q. And if that happened, they didn't tell you about it?

Q. Ever saying that?

20 BY MR. TILLERY:

A. Indeed.

Q. Okay.

21

22

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- 1 association, it is a looser organization than it used to be
- 2 until a few years ago.
- Q. Can you explain why you have marketing people on
- 4 the paraquat issues leadership team?
- A. I believe that it was thought wise to have -- to
- 6 give again transparency to the marketing organization about,
- 7 um, safety and regulatory issues regarding paraquat, so it
- 8 is giving them foresight of things that could affect their
- 9 ability to sell paraquat.
- Q. Anybody from the business side on the paraquat
- 11 health science team?
- A. No.
- Q. Okay. You talked about different PRF committees, 13
- 14 and you mentioned the difference between the US and Europe.
- 15 Are you aware of any other PRF committees with respect to
- 16 regulatory oversight by other countries?
- 17 A. No, I am not aware. I am not saying that there
- 18 aren't, but I don't remember having visibility of any other
- 19 PRF committees other than the one in Europe.
- 20 I don't even know whether that still works.
- 21 I assume it does, but I don't see evidence of that, or the
- 22 North American one.
- Q. When an adverse effect is reported to the regulatory
- 24 authority in the United States, the US EPA, is it
- 25 automatically reported in other countries where the product

- 1 is my experience from sometimes chairing that committee as
  - 2 well as being part of it, if it is clear that the criteria
  - 3 are not fulfilled then the record is there that we had that
  - 4 discussion, but it does not get submitted to the US
  - 5 committee.
  - If it is clear that they do meet the criteria, or if
  - 7 there is any doubt, then they are submitted to the US
  - 8 committee.
  - Q. Okay. It goes to the PRF committee?
  - 10 A. To the US PRF committee, yes.
  - 11 Q. Okay.
  - 12 So along the process, the PRF approach committee has
  - 13 the authority to stop the advancement of an adverse effect
  - 14 potentially being sent on to a regulatory authority, and the
  - 15 PRF committee itself does, right?
  - A. Yes. 16
  - Q. And then after the PRF committee makes the 17
  - 18 recommendation, where does it go from there?
  - A. Are you there referring to the approach committee or
  - 20 the US committee?
  - Q. No, the US committee. The PRF committee in the 21
  - 22 United States?
  - A. If the US committee believes that it meets the
  - 24 criteria of 6(a)(2), it will submit to the US EPA.
    - Q. Without further ado?

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- A. I'm not sure if that process is in place. I don't
- 3 know.

1 is sold?

- Q. Was it when you were on the committee?
- A. I -- at the time I was on the committee I don't
- 6 know, because I think as I said earlier the US PRF committee 6 report adverse effects to regulatory authorities?
- 7 I was not a member of that, so I don't exactly know what
- 8 their onwards process of communication was, other than into 8 committee gets involved in that kind of decision.
- 9 the EPA.
- Q. When a person makes -- or scientist makes --
- 11 a finding and sends it to, you said, a PRF approach
- committee, do they get it before the PRF committee?
- A. Yes. Because the PRF approach committee is within
- 14 the function that is generating the data doing the studies,
- 15 either within the function itself or at contract research
- 16 organizations. So they are the scientists who first become
- 17 aware of the findings.
- 18 Q. And they then do an evaluation?
- A. They evaluate whether the findings -- whether they
- 20 are real, whether they are related to treatment, if they are
- 21 adverse and if they fulfill the criteria for 6(a)(2).
- 22 Q. And they say it doesn't, does that stop it? Right
- 23 there it ends?
- A. If the committee -- if that approach committee
- 25 makes -- if it is clear to that approach committee, and this

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- A. I don't believe there is another check in that
- 2 process.
- Q. Okay. So you don't believe the Syngenta executive
- 4 committee has to approve any decision or recommendation by
- 5 a potentially referable finding committee about whether to
- 7 A. I don't believe that the Syngenta executive
- Q. Now have we identified all people outside of
- 10 Syngenta in all the committees? Are there other people who
- 11 are not fully employed by Syngenta who occupy roles in any
- 12 of these committees other than one you've described for me?
- A. Right. So certainly there are no
- 14 outside non-employed -- Syngenta employed -- people on
- 15 either of the PRF committees. So we can exclude those.
- 16 Q. Okay. All right.
- 17 A. There is nobody outside of Syngenta on the PILT.
- 18 Q. Okay.
- 19 A. Paraquat issues leadership team.
- 20 Q. All right.
- 21 A. As I said earlier, when it comes to the paraquat
- 22 health scientists team, we have had people, consultants,
- 23 outside experts, be part of that team for in some cases
- 24 quite a long period and other cases for a short period.

Q. Okay. Is a notifiable effect the same as

Page 482 Page 484 1 a potentially referable finding? 1 European Union has banned it? MR. NARESH: Objection, calls for a legal 2 A. It was part -- well, because the decision-making is 3 conclusion. 3 done at the EU level and we were talking about that list A. Possibly, yes. It sounds a reasonable conclusion. 5 BY MR. TILLERY: Q. All right. So it can't be sold in the EU? Q. Have you ever heard of the term "notifiable effect" A. That's the current position, yes. 7 being used at Syngenta? Q. All right. What other countries have banned it? A. Yes, it is a term which is sometimes used, yes. A. Well, a number of other countries in the Far East, 9 Q. Interchangeably with --9 China for example. Again, I would have to check back on the 10 A. Yes, my understanding of how that would be used 10 list that -- yes, the number of countries have banned it. 11 would be interchangeable with potentially referable, yes. 11 O. Who keeps that list? 12 That's not to say that other people might have a different 12 A. The marketing organization. 13 view, but that would be my understanding. Q. Okay. And you say China. When did China ban it? 13 Q. If a product is determined to be potentially 14 A. Again, I can't remember the exact date. 15 neurotoxic does that indicate to you that much more care in 15 Q. And did Vietnam ban it? 16 analysis is required because of possible serious harm or 16 A. I can't remember whether that was one of the 17 death to consumers? 17 countries A. We take all potential findings in studies that may Q. What other Pacific Rim countries have banned 19 have consequences for human health very seriously, so not 19 paraquat from being sold in their countries? 20 just neurotoxicity. A. Well, I think I would need notice of that question Q. So, in other words, you don't treat products that 21 to check. It is not a list that I tend to keep in my head. 22 are determined to be potentially neurotoxic any more O. Do you know the rough number of countries --23 seriously than any other product? A. I think you indicated a number this morning --A. That is in no way to diminish what you -- what you Q. I told you 32, but I think my information might be 25 are inferring, that any potential health effect is something 25 out of date. Page 483 Page 485 1 which we need to take seriously. A. Yes, I can neither confirm nor deny that. Q. Okay. Would you agree with me that if a product is 2 Q. Who is -- strike that. 3 Who owns Syngenta? 3 determined to be potentially neurotoxic, it sends an 4 MR. NARESH: Objection, scope. 4 indication, a red flag to you that care, deliberation, 5 caution is required because of the potential side effects A. ChemChina. 6 to, impact caused -- whatever you want to call it -- to the 6 BY MR. TILLERY: 7 consuming public, the people who by your product? Q. Where is Syngenta headquartered? MR. NARESH: Objection to form. A. Basel. 9 A. Of course. And that has always been the ethos of Q. Okay. 10 the approach committee which I was apart of, indeed. 10 Was paraquat banned by any country because of its 11 neurotoxicity, or its potential to be neurotoxic? 11 BY MR. TILLERY: A. I don't believe so. But I would -- again a detail Q. Let's talk about countries that have banned the 13 that I would need to check. My understanding is most of the 13 chemical paraquat, okay? 14 Does Switzerland allow paraquat to be used? 14 bans have been associated with its acute toxicity. A. I believe it does not. Q. Has paraquat been banned by any country because 16 Syngenta could not establish that it was not neurotoxic? 16 Q. Okay. Does England? A. I'm not aware of that, but again I would need to 17 A. No. 18 O. Does France? Q. Has any country banned paraquat because of a risk of 19 A. No. 19 20 brain injury? 20 Q. Germany? 21 A. No EU country does. 21 A. I am not aware of that. 22 22 Q. So I could go through the whole list --Q. But you can't deny --23 23 A. I would need to check that. A. You could. 24 Q. -- and none of them, okay? 24 Q. Has Syngenta been asked by any country considering When you say "EU", every country ever of the 25 the registration and permission to continue to sell it to

Page 488 Page 486 1 provide evidence that it is not neurotoxic? A. I do not believe so. 2 BY MR. TILLERY: 2 A. Well, we did discuss earlier on this afternoon 3 Brazil, for example. Q. Okay. Has Syngenta ever reported to any regulatory 3 Q. We went through that. 4 agency that paraquat has the potential to be neurotoxic? MR. NARESH: Objection to scope. 5 A. They were asking questions about that matter --A. Yes, because as exemplified by the discussions we Q. So excluding Brazil and their request for 7 had with Brazil, we said the potential was there, which was 7 information about neurotoxicity? 8 A. Yes. 8 why we were conducting our research program. 9 9 BY MR. TILLERY: Q. Any other country ask for that same information? 10 A. I can think of another example in the form of 10 Q. You were telling them about the potential. Why 11 didn't you tell them about Louise Marks? A. Well, as I say, hindsight is a wonderful thing, and 12 Q. Have they asked for that? 13 we could have added the Marks studies to what these 13 A. They asked for our evidence which we discussed with 14 regulatory authorities already knew, which is that that 14 their regulatory authority, yes. 15 mouse model has, in the hands of some researchers, shown 15 Q. And when did they ask for that? A. I can't give you the date. It was -- I think we are 16 an effect, an apparent effect, of the paraquat. 16 17 talking about over the last ten years or so as they have Q. You don't think it makes a little bit of difference 18 been rereviewing. 18 if the people involved in the manufacturing and sell --Q. And Charles Breckenridge made a presentation to the nl 9 sale -- and who have an obligation to go forward with the 19 20 there, didn't he? 20 registration of the chemical, if the same people behind that 21 A. He did, yes. 21 chemical had done testing within their own laboratories and 22 Q. Just like he did to the folks in Brazil? 22 made findings that are consistent with outside scientists, 23 A. Yes. 23 you don't think that's important to regulators? Q. And in that presentation he didn't mention anything 24 MR. NARESH: Objection to form. 25 A. I don't think I have ever said that it is not 25 about Louise Marks, did he? Page 487 Page 489 1 MR. NARESH: Objection to form. 1 important to regulators. And I have said, I think, several 2 A. And I think the same applies to what -- to the 2 times now that in my view it would have been not an 3 discussion we had earlier that two things are important. 3 unreasonable course of action to include that, but obviously First of all, Australia were well aware of the 4 the overall weight of evidence was telling us something 5 published literature suggesting that paraquat has an effect 5 differently. 6 on the mouse brain, so they were starting from an assumption 6 BY MR. TILLERY: 7 that that might be something of significance. But they saw 7 Q. Have you ever told anyone not to report an adverse 8 from the extensive research that we have done that that was 8 effect of paraquat to any regulatory agency? 9 giving a different weight of the evidence. 9 A. I am not aware that I have ever done that. 10 BY MR. TILLERY: 10 Q. Are you aware of anyone at Syngenta who has ever 11 11 told anyone not to report the results of an adverse effect Q. Okay. I move to strike the answer as unresponsive. 12 Could you repeat my question, please? 12 of paraguat to any regulatory agency? 13 COURT REPORTER: "And in that presentation he 13 A. Again, I'm not aware of that being said in any -- in 14 didn't mention anything about Louise Marks, did he?" 14 any direct way, no. A. I believe he did not. Q. Have you ever participated in a group that discussed 15 15 Q. To your knowledge, the Australians selling or 16 whether to report an adverse effect of paraquat? 17 allowing paraquat to be sold today know nothing about the A. The PRF approach committee is the closest that I've 18 studies that you did internally in CTL by Louise Marks, 18 got to. But again that's making recommendations, not 19 right? 19 decisions. A. That is a possibility. But again I would need to 20 Q. And you told us about that earlier. 21 confirm that with other colleagues. 21 A. I did. 22 22 Q. When you made the recommendation for the US EPA? Q. Okay. 23 Has Syngenta ever reported to any regulatory agency 23 A. That is correct.

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Q. Did the Syngenta executive committee ever decide no

25 to report a potential adverse effect of paraquat to

24

25

24 anywhere on this globe that paraquat is neurotoxic?

MR. NARESH: Objection to scope.

1 a regulatory agency?

- A. Again, as I have said before, in my experience
- 3 I don't think the SEC have ever been involved in making
- 4 those decisions.
- Q. Would you agree with me, sir, that companies engaged 5
- 6 in the development and sale of a product subject to ongoing
- 7 regulation like paraquat have an obligation to be truthful
- 8 to those regulatory bodies and to the public when they
- 9 report their scientific findings?
- 10 A. I do agree with that.
- Q. Okay. Would you agree with me that companies
- 12 engaged in the development and sale of a product subject to
- 13 ongoing regulation like paraquat have an obligation to the
- 14 public to share their scientific findings?
- 15 A. Yes, I agree with that.
- Q. Would you agree with me that Syngenta scientists are
- 17 ethically required to share their scientific findings about
- 18 paraquat?
- 19 MR. NARESH: Objection to scope.
- 20 A. I do agree.
- 21 BY MR. TILLERY:
- O. Would you agree with me that the amount of money
- 23 Syngenta makes should never, ever, be a reason or
- 24 justification for concealing health risks of paraquat?
- 25 A. Very much so, yes. I agree.

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- O. Okay. Can you think of any justification for
- 2 concealing or withholding information about an adverse
- 3 effect concerning paraquat?
- A. Only if the -- the definition of a PRF, for example,
- 5 has not been felt to have applied, which is the case we were
- 6 discussing earlier.
- Q. Would you agree with me that withholding scientific
- 8 findings from the public about the neurotoxic effects of
- 9 paraguat would be unethical?
- A. If we truly believed that paraquat had genuine
- 11 neurotoxicity, then of course we would not wish to withhold
- Q. And do you agree with me that would be improper and 13 of your questioning and I do object to the use of this 13
- 14 unethical?
- A. If we genuinely believed that that was the property
- 16 of paraguat.
- Q. But it is only when you subjectively believe it, 17
- 18 right?
- 19 MR. NARESH: Object to form, argumentative.
- A. Could you repeat the question?
- 21 BY MR. TILLERY:
- Q. It is only when you believe it, that is the
- 23 standard?
- 24 MR. NARESH: Objection.
- A. No, let me qualify that by saying that this is

- 1 dependent on the best possible scientific evidence which,
- 2 when I have been talking about weight of evidence, is what
- 3 we have been engaged for many years in trying to create.
- 4 BY MR. TILLERY:
- Q. Would you agree with me that withholding scientific
- 6 findings from the public about the neurotoxic effects of
- 7 paraquat would be fraudulent?
- 8 MR. NARESH: Objection to form.
- 9 A. If there were -- if the weight of evidence had
- 10 suggested there was clear neurotoxicity, then I don't know
- 11 whether you call that fraudulent, but I think it is
- 12 certainly not something that we would -- we would do.
- 13 BY MR, TILLERY:
- Q. Well, whether or not you would do it or not, would
- 15 you agree with me that if you did it, it would be
- 16 fraudulent?
- 17 MR. NARESH: Same objections.
- A. I don't know that I would be happy to -- to use the
- 19 word "fraudulent".
- 20 BY MR. TILLERY:
- Q. Okay, let's substitute a word. Let's substitute
- 22 the word "dishonest"?
- 23 A. I think that is probably a better --
- 24 Q. Are you okay with that word?
- 25 A. Yes.

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- Q. Let me start over again. Would you agree with me
- 2 that withholding scientific findings from the public about
- 3 the neurotoxic effects of paraquat would be dishonest?
- MR. NARESH: Same objection.
- A. Yes, and again if we had come to a conclusion on
- 6 that subject based on the best science.
- 7 MR. TILLERY: I am at your magic number. I will
- 8 see on you the 31st.
- A. I understand, sir.
- 10 MR. NARESH: Let me just make on the record, I do
- 11 anticipate having redirect for this witness. I understand
- 12 that my opportunity for redirect will come at the conclusion
- 14 deposition until I have my opportunity for redirect.
- THE VIDEOGRAPHER: At that point, are we
- 16 concluding for today?
- 17 MR. TILLERY: We are.
- THE VIDEOGRAPHER: In which case we shall go off
- 19 of the record at 4:49 pm concluding today's part of the
- 20 deposition.
- 21 (Whereupon, the deposition concluded at 4:49 p.m.)
- 22
- 23
- 24
- 25

	Page 494		Page 496
1	CERTIFICATE OF COURT REPORTER	1	Hoffmann, Diana v. Syngenta Crop Protection LLC
2		2	Dr. Philip Botham, V2 (#3984465)
3	I, Laura Evans, an Accredited Real-time Reporter, hereby	3	ERRATA SHEET
	certify that the testimony of the witness Philip Botham in	4	PAGELINECHANGE
	the foregoing transcript, numbered pages first page 244	5	
	through last page 495, taken on this 26th day of February,	6	REASON
	2020 was recorded by me in machine shorthand and was	7	PAGELINECHANGE
	thereafter transcribed by me; and that the foregoing	8	
	transcript is a true and accurate verbatim record of the	9	REASON
	said testimony.		PAGELINECHANGE
11 12		11	
	I further certify that I am not a relative, employee,	12	REASON
	counsel or financially involved with any of the parties to	13	PAGELINECHANGE
	the within cause, nor am I an employee or relative of any	14	
	counsel for the parties, nor am I in any way interested in	15	REASON
17		16	PAGELINECHANGE
18		17	
19		18	REASON
	Laura Evans	19	PAGE LINE CHANGE
20	Signed:	20	
21	Name: Laura Evans	21	REASON
22	Date: February 27, 2020	22	
23		23	
24		24	Dr. Philip Botham, V2 Date
25		25	
	Page 495		Page 497
1	Ragan Naresh, Esq.		Page 497 Hoffmann, Diana v. Syngenta Crop Protection LLC
2	Ragan Naresh, Esq. ragan.naresh@kirkland.com	1 2	Hoffmann, Diana v. Syngenta Crop Protection LLC Dr. Philip Botham, V2 (#3984465)
3	Ragan Naresh, Esq. ragan.naresh@kirkland.com March 3, 2020	1 2 3	Hoffmann, Diana v. Syngenta Crop Protection LLC  Dr. Philip Botham, V2 (#3984465)  ACKNOWLEDGEMENT OF DEPONENT
2 3 4	Ragan Naresh, Esq. ragan.naresh@kirkland.com March 3, 2020 RE: Hoffmann, Diana v. Syngenta Crop Protection LLC	1 2 3 4	Hoffmann, Diana v. Syngenta Crop Protection LLC  Dr. Philip Botham, V2 (#3984465)  ACKNOWLEDGEMENT OF DEPONENT  I, Dr. Philip Botham, do hereby declare that I
2 3 4 5	Ragan Naresh, Esq. ragan.naresh@kirkland.com March 3, 2020 RE: Hoffmann, Diana v. Syngenta Crop Protection LLC 2/26/2020, Dr. Philip Botham, V2 (#3984465)	1 2 3 4 5	Hoffmann, Diana v. Syngenta Crop Protection LLC  Dr. Philip Botham, V2 (#3984465)  ACKNOWLEDGEMENT OF DEPONENT  I, Dr. Philip Botham, do hereby declare that I have read the foregoing transcript, I have made any
2 3 4 5 6	Ragan Naresh, Esq. ragan.naresh@kirkland.com March 3, 2020 RE: Hoffmann, Diana v. Syngenta Crop Protection LLC 2/26/2020, Dr. Philip Botham, V2 (#3984465) The above-referenced transcript is available for	1 2 3 4 5 6	Hoffmann, Diana v. Syngenta Crop Protection LLC  Dr. Philip Botham, V2 (#3984465)  ACKNOWLEDGEMENT OF DEPONENT  I, Dr. Philip Botham, do hereby declare that I  have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as
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IN THE CIRCUIT COURT
TWENTIETH JUDICIAL CIRCUIT
ST. CLAIR COUNTY, ILLINOIS

DIANA HOFFMANN, )
individually and as )
Independent Administrator )
of the Estate of THOMAS R. ) No. 17-L-517 '
HOFFMANN, Deceased, et al., )

Plaintiff, )

V.
SYNGENTA CROP PROTECTION,

LLC, et al.,
Defendants.

\*\*\*CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER\*\*\*

VIDEOTAPED ZOOM DEPOSITION OF

SYNGENTA CROP PROTECTION, LLC

PHILIP BOTHAM (Volume III, pages 498-834 inclusive)

Wednesday, June 17, 2020

Berkshire, England, United Kingdom (Deponent's location)

Reported by: LEAH M. WILLERSDORF, (AVR, MBIVR No. 166, QRR2, International Participating Member NCRA.)

Job No. 27625

## CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER

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	Page 499			Page 501
1		1	APPEARANCES (all via Zoom videoconference)	
2 3	June 17, 2020	2		
4	10:20 a.m.	3	For the Defendant CHEVRON USA, INC.:	
-	(British Summer Time)	4	HUSCH BLACKWELL LLP	
5			BY: JOSEPH ORLET, Esq.	
6	7	5	190 Carondelet Plaza	
7 8	Zoom videotaped deposition of SYNGENTA CROP PROTECTION, LLC - Philip Botham, Berkshire, England,	6	Suite 600 St. Louis, MO 63105	
9	United Kingdom, reported remotely via videoconference	7	Telephone: (816) 983 8295	
10	before Leah Willersdorf, Accredited Verbatim Reporter,	8	Email: joseph.orlet@huschblackwell.com	
11 12	Member of the British Institute of Verbatim Reporters (Accreditation No. 166), Qualified Realtime Reporter	9 10	ALSO PRESENT:	
13	(Level 2), International Participating Member NCRA	11	Khaldoun Baghdadi - Walkup, Melodia, Kelly & Schoenberger - Plaintiff's	
14	(USA).	12	co-counsel)	
15		13	Nicole Graham - Korein Tillery, LLC Juanita Brumitt - Korein Tillery, LLC	
16 17		14	Mark Smith - Syngenta in-house counsel Wendy Viner - Videographer	
18		15		
19		16 17		
20		18 19		
21 22		20		
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24		23 24		
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2		2	Witness: Page	
3 4	On behalf of Plaintiffs: KOREIN TILLERY, LLC	3	Witness: Page	
5	BY: STEPHEN M. TILLERY, Esq. ROBERT L. KING, Esq.		PHILIP BOTHAM (Volume III)	
6 7	ROSEMARIE FIORILLO, Esq. One US Bank Plaza	4	Franciscotion by Mr. Tillage, continued	511
8	505 N. 7th Street Suite 3600	5 6	Examination by Mr. Tillery, continued	311
9	St. Louis, MO 63101	7		
1.,	Telephone: (314) 241 4844	8		
10	Email: stillery@koreintillery.com rking@koreintillery.com	9 10		
11 12	rfiorillo@koreintillery.com	11		
13	On behalf of Defendant SYNGENTA CROP PROTECTION, LLC:	12		
14	KIRKLAND & ELLIS LLP	13 14		
15	BY: RAGAN NARESH, P.C.	15		
	1301 Pennsylvania Avenue, N.W.	16		
16 17	Washington, DC 20004 Telephone: (202) 389 5267	17		
18	Email: ragan.naresh@kirkland.com	18 19		
19 20	For the Defendant GROWMARK, INC.: STEPTOE & JOHNSON, LLP	20		
21 22	BY: ANTHONY HOPP, Esq. 227 West Monroe Street	21		
23	Suite 4700 Chicago, IL 60606	22		
24	Telephone: (312) 577 1249	24		
25	Email: ahopp@steptoe.com	25		

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	Arted Type 73 1050				
	dated June 23, 1969 (CUSA-00383840)		9	(SYNG-PQT-ATR-07709192 -	
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4 (Pages 507 to 510)

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1	Swear him in.	1	a document that you thought you wanted to see
2	THE VIDEOGRAPHER: Could I ask the	2	more of, if you thought there was some issue
3	court reporter to please swear in the	3	about what the part of the document that
4	witness and we can proceed.	4	I was showing you or whatever, you have the
5	PHILIP BOTHAM,	5	right to stop me and ask or to show different
6	having been duly re-sworn,	6	parts of that document or to look at it.
7	was examined and testified as follows:	7	No one wants to rush you. Given the
8	MR. TILLERY: Can we get the full	8	circumstances of this communication, you have
9	screen of Dr. Botham instead of just the	9	the right to take your time in looking at those
10	small icon of him. Is there a way to do	10	exhibits any way you want. I want to make sure
11	that?	11	you have that.
12	There we go. All right. Okay.	12	Right?
13	Thank you.	13	A. Okay, thank you.
14	EXAMINATION ON BEHALF OF PLAINTIFFS	14	Q. And as we indicated off the record,
15	(continued):	15	if you need to take a break, you do that at
16	BY MR. TILLERY:	16	your discretion, and just so long as we're not
17	Q. Would you state your name, please,	17	in the middle of a deposition question. Okay?
18	for this record, once more.	18	A. Thank you.
19	A. Dr. Philip Botham.	19	Q. And before we begin the deposition,
20	Q. You understand, Dr. Botham, this is	20	this remote deposition, I want to make clear
21	a continuation of a deposition that was started	21	the expectations regarding communications with
22	in London in about the third week of February	22	the deponent.
23	of this year, correct?	23	During this deposition, as I've
24	A. Correct.	24	indicated, counsel appearing with the deponent
25	Q. And we were not able to finish that	25	and the deponent, here you don't have counsel
	Page 512		Page 514
1	deposition because of a lot of issues with the	1	appearing physically with you, do you, sir?
2	coronavirus and the deposition has been delayed	2	A. No, I don't.
3	until this time. We are now doing this	3	Q. But you'd have an opportunity at
4	deposition remotely, which means that lawyers	4	a break to have an electronic chatroom, they
5	from different parts of the United States are	5	refer to it as, a way to communicate at a break
6	logging in to a video-audio system that allows	6	with your counsel if you wish to. But while
7	them to watch you where you're located in	7	we're appearing on the film, while we're asking
8	England, and we are located in different	8	questions, it's our expectation that there's
9	positions in different parts of the United	9	no electronic communication going on between
10	States.	10	you and anyone else.
11	Do you understand all that?	11	You understand that?
12	A. That's fine. I understand.	12	A. Yes. That was something that
13	Q. All right. And you're connected	13	I've discussed with my counsel and
14	to an electronic system that allows you to look	14	I clearly I understand those that
15	at exhibits electronically, and those exhibits	15	requirement.
16	are then put on a screen for you to see and you	16	Q. And you're in a deposition room by
17	can study those exhibits, look at them,	17	yourself, and you're physically located where
18	ask your own questions if you want to see more	18	at this time?
19	of that exhibit than as what we pull up on the	19	A. Yes, I'm on my own. I'm physically
20	screen.	20	located in the Syngenta Jealott's Hill complex
21	Did you understand that?	21	and I'm in the building that is occupied by
22	A. Yes. Thank you, that's my	22 23	the product safety department.
23 24	understanding.		Q. All right. And this is in just
24 25	Q. So for clarification, just to make	24 25	so we're clear, this is in a city outside of London about how far?
transmin	sure, for that purpose, if you were to see	2.0	LONGON ADOUG NOW TAL!

	Page 515		Page 517
1	A. We are in a science park, which is	1	A. Yeah. I'm just downloading this,
2	where the nearest city is called Bracknell,	2	I'm sorry. I didn't download every previous
3	and that is around 20 miles away from London.	3	document I had so I'll just take a minute.
4	Q. All right.	4	Q. All right. No problem.
5	So the first thing I want to do in	5	A. Okay. So I can now see my local
6	the deposition is to indicate to you that	6	version here.
7	we should clean up or clear up some open-ended	7	Q. And the page, if you see the
8	issues that were left open during the	8	reference that we're looking at, there is
9	deposition, before we move on to new topics.	9	a CUSA number at the bottom.
10	I had been I wouldn't expect you	10	Do you see that?
11	at this length of time of delay, unless you've	11	A. Yeah. Yes, I can see that.
12	re-read your deposition recently, to understand	12	Q. We're going to the last number 885,
13	that we had finished we hadn't finished on	13	and that it's Exhibit 14 but the Bates
14	some questions because there was some issue	14	number at the bottom of the page is 885. it's
15	about numbers, if you remember that, okay	15	CUSA-00189885.
16	A. I do.	16	A. Yeah, I'm almost there.
17	Q in the first all right.	17	Yeah, I'm there. I can see that,
18	So we're going to go back for a few	18	thank you.
19	questions and finish those before we move on.	19	Q. All right. All right.
20	One of the first ones I had was	20	So if you would read the paragraph
21		21	that starts with Mike's letter. You can read
22	marked as Exhibit No. 14 in your deposition, in the earlier part of this deposition. That	22	
23		23	it to yourself if you wish.
	is a document that we could pull up at this		A. Yes, I do you want me to
24 25	point in time.	24	you don't want me to read that out loud or
25	Because of the size of the document,	25	just to myself?
	Page 516		Page 518
1	it's going to be submitted to you on the	1	Q. Just to yourself's fine. I want
2	screen. The document that I've shown you	2	to ask you some questions about that.
3	is a document from a production by Chevron and	3	A. Okay.
4	it relates to an ICI-Chevron communication.	4	Yes, okay, I've read that
5	MR. NARESH: Steve, not to	5	paragraph.
6	interrupt, but, Dr. Botham, do you have	6	Q. All right. So this is a page from
7	access to an electronic version of the	7	a letter from R. Cavalli to Ken Fletcher, dated
8	prior exhibits that were used in the	8	July 9, 1975, and though we may have identified
9	deposition in February?	9	those gentlemen at an earlier time of the
10	THE WITNESS: I do.	10	deposition, out of an abundance of caution
11	BY MR. TILLERY:	11	let's one more time explain who they were.
12	Q. Actually, that might be easier for	12	You understand R. Cavalli to be
13	you if you wish to do that.	13	a toxicologist at Chevron, correct?
14	A. Yeah, okay.	14	A. I'm not sure that I did know that
15	Q. All right. So if you pull up	15	but I certainly don't remember ever meeting
16	Exhibit No. 14.	16	that person, so I can't confirm that.
17	(Botham Exhibit 14 previously	17	Q. But you understand that from the
18	marked for identification.)	18	deposition, from the exhibits that we looked
19	THE WITNESS: Sorry. I just need	19	at before in the earlier part of the
20	to log on to the access for this.	20	deposition, we referred many times to
21	BY MR. TILLERY:	21	R. Cavalli. Do you remember?
4 1		22	A. Yes, okay.
	O. Yean, It's man bage mans on voiir		
22	Q. Yeah, it's that page that's on your screen if you look at your screen right now.		
	screen if you look at your screen right now.  A. Yeah, so	23 24	Q. All right.  And there's a Ken Fletcher as well.

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1	A. Yes. Ken Fletcher I know was a	1	BY MR. TILLERY:
2	somebody who worked at the Central Toxicology	2	Q. The letter also indicates that
3	Laboratory of ICI. He left before I joined.	3	a pathologist who examined, a Dr a Thomas
4	Q. And Ken Fletcher then would be	4	Paul, found a lesion in the spinal cord.
5	working with the predecessor of Syngenta	5	Do you see that?
6	corporation, correct?	6	A. Yes.
7	A. That is correct.	7	Q. The letter also says that the
8	Q. And during this period of time,	8	pathologist was suspicious that it was due
9	July 9, 1975, was when ICI and/or Syngenta and	9	to his exposure to paraquat. Correct?
10	Chevron were working together in terms of the	10	A. That's correct.
11	production of a product in a paraquat	11	Q. So did ICI do any study to
12	product, and the formulation of product by	12	investigate whether exposure to paraquat could
13	Chevron and the sale of product in the United	13	cause a spinal cord lesion in response to this
14	States that included paraquat by Chevron,	14	report?
15	correct?	15	A. I'm not aware that any such study
16	A. That's correct.	16	was done.
17	Q. All right.	17	Q. Did Chevron, to your knowledge,
18	Now, if you would look at this	18	do any study to investigate whether exposure
19	as I ask you this question, if you look at this	19	to paraquat could cause a spinal cord lesion?
20	part of the exhibit, the letter indicates that	20	A. I'm not aware of Chevron doing such
21	a Mr. Fales, or Fales, alleged permanent CNS	21	a study.
22	effects from paraquat.	22	Q. Okay.
23	Do you see that?	23	In response to this letter, did ICI
24	A. Yes, I do.	24	investigate paraquat's potential to cause the
25	Q. All right. CNS stands for what?	25	kinds of central nervous system effects that
	Page 520	-	Page 522
1	A. Central nervous system.	1	were being reported in the letter?
2	Q. And Dr. Cavalli asked Dr. Fletcher	2	A. I'm not aware of any studies that
3	for any information he may have on the question	3	were directly related to the issues that are
4	of permanent injury from paraquat, doesn't he?	4	described here.
5	A. He does.	5	Q. Well, even indirectly did they
6	Q. He asks for any follow-up	6	do any? Whether they were a direct response
7	evaluations several years after spraying,	7	to this letter or generally, did they do any?
8	doesn't he?	8	A. Well, generally, yes, ICI and its
9	A. He does.	9	companies which followed, of course, did do
10	Q. By the time of this letter, ICI had	10	a considerable amount of work on to look
11	been manufacturing paraquat active ingredient	11 12	at the potential for paraquat to affect the
12	and selling it to Chevron for formulation and	13	nervous system, but not directly related to this.
13	distribution in the United States for just	14	Q. Okay. Tell me the first long-term
14 15	about ten years, correct?  A. Correct.	15	neurological study that ICI-Syngenta did for
16	Q. But the sole distributor of paraquat	16	studying the impact of paraguat on the central
17	products in the United States was asking the	17	nervous system. When did they do that?
18	manufacturer of the active ingredient for any	18	A. Well, we had done a number of
19	information it might have about whether	19	studies in the 1990s 1980s and 1990s
20	long-term use of paraquat could cause problems	20	to address that question, and that research
21	at that time, right? Health problems.	21	continued until our publications in 2013 and
22	MR. NARESH: Object to the form.	22	2014; so we did a considerable number of
23	Go ahead and answer.	23	studies over a 25-year period.
24	THE WITNESS: That is correct, yes.	24	Q. Okay. Why don't you name me one.
25	///	25	The
		On the Labor to	

-	Page 523		Page 525
1	A. Well, the	1	A. He did.
2	Q. Excuse me, sir. We got a lot of	2	Q. And what were the study parameters?
3	feedback. Let me start that question over.	3	A. The main investigation was looking
4	Why don't you name me a single	4	at whether paraquat could enter the brain;
5	long-term neurotoxicity study that Syngenta did	5	so it was mainly a kinetic study but there
6	in the 1990s for paraquat?	6	were some parts of it that looked at the
7	A. Well, we for example, the	7	pathology of the brain.
8	studies that were conducted by Louise Marks at	8	Q. Was it published?
9	CTL which we discussed earlier.	9	A. It was . It was published in Human
10	Q. You understand that those didn't	10	and Experimental Toxicology.
11	occur until 2003?	11	Q. And that was one that was funded by
12		12	ICI or Zeneca?
13	A. Yes. I'm sorry, yes, that's correct.	13	A. That's correct.
14		14	
	Q. So you certainly did those, and		Q. What year was that study?
15	we're going to talk a lot about those today and	15	A. Published in 1995.
16	we're going to study we're going to discuss	16	Q. Okay. And are there any other
17	them.	17	studies besides that one?
18	My question to you is, you said	18	A. I can't recall any
19	you did studies at this time period, or up	19	Q. Until Marks
20	until the '90s. Tell me one study Syngenta	20	A. I can't recall any more in the
21	did, or Chevron did let's broaden it	21	1990s so we would move into the 2000s
22	or ICI did through the '80s or '90s to evaluate	22	to identify other studies.
23	the neurotoxicity of paraquat on a long-term	23	Q. And then the first ones of those
24	exposure basis?	24	would be the Louise Marks studies that we have
25	A. Okay. So one example would be in	25	gone through in this deposition earlier,
	Page 524		Page 526
1	the Nineteen which was definitely the	1	correct'?
2	1990s, was a study that was published as	2	A. Yes. It's my understanding that
3	Widdowson, et al.	3	those that was the next series of studies
4	Q. Widnes?	4	that was done.
5	A. Widdowson, et al. No, I'm sorry	5	Q. All right. So the only study from
6	Q. Widdowson	6	1965 until 2003 that studied long-term
7	A. No, it was Naylor, et al.,	7	neurotoxicity potential of paraquat was the
8	I'm sorry. Widdowson was the second author,	8	Naylor study in 1995, correct?
9	excuse me. It was Naylor, et al.	9	A. I was quoting that as an example
10	Q. And Naylor, et al. was one a	10	that I was aware of. I think if if you
11	study that Syngenta did?	11	look at the reference list in Naylor, it may
12	A. Yes. It was Zeneca at that time.	12	refer to other studies that were done before
13	Q. Okay. Zeneca did a long-term	13	that time.
14		14	
	neurotoxicity study and where the primary	1	Q. Now, have you read the Naylor study
15 16	investigator was Naylor?	15	yourself?
	A. Yeah. It's it depends how you	16	A. I have, yes.
17	define long term. This wasn't a long-term	17	Q. When was the last time you read it?
18	toxicity study as would be understood in	18	A. In preparation for this deposition.
19	regulatory guideline terms but it certainly	19	Q. So you had read it, what, in the
120	was looking at the potential for paraquat	20	last couple two or three weeks?
20	to affect the nervous system.	21	A. I have.
21			
21 22	Q. Okay. When was that study done?	22	Q. All right. Now, you know from
21 22 23	<ul><li>Q. Okay. When was that study done?</li><li>A. It was published in 1995.</li></ul>	23	reading the Naylor study it was a rat study,
21 22	Q. Okay. When was that study done?	•	

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		1	
1	Q. And you know the rats were given	1	24-hour test; is that correct?
2	paraquat and examined after 24 hours, right?	2	A. I think that I
3	A. That's correct.	3	MR. NARESH: Object to form.
4	Q. Okay. So you just represented	4	THE WITNESS: would need to
5	on this record that there was a long-term	5	re-check they for example, through the
6	neurotoxicity study of paraquat in 1995 by	6	references quoted in Naylor, but other
7	Naylor, and you understood my question to be	7	studies were done; so Naylor was not the
8	asking for a 24-hour study? Is that what you	8	only study that was done in that time
9	thought?	9	period.
10	A. No, I think I	10	BY MR. TILLERY:
11	MR. NARESH: Objection to form.	11	Q. Yeah. So we're clear, when you say
12	THE WITNESS: As I said in my	12	done, you I'm talking about by Chevron or
13	earlier answer, it does not conform to	13	Syngenta.
14	the normal definition of long-term	14	A. And my answer is
15	toxicity.	15	Q. There were certainly excuse me.
16	BY MR. TILLERY:	16	There were certainly other studies
17	Q. All right. So it was a 24-hour	17	done by other people. What I'm asking is did
18	study, right?	18	Syngenta or Chevron do any neurotoxicity
19	A. It was.	19	studies other than the 24-hour rat study in
20	Q. All right.	20	1995 in the period of time between 1965 and
21	So let's go back now and talk about	21	2003?
22	the work that Syngenta did or Chevron did	22	A. I would need to check that.
23	up until Louise Marks. You did a one-day,	23	I can't answer that question directly today.
24	24-hour rat study in 1995, correct?	24	<ul><li>Q. Well, actually, unfortunately,</li></ul>
25	A. Correct.	25	we can't come back to it so let's ask it this
	Page 528	j	Page 530
1	Q. Is there any others before	1	way: Are you aware of any studies that
2	Dr. Louise Marks's work in 2003 that Syngenta	2	Syngenta or Chevron did studying the
3	or Chevron did?	3	neurotoxicity of paraquat, other than the
4	A. I can't recall if any other work	4	Naylor study, the 24-hour rat study, in the
5	was done.	5	time period between 1965 and 2003?
6	Q. All right. You're speaking,	6	A. I'm not aware of any.
7	you know, on behalf of Syngenta today, right?	7	Q. All right.
8	A. Correct.	8	Did ICI ever warn paraquat users
9	Q. You remember at the beginning of	9	about potential nervous system effects from
10	this deposition I went over and asked you and	10	exposure of paraquat?
11	told you if you knew and understood that you	11	MR. NARESH: Object to scope.
12	could access any information, you could	12	BY MR. TILLERY:
13	research it, you could get any information that	13	Q. To your knowledge, sir.
14	you knew or learned historically from the	14	A. It certainly the possibility
		15	that paraquat could cause Parkinson's disease
15	effect of all the work done by Syngenta and	16	was included in our external communications
16	its corporate predecessors. You understood	17	
17	that, right?	18	such as on paraquat.com.
18	A. Yes.		Q. And when did you first say that paraquat causes Parkinson's disease on your
19	Q. All right. Now, let's go back and	19	
20	clarify this.	20	website?
21	From the 38-year period, from 1965	21	MR. NARESH: Object to form.
22	until 2003, when Dr. Marks started	22	THE WITNESS: I can't recall the
23	started her paraquat neurotoxicity studies,	23	precise date when that was the case, and
24	neither Syngenta or its corporate predecessors	24	we would not have said that it causes;
25	or Chevron did anything more than the Naylor	25	we would have said there is evidence

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١.			Page 533
1 ,	showing an association.	1	them to the fact that if they sprayed your
T.	BY MR. TILLERY:	2	paraquat products they might get Parkinson's
3	Q. And does is it strike that.	3	disease. Is that what you're saying?
4	Is it Syngenta's position today that	4	A. No, of
	there is good, solid scientific evidence	5	MR. NARESH: Object to form.
	linking paraquat to Parkinson's disease?	6	THE WITNESS: No, I'm not saying
7	A. It's our position that the evidence	7	that. I'm saying that this was a way
	does not lead to that conclusion. There is	8	in which we were being very open through
	no clear causative link.	9	the normal process of scientific
10	Q. Okay. So why, then, did you put on	10	discussion that this was
	your website exact opposite of what you	11	BY MR. TILLERY:
	believe?	12	Q. And
13	A. Could you clarify that question,	13	A an open research question.
	please?	14	Q. And would you say that it was open
15	Q. You just told me you put this	15	to hide Dr. Marks's scientific analysis and
	information on your website to warn people,	16	studies for 16 years?
	paraquat users, about potential nervous system	17	MR. NARESH: Object to form.
	side effects from exposure to paraquat.	18	THE WITNESS: Well, we didn't
	Why'd you do that if you don't believe it?	19	actually hide that. If you recall,
20	A. I indicated that what we did was	20	we discussed that Dr. Marks did actually
21 1	to say that there was there were	21	talk about some of her research at
22 ]	publications, evidence that had been generated	22	an external scientific meeting.
23	that suggested that that there could be	23	BY MR. TILLERY:
	a relationship but that we did not	24	Q. Right. A scientific meeting with
25	Q. When did sorry.	25	Syngenta people. What I'm saying is, did you
	Page 532		Page 534
1	A that we did not believe that	1	publish the Marks studies that confirmed the
	there was a causal relationship.	2	association between paraquat and neurotoxicity,
3	Q. And when did you first say that?	3	brain injury? Did you give those to the US EPA
4	A. I don't recall when we first said	4	until December 2019?
1	that.	5	MR. NARESH: Object to form.
6	Q. Did you ever warn that in any other	6	THE WITNESS: The first we did
7	way than putting some reference in	7	describe some of Dr. Marks's work at
	paraquat.com?	8	an external scientific meeting, it wasn't
9 '	MR. NARESH: Object to scope.	9	just a Syngenta meeting, and I think
10	THE WITNESS: That was our main	1 0	we discussed that the last time we met.
11	route of making that position available	11	And, secondly, yes, the EPA were
12	to the external world.	12	informed about some of Dr. Marks's work
	BY MR. TILLERY:	13	in 2019, but they had received
14	Q. What were all the minor routes?	14	information about other parts of her work
15	MR. NARESH: Same objection.	15	back in 2006 or so.
16	THE WITNESS: Well, for example,	16	BY MR, TILLERY:
17	when we were engaged in our research	17	
18			Q. Yeah. The parts that you gave them,
19	program, particularly from 2003 onwards, this issue was discussed at scientific	18	however, in 2006 did not include the three
20		19 20	neurotoxicity studies that showed the
	meetings.		relationship between paraquat and damage
	BY MR. TILLERY:	21	to the center part of the brain called the
22	Q. So you say that scientific meetings	22	substantia nigra, did they?
	would tell somebody like Ronald Niebruegge or	23	MR. NARESH: Objection to form.
	Freemon Schmidt or Jerry Mills or Carroll	24	THE WITNESS: That is correct.
25 ]	Rowan, your scientific meetings would alert	25	Those studies were not referred to the

41	Page 535		Page 537
1	EPA at that time.	1	reporting the first one which she found out
2	BY MR. TILLERY:	2	later to be having had strike that.
3	Q. All right. The only study that you	3	She only reported the first study,
4	said you circulated in scientific literature	4	which had been negated in terms of results from
5	was the first study she did, correct? And that	5	her next three successive studies using
6	was at a neurotoxicity meeting, correct?	6	an updated stereology technique. Is that
7	A. That is correct.	7	a correct statement?
8	Q. And that was the one that she later	8	A. That is correct, yes.
9	discounted and said that it was inaccurate	9	Q. All right.
10	because of the stereology technique, correct?	10	Do you know if Chevron ever warned
11	A. That's correct.	11	paraquat users about potential central nervous
12	Q. And you never went back and	12	system effects from exposure to
13	corrected for the neurology, or the group where	13	paraquat in the
14	it was presented, to tell them that the study	14	MR. NARESH: Objection to scope.
15	was incorrectly done, did you?	15	I'm sorry.
16	A. No, and that is not necessarily	16	BY MR, TILLERY:
17	the only thing that would accurately describe	17	Q 21 years that it marketed your
18	what happened, because Dr. Marks did actually	18	products?
19	have discussions with external researchers	19	A. I'm not aware of anything of that
20	about that study and why it may we may need	20	nature from Chevron.
21	to address the way in which we do them,	21	Q. Getting back to this report where
22	so certainly we were we continued to have	22	we started this deposition today, in this
23	an open dialogue about that.	23	letter from Mr. Cavalli to Mr. Fletcher,
24	Q. Did you ever go back and have	24	did either of these two companies ever
25	a public retraction of the first study because	25	do anything in response to that report?
	Page 536		Page 538
1	the stereology technique was incorrectly done?	1	A. I'm not aware of any action that
2	A. No, we did not, and actually the	2	was taken by either company.
3	study was not incorrectly done so requiring	3	Q. Okay. Let's go to that same
4	a retraction; it was done with a methodology	4	document, and this would be the second portion
5	that could be improved.	5	and its response communication. If you would
6	MR. TILLERY: So I move to strike	6	look at CUSA-00189805.
7	your answer as unresponsive.	7	A. Okay. I have that on my screen
8	BY MR. TILLERY:	8	now.
9	Q. Did Syngenta or Dr. Marks ever go	9	Q. All right. This is a continuation
10	back and retract the findings and statements	10	of that same letter communication between these
11	about the first study? Can you answer that	11	two scientists, correct?
12	straightforwardly, please?	12	A. Yes, that is correct.
13	A. No, we did not retract.	13	Q. All right. If you'd look, starting
14	Q. All right. The external meeting	14	at paragraph 4, and read paragraph 4 and
15	where Dr. Marks discussed her work involved	15	where it starts on the bottom of 805 and
16	only her first study that reported negative	16	continues on to 806.
17 18	results, correct?	17 18	Do you see that?
18 19	<ul><li>A. Correct.</li><li>Q. You didn't have an external meeting</li></ul>	19	A. Paragraph Q. All
20	where Dr. Marks discussed her next three	20	A. Paragraph 4 begins, "I am
21	studies that were finding positive results, did	21	sorry"?
22	you?	22	Q. That is correct, sir. If you just
23	A. That is correct.	23	read that to yourself.
	Q. So when you just told the court and	24	And I'll read for the record now
24			

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1	Dr. Fletcher's July 21, 1975 letter in response	1	work on the part of ICI, most people, including
2	to Mr. Cavalli's letter, isn't it, sir?	2	the government, believe that paraquat does not
3	A. It is.	3	cause problems. That's what he's saying,
4	Q. And, again, these are	4	isn't he?
5	representatives of Chevron and Syngenta.	5	MR. NARESH: Object to form,
6	At that time, the predecessor was ICI, correct?	6	foundation.
7	A. Correct.	7	THE WITNESS: Well, that's an
8	Q. And he says in this paragraph:	8	interpretation of what it says.
9	"I am sorry not to be more helpful	9	I couldn't really comment whether that
10	with your legal problems. To my knowledge,	10	was what was meant.
11	no-one here has followed up a case of recovered	11	BY MR. TILLERY:
12	paraquat poisoning for more than a few weeks.	12	Q. Can you dispute that interpretation?
13	I have not heard of delayed sequelae being	13	A. Well, as I say, I'm not able
14	attributed, rightly or wrongly, to paraquat.	14	to make a judgment on that.
15	Due possibly to good publicity on our part,	15	Q. Okay. Let's say that's my
16	very few people here believe that paraquat	16	interpretation. Tell me where I'm wrong.
17	causes any sort of problem in the field and we	17	A. I wouldn't be able to say you were
18	have the support of the official side.	18	wrong. I couldn't dispute your
19	Consequently, any allegation of illness due to	19	interpretation, but I can't equally say that
20	spraying never reaches serious proportions and	20	something else may have been meant.
21	we have never had to defend this type of	21	Q. Okay. But could you offer up what
22	action. Also, since it is not believed that	22	that alternative would be if mine's wrong?
23	paraquat causes damage, there has been no study	23	A. No, I wouldn't want to speculate.
24	[of] long-term effects. This would be very	24	Q. Okay. All right.
25	difficult in an uncontrolled population."	25	He goes on to say:
	Page 540		Page 542
1	Did I read that correctly, sir?	1	" since it is not believed that
2	A. You did.	2	paraquat causes damage, there has been no study
3	Q. So Dr. Fletcher, a toxicologist at	3	on long-term effects."
4	ICI, told Dr. Cavalli that to his knowledge	4	So my question is, in 1975, 20 years
5	no one at ICI had followed up on a case of	5	after it was discovered that paraquat could be
6	recovered paraquat poisoning for more than	6	used to kill plants because that was in
7	a few weeks. Is that a fair statement?	7	1955, right?
8	A. That is fair.	8	A. Correct.
9	Q. And I wanted to ask you a question.	9	Q ICI still had done no study
10	He says:	10	to investigate the long-term effects of
11	"Due possibly to good publicity on	11	paraquat exposure on humans or animals.
12	our part, very few people here believe that	12	Is that a correct statement?
13	paraquat causes any sort of problem in the	13	A. That is correct.
14	field and we have the support of the official	14	Q. Okay. And would you agree that
15	side."	15	without a long-term study of the effects of
16	Do you see that?	16	paraquat exposure, a reasonable scientist could
17	A. I do.	17	not conclude that paraquat does not cause
18	Q. And Dr. Fletcher goes on:	18	long-term effects?
19	"Consequently, any allegation of	19	MR. NARESH: Objection to form.
20	illness due to spraying never reaches serious	20	THE WITNESS: Yes, that would be
21	proportions"	21	a reasonable conclusion.
22	Right?	22	BY MR. TILLERY:
23	A. Correct.	23	Q. Okay. ICI could have studied the
24	Q. In short, Dr. Fletcher is saying	24	long-term effects of exposure to paraquat
25	that maybe because of good public relations	25	in nonhuman primates before it began selling

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1	it for use as a weed killer, couldn't it?	1	A. I can't immediately recall what
2	A. It could but, of course, before	2	they may be, no.
3	selling it we're talking about a time where	3	Q. Okay. So if I told you there were
4	perhaps this potential was not fully	4	such, you haven't looked at them at all, have
5	understood.	5	you?
6	Q. It could have done it, couldn't it?	6	A. I don't recall having looked at
7	Could you directly answer my question?	7	those.
8	A. It could have been done, yes.	8	Q. Okay.
9	Q. But it didn't do that, did it?	9	Now, let's go to CUSA-00189806,
10	A. It did not.	10	and that's the third page reference from
11	Q. Okay. And it hadn't done that	11	this that same communication.
12	as of 1975 either, had it?	12	A. So that was 896?
13	A. I'm not aware of it having done any	13	Q. Yes. It's actually the Bates
14	such study.	14	range is CUSA-00189795.
15	Q. And Chevron, to your knowledge, had	15	A. Oh.
16	laboratories where those studies could	16	MR. NARESH: Steve, do you have
17	have been done as well, didn't it?	17	a PDF number? It's such a big document
18	A. Chevron had laboratories. Whether	18	it might be easier for Dr. Botham to find
19	they had the type of labs that would be	19	if he has a PDF number.
20	required for a nonhuman primates study,	20	THE WITNESS: Okay. I've got
21	I don't know.	21	I do have 189795 in front of me.
22	Q. But they could have certainly had	22	MR. TILLERY: Actually, I think
23	someone else do it if they wanted to, right?	23	we have the wrong reference page.
24	A. They could.	24	BY MR. TILLERY:
25	Q. ICI could have studied the long-term	25	Q. If you look at 189806. It's page 71
	Page 544		Page 546
1	effects of exposure to paraquat in ways other	1	of the group of documents in the CUSA
2	than in nonhuman primates before it began	2	production.
3	selling it for use as a weed killer, couldn't	3	Let me explain something to you,
4	it?	4	sir. Chevron produced entire files in one
5	A. It could.	5	large exhibit when they produced these to us,
6	Q. But it didn't do that either,	6	so we're making do with what we've been
7	did it?	7	provided in production of documents, okay
8	A. At the time when it was first put	8	A. Okay.
9	for sale, there was no reason, nor indeed	9	<ol><li>Q just so you understand.</li></ol>
10	no practice at that time, to do such studies.	10	A. Yeah.
11	Q. Have you looked at the long-term	11	Q. All right.
12	communications strike that.	12	If you'd look at that document and
13	Have you looked at the	13	that page, 00189606
14	communications between Chevron and ICI and	14	A. 608, okay. I thought you said 806,
15	their findings of animal studies from the '60s	15	I'm sorry.
16	and '70s, sir, in preparation for the	16	Q. It is 806.
17	deposition?	17	A. Oh, right.
18	A. I have not done that.	18	MR. NARESH: This is the same
19	Q. Okay. So you're unaware of the	19	document that we were just looking at?
20	animal studies showing neurological effects,	20	Is that what you're
21	aren't you?	21	MR. TILLERY: Yeah. It's page 71.
22	MR. NARESH: Objection to form.	22	MR. NARESH: Okay.
23	THE WITNESS: From the 1960s?	23	THE WITNESS: Yeah. Sorry, I was
24	BY MR. TILLERY:	24	there; I now just need to go back again.
25	Q. Yeah, from the 1960s. Yes.	25	///

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1	BY MR. TILLERY:	1	1	A. No, I am not.
2	Q. And start with the paragraph,		2	Q. All right. Let's go now to this
3	"As you say"		3	is Exhibit 14 and it's page 60. And I think
4	A. Yes, okay.		4	that's it'd be 189795, sir.
5	Q. Do you see that, "As you say"?		5	A. Okay, yes. I'm there.
6	A. I do.		6	Q. All right. Do you see where he says
1 7	Q. Read that, I think it's about eight		7	second "Secondly"?
8	or nine lines, into the record, please.		8	A. Yes.
9	If you want I can read it, if that		9	Q. Read that into the record. Again,
10	would be better. You just follow along with		10	let's, for identification, identify which
11	me. As		11	document you're referring to.
12	A. I could yes. Please go ahead.		12	
13	Q. Do you have the reference where it		13	A. Okay. This is a letter written by Dr. Fletcher to Dr. Cavalli at Chevron.
14	says, "As you say"?		14	
15	A. Yes, I do, and I have read that			Q. Okay. It's a Syngenta predecessor
16	paragraph.	1	15 16	company, ICI, scientist K. Fletcher, and
17	Q. And this, again, just for the		17	he's communicating with Dr. Cavalli. Right?
18	record, is a letter between Mr. Fletcher,			A. Yes, he is.
19	writing it, to Dr. Cavalli; correct?	- 1	18 19	Q. And he has at the bottom of this,
20	A. That is correct.		1	he says he's Cc'ing three people. Who are
21	Q. And what is the date of the letter,		20	they?
22	the communication?		21	A. Okay. Dr. M.S. Rose was
23			22	a toxicologist at Central Toxicology
24	A. July 21, 1975.		23	Laboratory where Dr. Fletcher was based.
25	Q. Okay. So, "As you say," it says:		24	Dr. Calderbank was in another part of research
23	" there are sporadic reports of	_	25	and development of ICI, based at Jealott's
	Page 5	48		Page 550
1	CNS effects in paraquat poisoning although	- 1	1	Hill, and Mr. Waitt was in the headquarters of
2	I cannot recall any CNS pathology being found	ĺ	2	ICI, as it was then, in Fernhurst.
3	in other cases, apart from brain oedema and	- 1	3	Q. All right. Now, if you'd read that
4	hemorrhage in a few cases."	- 1	4	into the record, please.
5	Do you see that?	- 1	5	A. You'd like me to read the paragraph
6	A. I do.	- 1	6	beginning "Secondly"?
7	Q. And then you see the statement:	- 1	7	Q. Yes, sir, if you wouldn't mind,
- 8	"My impression is that paraquat does		8	Dr. Botham,
9	not affect the CNS to any significant extent,		9	A. "Secondly, we discussed last week
10	except in large doses."		10	the point you raised about possible chronic
11	Do you see that?		11	effects, which you see causing legal problems.
12	A. I do.		12	This is a quite terrible problem and, frankly,
13	Q. Okay. What studies did ICI and		13	I do not believe a satisfactory investigation
14	Chevron have as of the date of this letter		14	can be made. However, I think some plan could
15	to support the conclusion that paraquat does	- 1	15	be made and, to be as definitive as possible,
16	not affect the CNS to any significant extent	771	16	any study must be as free from doubt as
17	except in very large doses? What studies did		17	possible. Ideally, we need a fairly large
18	they		18	coherent group (say 50) who are exposed to
19	A. I'm not able to answer that.		19	paraquat frequently over a long period, who
	I don't know what studies would have been		20	are exposed to no other pesticide or herbicide
20			21	and can be followed medically for several
20 21	available, or whether they were just here			ana can de lundwed medicany lui sevelai
21	available, or whether they were just here			
21 22	referring to paraquat poisoning cases	- 1	22	years."
21				

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1	Q. Okay. So Dr. Fletcher told	1	start over. Okay.
2	Dr. Cavalli that on November 11, 1975, that	2	BY MR. TILLERY:
3	he doesn't believe a satisfactory investigation	3	Q. So you're saying there was
4	can be made into the chronic health effects of	4	a different standard in 1965 where Syngenta
5	paraquat exposure, correct?	5	would not have to do such studies if it
6	A. That is what this says.	6	suspected possible adverse health effects from
7	Q. All right.	7	chronic exposure to paraquat at that time,
8	If a manufacturer suspects possible	8	correct?
9	adverse health effects from chronic exposure	9	A. That is actually, if I may say so,
10	to its products, do you agree with me that	10	a slightly different question. What
11	a satisfactory investigation of chronic health	11	I answered before was that the custom and
12	effects should be made before the product is	12	practice before, when you were marketing
13	sold?	13	a new chemical, would be different to what
14	MR. NARESH: Object to the form and	14	it is today in terms of the standards required
15	scope.	15	of testing.
16	THE WITNESS: With today's	16	Q. Well, I asked
17	standards of how we would do that, that	17	A. It
18	is absolutely the case, but when we go	18	Q. I'm sorry. Go ahead and finish your
19	back in history, that was not necessarily	19	answer, sir.
20	custom and practice.	20	A. Yeah. You just asked the question
21	BY MR. TILLERY:	21	that if you had indications that there could
22	Q. Okay. So it strike that.	22	be adverse effects would you would you do
23	Today you would do such studies	23	something differently. That is a slightly
24	before you ever marketed paraquat, right?	24	different question.
25	A. We certainly would, yes. We would	25	Q. No, that's my original question
-	Page 552		Page 554
1	do chronic studies, yes.	1	to you is simply this, I'll restate it. if the
2	Q. Okay. So what you're saying is that	2	manufacturer suspects possible adverse health
3	the standard in 1965 was different; you didn't	3	effects from chronic exposure to its product,
4	need to do that. Right? Is that	4	here paraquat, would you agree that
5	A. That is correct.	5	a satisfactory investigation of chronic health
6	Q what you're saying?	6	effects should be made before the product
7	MR. NARESH: Objection	7	is sold?
8	THE WITNESS: That is correct, yes.	8	That was my original question.
و ا	BY MR, TILLERY:	9	Can you answer that?
10	Q. Okay. Could you tell me the	10	MR. NARESH: Object to form,
11	standard	11	foundation and scope.
12	(Stenographer interruption.)	12	THE WITNESS: Yes. That's but
13	MR. NARESH: Oh, yes. Same	13	I don't the issue here is that the
14	objections as before; scope and	14	suspicion of these chronic effects only
15	foundation.	15	became apparent sometime after marketing
16	THE STENOGRAPHER: Thank you.	16	had started.
17	And the witness, sorry, you said	17	BY MR. TILLERY:
18	you answered Yes that question?	18	Q. And you're basing that on the fact
19	THE WITNESS: Repeat the question,	19	of the materials you've read, which does not
20	please.	20	include the 1960 animal studies, correct?
21	THE STENOGRAPHER: Yes. Yes.	21	A. Correct.
22	So what	22	Q. So if I ask you to assume that there
23	MR. TILLERY: Absolutely.	23	were central nervous system signs in animal
24	THE STENOGRAPHER: Sorry.	24	studies at or about the time of the launch of
25	MR. TILLERY: Absolutely. Let's	25	paraquat in 1965, would you agree with me that
45	MIK. HILLERY: Adsolutely. Let's	25	paraqual iii 1703, would you agree willi iile mat

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1	it would have been the best course, before	1	Q. So are you suggesting, then, that
2	paraquat was marketed, to evaluate the adverse	2	if the science was in existence and the
3	health effects from chronic exposure	3	regulatory standards were in existence, that
4	to paraquat?	4	at that point in time, in the 1970s, that the
5	MR. NARESH: Same objections.	5	defendants, ICI-Syngenta, and Chevron, should
6	THE WITNESS: I am not able to	6	have at that time conducted studies
7	accurately ascertain whether that would	7	to determine adverse health effects from
8	have been the right judgment at the time.	8	chronic exposure to paraquat?
9	BY MR. TILLERY:	9	MR. NARESH: Objection to form,
10	Q. So you can't answer my question,	10	foundation.
11	is that what you're saying?	11	THE WITNESS: Are you referring to
12	A. The way in which I would answer	12	a response to the effects that had
13	your question would be that this is what	13	been that are reported in people who
14	toxicologists do all the time. Adverse	14	have been exposed to paraquat?
15	effects are seen in animal studies, even	15	BY MR. TILLERY:
16	in today's world, and a judgment is made about	16	Q. I'm referring to all of the
17	whether those findings could have relevance	17	knowledge that Syngenta, through ICI, and
18	for humans, and, in which case, whether it is	18	Chevron had at its disposal. Every bit of it.
19	the right thing or not to do to market or sell	19	Should they have conducted, at that time,
20	a product.	20	long-term neurotoxicity studies to evaluate
21	And that same judgment would	21	adverse health effects from chronic exposure
22	have been made at that time.	22	to paraquat'?
23	Q. So you don't see a different	23	A. They would they should have
24	standard when the evidence is there;	24	conducted the long-term chronic toxicity
25	the standard that exists today would have	25	studies when those studies began to become
	Page 55	6	Page 558
1	applied in 1965 based upon the evaluation	1	the standard practice for toxicology
2	of available scientific evidence, correct?	2	reinforced by regulatory guidelines.
3	A. The standard of making that		
	A. The standard of making that	3	
4		3 4	Q. Okay. So by the late '70s at the
	judgment, as I have just described it, is indeed the same would have been the same		
4	judgment, as I have just described it, is indeed the same would have been the same	4	Q. Okay. So by the late '70s at the latest, correct?  A. Correct.
4 5	judgment, as I have just described it,	4 5	Q. Okay. So by the late '70s at the latest, correct?  A. Correct. Q. All right. Thank you.
4 5 6	judgment, as I have just described it, is indeed the same would have been the same then as it is today.  Q. All right.	4 5 6	Q. Okay. So by the late '70s at the latest, correct? A. Correct. Q. All right. Thank you. Had either ICI or Chevron wanted
4 5 6 7	judgment, as I have just described it, is indeed the same would have been the same then as it is today.  Q. All right.  A. The difference, which is what I was	4 5 6 7	Q. Okay. So by the late '70s at the latest, correct? A. Correct. Q. All right. Thank you. Had either ICI or Chevron wanted to perform a study of chronic exposure, either
4 5 6 7 8 9	judgment, as I have just described it, is indeed the same would have been the same then as it is today.  Q. All right.  A. The difference, which is what I was referring to before, is that the requirements	4 5 6 7 8 9	Q. Okay. So by the late '70s at the latest, correct? A. Correct. Q. All right. Thank you. Had either ICI or Chevron wanted to perform a study of chronic exposure, either or both of them could have done long-term study
4 5 6 7 8	judgment, as I have just described it, is indeed the same would have been the same then as it is today.  Q. All right.  A. The difference, which is what I was referring to before, is that the requirements and the practice that was present in the	4 5 6 7 8 9	Q. Okay. So by the late '70s at the latest, correct?  A. Correct. Q. All right. Thank you. Had either ICI or Chevron wanted to perform a study of chronic exposure, either or both of them could have done long-term study in nonhuman primates to determine the central
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4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	judgment, as I have just described it, is indeed the same would have been the same then as it is today.  Q. All right.  A. The difference, which is what I was referring to before, is that the requirements and the practice that was present in the 1960s, in terms of what you did, was different to how it is today.  Q. When did it change over time?  A. This began to change in the 1970s when  Q. Okay.  A regulatory guidelines for toxicology testing began to emerge.  Q. Okay. So let's assume then pick a date in the 1970s that you think applies where the standard changed.  A. The standard changed in the late 1970s when guidelines were international	4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Q. Okay. So by the late '70s at the latest, correct?  A. Correct. Q. All right. Thank you. Had either ICI or Chevron wanted to perform a study of chronic exposure, either or both of them could have done long-term study in nonhuman primates to determine the central nervous system effects, couldn't they? A. They could have. Q. Yes. Did either ICI or Chevron conduct those studies before they put paraquat on the market? A. I don't believe that they did. Q. Okay. Did they do any of them in the '60s? A. I'm not aware of such studies in the nonhuman primate in the 1960s. Q. ICI and Chevron could have done a long-term study on nonhuman primates when they learned that from an evaluation of
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20 21 22	judgment, as I have just described it, is indeed the same would have been the same then as it is today.  Q. All right.  A. The difference, which is what I was referring to before, is that the requirements and the practice that was present in the 1960s, in terms of what you did, was different to how it is today.  Q. When did it change over time?  A. This began to change in the 1970s when  Q. Okay.  A regulatory guidelines for toxicology testing began to emerge.  Q. Okay. So let's assume then pick a date in the 1970s that you think applies where the standard changed.  A. The standard changed in the late	4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	Q. Okay. So by the late '70s at the latest, correct?  A. Correct. Q. All right. Thank you. Had either ICI or Chevron wanted to perform a study of chronic exposure, either or both of them could have done long-term study in nonhuman primates to determine the central nervous system effects, couldn't they? A. They could have. Q. Yes. Did either ICI or Chevron conduct those studies before they put paraquat on the market? A. I don't believe that they did. Q. Okay. Did they do any of them in the '60s? A. I'm not aware of such studies in the nonhuman primate in the 1960s. Q. ICI and Chevron could have done a long-term study on nonhuman primates when

	Page 559		Page 561
1	They could have done it at that time, too,	1	evidence would have put ICI and Chevron on
2	couldn't they?	2	notice that through oral ingestion of the
3	MR. NARESH: Objection to form.	3	product, at least through that source, paraquat
4	THE WITNESS: They could have done	4	finds its way into the brain tissue. Correct?
5	such a study.	5	MR. NARESH: Objection to form.
6	BY MR. TILLERY:	6	THE WITNESS: If such evidence was
7	Q. I'm sorry?	7	ayailable, then yes.
8	A. Yes, they could have done such	8	MR. TILLERY: All right.
9	a study.	9	This is Exhibit 16 for this
10	Q. And they didn't do it at that time	10	deposition. It will be referred to as
11	either, did they?	11	Botham Exhibit No. 16.
12	A. I'm not aware that such a study was	12	For counsel on this call, this is
13	done.	13	SYNG-PQ-04263689. There are two parts
14	Q. Did ICI assume that in poisoning	14	to this and we are going to show a second
15	cases, paraquat got into the brain of the human	15	component and, for counsel, that second
16	because of a high dose?	16	is going to be we are going to be
17	A. I	17	showing SYNG-PQ-04263571.
18	Q. Or do you know one	18	(Botham Exhibit 16 previously
19	A. I don't know whether such an	19	marked for identification.)
20	assumption was made at that time.	20	BY MR. TILLERY:
21	Q. Okay. Did you know one way or	21	Q. Now, can you pull up the first one,
22	another whether your strike that.	22	please, for him. Is that on eDepoze for you
23	You're the spokesperson here today	23	to see? Can you see it, Doctor?
24	for Syngenta, not just 2020 but all the way	24	A. I can yes, I could until
25	back to before the marketing and sale of	25	a moment ago. Yes, I can see it, yes.
	Page 560		Page 562
1	paraquat in the United States 1965. Do you	1	Q. All right. Take your time and read
2	know whether Chevron assumed that, in poisoning	2	that.
3	cases, paraquat got into the brain because of	3	MR. NARESH: I think you're in
4	high dose?	4	presentation mode, Steve. Could you take
5	A. I don't know.	5	it out of presentation mode so that
6	Q. All right.	6	he can review?
7	Even assuming if they did, that	7	MR. TILLERY: It's just one page,
8	ICI and Chevron thought that, in poisoning	8	Ragan.
9	cases, paraquat got into the brain because of	9	MR. NARESH: Thanks.
10	the high dose, it certainly put ICI and Chevron	10	THE WITNESS: Okay, thank you.
11	on notice that there was a way through which	11	I can now see that.
12	paraquat could get into the brain, correct?	12	MR. TILLERY: And can you look
13	MR. NARESH: Objection to form.	13	at can you pull up the second exhibit
14	THE WITNESS: That is one	14	as well. This is Exhibit No. 17 is
15	certainly one possibility. Again,	15	that correct? This is Exhibit No. 42,
16	I cannot comment whether that was	16	I'm sorry.
17	something that was discussed at that	17	(Botham Exhibit No. 42 marked for
18	time.	18	identification.)
19	BY MR. TILLERY:	19	THE WITNESS: Okay. I have read
20	Q. Well, let's simplify this. We're	20	the first exhibit, Exhibit 16.
21	going to go over a few studies or reports of	21	BY MR. TILLERY:
22	autopsies, and they will demonstrate,	22	Q. Yeah. And the first exhibit says
23	I believe, to you that paraquat gets in the	23	that in March 1968 a Japanese woman swallowed
24	brain. I'll show you these studies.	24	Gramoxone and died, and her autopsy revealed
25	Now, all I'm asking you is, that	25	that 8.6 and that says a unit of measure,

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1	ug/g. And would you, for the ladies and	1	a scientific laboratory, for the scientist
2	gentlemen of the jury, tell us what that	2	to
3	measurement is.	3	A. I
4	A. That says micrograms of paraquat	4	Q. You would agree with
5	per gram of tissue, so 1 microgram is	5	A. Yes, I would expect that. I would
6	a thousand one-thousandth of a gram.	6	expect that.
7	Q. All right. So that's 8.6 micrograms	7	Q. All right.
8	per gram of paraquat was found in her brain.	8	Chevron was also made aware of this
9	Do you see that?	9	since it came through them, didn't it, sir?
10	A. Yes.	10	A. I can't see that Chevron were made
11	Q. And did Ken Fletcher of ICI say	11	aware of this from the document I have here.
12	about this that the tissue analysis results	12	Q. Wouldn't it have been standard
13	were "rather higher than we would have expected	13	practice for you during that period of time
14	particularly in the brain, considering the	14	to share information, scientific information,
15	relatively small quantity that was taken"?	15	with Chevron?
16	Is that what he's saying?	16	A. I'm sure it possibly was, but,
17	A. Yes, that's what it says.	17	again, I can't confirm that that was
18	Q. So in 1968, three years after this	18	necessarily or was the case.
19	product was first marketed in the United	19	Q. If you'd look at No. 42 again, it
20	States, ICI knew that swallowing a relatively	20	shows that this was brought to the attention of
21		21	•
22	small amount of paraquat would result in	i .	Dr. Litchfield, Dr. Conning, Dr. Swan,
23	paraquat entering the brain, didn't it?	22	Dr. Fletcher, Dr. Gage. These are all
23 24	A. Yes.	23	scientists at ICI, correct?
25	Q. Several people at ICI were made	24 25	A. Just before we go on, which
25	aware of this report, weren't they?  Page 564	25	document are you now looking at because  Page 566
1	A. I don't have direct evidence for	1	I'm still looking at 16.
2	that, but I assume so.	2	Q. This is Exhibit 42. I'm sorry, it's
3	Q. Well, you look on if you look on	3	tab
4	the face of the exhibit, sir?	4	MR. TILLERY: I'm sorry, can you
5	A. Ah, yes, I see. Yes, copies.	5	pull that document up?
6	Okay. Yes, that is true.	6	MS. BRUMITT: Yeah,
7	Q. And these were other scientists at	7	MR. TILLERY: I'm going to show you
. 8	ICI. It wasn't sheltered information, it was	_ 8	the next document, sir, and it's
9	information that was distributed, and that	9	Exhibit 43. This document is a summary
10	would be the practice at that time, too,	10	of the findings from the documents that
11	wouldn't it?	11	you've just looked at, of the Japanese
12	A. Yes, that would be practice.	12	woman
13	Q. And isn't it your testimony that it	13	MR. NARESH: Steve, I don't mean to
14	would be standard practice to share information	14	interrupt but I am genuinely confused.
15	not only with the Chevron scientists but also	15	MR. TILLERY: All right. Ragan,
16	with all of the people who were working with	16	if you wouldn't mind looking at
17	paraquat at ICI at the time if they thought	17	SYNG-PQ-03720698.
18	it was a significant finding?	18	MR. NARESH: I think my concern
19	A. Well, that, I can't confirm as	19	is that I don't know if your questioning
20	to exactly how much and which people such	20	just now was about Exhibit 16 or 42, and
21	information would be shared with. I can't	21	the questioning was
22	comment on the detail that was practiced at	22	MR. TILLERY: This is
23	that time.	23	MR. NARESH: a little confusing
24	Q. Well, would you at least say that	24	to me. Did you ask him questions about
25	that would be the standard practice in	25	Exhibit 42?

	Page 567		Page 569
1	MR. TILLERY: Yes, I'll I'll	1	BY MR. TILLERY:
2	withdraw it. I'll withdraw it. Okay.	2	Q. Would you take a minute
3	MR. NARESH: Okay.	3	to familiarize yourself with the document,
4	MR. TILLERY: This is Exhibit	4	please.
5	No. 43 and it's, for the record, as I	5	<ol> <li>A. Okay, I've read that document.</li> </ol>
6	told you, SYNG-PQ-03720698. Okay. Can	6	Q. All right. This is an analysis of
7	you pull that up and we can put it on the	7	tissue performed after autopsy of a patient who
8	eDepoze for you.	8	ingested 15 to 20 milliliters of paraquat in
9	THE WITNESS: Yeah, I've just	9	1974. Correct?
10	opened up a document which is a letter	10	A. Correct.
11	from Dr. Litchfield to Dr. Swan. Is that	11	Q. The patient died after four days.
12	that	12	Correct?
13	MR. TILLERY: Yes, that's it.	13	A. Correct.
14	THE WITNESS: Right, okay. Yes,	14	Q. Paraquat was found in the
15	I have that in front of me now from	15 16	cerebellum, which is part of the brain.
16 17	eDepoze. (Botham Exhibit 43 marked for	17	Correct? A. Correct.
18	identification.)	18	Q. Paraquat was found in the cerebrum,
19	BY MR. TILLERY:	19	which is also part of the brain. Correct?
20	Q. Okay. And this report was, from the	20	A. Correct.
21	face of that document, brought to the attention	21	MR. TILLERY: Now let's go,
22	of Litchfield, Conning, Swan, Gage, Fletcher,	22	if we can, to Exhibit 45 and this is
23	et cetera, right?	23	CUSA-00169412, and we're going to be
24	A. That is correct.	24	looking at that and that front page.
25	Q. And they're all ICI scientists,	25	(Botham Exhibit 45 marked for
	Page 568		Page 570
1	correct'?	1	identification.)
2	A. They are. They are, yes.	2	THE WITNESS: Okay, the document is
3	Q. So all of them knew in 1968 that	3	received so I can see that.
4	paraquat could enter the brain of a person	4	BY MR. TILLERY:
5	exposed to the chemical, correct?	5	Q. If you'd read that and the second
6	A. Correct.	6	page, Doctor.
7	MR. NARESH: Objection to form.	7	A. Okay, I've done that.
8	BY MR. TILLERY:	8	Q. Okay. And if you wouldn't mind,
9	Q. What did they do with the knowledge	9	direct your attention to the paragraph on the
10	of that particular fact in terms of planning	10	first page where it says:
11	studies?	11	"In their letter Merck emphasise
12	A. I'm not able to comment on that.	12	that these results confirm earlier findings on
13	I don't know what conversations or planning	13	the distribution of paraquat and they also
14	was done.	14	mention that obviously the lungs are not a
15	Q. Are you aware of them using this	15	particular target organ, as the paraquat
16	information to plan any kind of study	16	concentration was only slightly higher than in
17	evaluating the health or safety of paraquat?	17	some other organs that are also well supplied
18	A. I'm not aware of that, no.	18	with blood."
19	MR. TILLERY: Okay.	19	Do you see that?
20	Now we'll go to Exhibit 44.	20	A. I do.
21	Counsel, this is CUSA-00206717.	21	Q. This is a recitation of a letter
22	(Botham Exhibit 44 marked for	22	received from Merck about a woman who had
23	identification.)	23	died possibly from suicidal poisoning using
24 25	THE WITNESS: Okay, I can see that	24 25	paraquat, correct?
45	document.	123	A. Yes.

-	Page 571	-	Page 573
1	Q. The communication is dated	1	Q. All right. And this is a postmortem
2	February 12, 1974; is that correct, Dr. Botham?	2	analysis of someone named Charles Lockwood,
3	A. Yes, it is.	3	correct?
4	Q. In their letter they emphasize that	4	A. That's correct.
5	the lungs are not necessarily a target organ,	5	Q. He ingested 35 milliliters of
6	correct?	6	paraquat CL on June 10, 1978; is that correct?
7	A. Yes.	7	A. That is correct.
8	Q. So after Syngenta and Chevron knew	8	Q. A plasma sample taken on June 14 had
9	that the lungs were not a specific target	9	0.06 part per million paraquat, correct?
10	organ, did you do studies to determine the	10	A. Paraquat, I think, was 0.04.
11	effects of paraquat on organs that were	11	Q. 04, okay. Subsequent plasma samples
12	well supplied with blood?	12	were taken on the 15th and 16th.
13	MR. NARESH: Objection to form,	13	Do you see that?
14	foundation.	14	A. I'm sorry, excuse me. I was
15	THE WITNESS: To clarify, when the	15	looking further down the letter. You're quite
16	word when the term "target organ"	16	right; first, it was initially 0.06.
17	is used, normally that is meant to	17	Q. Okay. And subsequent plasma samples
18	indicate an organ that may be susceptible	18	were taken on the 15th and 16th and were found
19	to damage by a toxicant, not necessarily	19	to be below the detection limit, right?
20	to indicate how much of a toxicant gets	20	A. That's correct.
21	to that tissue. So it's the use of	21	Q. Now, postmortem analysis was
22	that term here, which is based on how	22	performed of the brain, lung, liver, kidney,
23	much got into the lung, is not what	23	right?
24	we would normally have expected to see.	24	A. Yes.
25	///	25	Q. And only the brain had a 0.04 part
	Page 572		Page 574
1	BY MR. TILLERY:	1	per million of paraquat, right?
2	Q. Well, let me ask you this: Does that	2	A. Yes.
3	report from Merck indicate that, again, they	3	Q. So the brain was the target organ
4	found that paraquat gets into the brain of	4	for paraquat here, correct?
5	people who get it in their system, if you'd	5	A. Again, the use of the term "target
6	look at where	6	organ" is not really a correct one. It simply
7	A. That is correct, yes. Yes.	7	indicates that that level of paraquat was
. 8.	Q. It does. They had findings of	8	in the brain at that time.
9	paraquat in the brain, didn't they?	9	Q. Was there any level of paraquat
10	A. They did.	10	found in any other organ, other than the brain,
11	Q. The concentration of paraquat found	11	at that time?
12	in the woman's brain was 0.17 part per million,	12	A. This indicates that that was
13	correct?	13	that there was no paraquat, detectable
14	A. That's correct.	14	paraquat, in other tissues.
15	Q. All right.	15	Q. The only detectable paraquat from
16	MR. TILLERY: Let's go to	16	this ingestion was in the brain, correct?
17	Exhibit No. 46 and this is CUSA-00168423.	17	A. That is correct.
18	(Botham Exhibit 46 marked for	18	Q. And from the time period here, had
19	identification.)	19	paraquat accumulated in the brain as opposed
20	THE WITNESS: Okay. That's	20	to other tissues? Would you agree with that?
21	received here. I can see that.	21	A. It had certainly entered the brain.
22	BY MR. TILLERY:	22	MR. TILLERY: Now let's go to
23	Q. Why don't you take a look at it	23	sorry. Number 47, Exhibit 47.
	really quickly.	24	(Botham Exhibit 47 marked for
25	A. Okay, I've read that.	25	identification.)

	Page 575	. [	Page 577
	7)		
1	MR. TILLERY: This is I'm sorry,	1	isn't it?
2	it's SYNG-PQ-0467141.	2	A. That is correct.
3	THE WITNESS: Okay, I can see	3	Q. And loss of dopamine production
4	the document.	4	causes motor symptoms in Parkinson's disease
5	BY MR. TILLERY:	5	I think you told me earlier in this deposition?
6	Q. All right. Take a look at it,	6	A. I did. Yes, that is correct.
7	please, and tell me when you're ready to talk	7	Q. Purkinje cells are neurons located
8	about it.	8	in the cerebellum, aren't they? A. Yes.
9 10	<ul><li>A. Okay, I've looked at that.</li><li>O. And this was a document that was</li></ul>	10	Q. They release a neurotransmitter
11	disclosed to us by Syngenta, so it was in	11	called G-A-B-A, GABA. Do you know what that
12	Syngenta's files.	12	stands for?
13	Have you seen this before?	13	A. GABA? I'd
14	A. No, I have not.	14	Q. GABA.
15	Q. All right. And this is a 1976	15	A. Yeah, GABA. Yeah. It's I can't
16	autopsy report by Dr. L. Henry from Sheffield,	16	immediately give you the
17	UK. Is that right?	17	Q. I'll yeah, yeah, it's not a test,
18	A. Yes, certainly Dr. L. Henry.	18	and I have trouble even pronouncing the
19	I can't see the Sheffield attribution but	19	scientific term. I'm going to do my best and
20	I think that's because I may not be able to	20	let you correct me, okay. But I think GABA
21	see the very top of the page.	21	stands for gamma-aminobutyric acid, okay
22	Q. All right. And this is a report of	22	A. Yes, that is correct.
23	an autopsy of a farmworker who ingested	23	Q. Does that sound right?
24	paraquat, right?	24	A. That is correct.
25	A. Correct.	25	Q. All right. And they release
	Page 576		Page 578
1	Q. If you turn to page 3, and that's	1	a neurotransmitter called GABA that regulate
2	SYNG-04267143, does the report there say that	2	and coordinate motor movements; is that right?
3	the histological examination of his brain	3	A. That is correct, yes.
4	revealed degenerative changes "present in the	4	Q. All right.
5	cells of the substantia nigra and the Purkinje	5	Given ICI's knowledge of reports
6	cells of the [cerebrum]."	6	that applicators exposed to paraquat had
7	Does it say that?	7	central nervous system problems, and its
8	A. Yes, it does say that.	8	knowledge from this report that damage to the
9	<ul> <li>Q. Just for purposes of the court and</li> </ul>	9	substantia nigra had been found after paraquat
10	jury, what does histological examination mean?	10	ingestion and that paraquat hadn't been ruled
11	A. It means that you take a tissue,	11	out as a cause of that damage, would you agree
12	in this case the brain, and you cut very fine	12	with me that a reasonable manufacturer of
13	slices of that brain and you look at those	13	paraquat would have studies done to investigate
14	slices under the microscope, usually with the	14	the effects of paraquat exposure on the central
15	tissue being stained so you can see the cells,	15	nervous system, including the substantia nigra,
16	the architecture, and that is called	16	at that time?
17 18	histological analysis.	17 18	MR. NARESH: Objection to form,
19	Q. And Dr. Henry concludes that: "The gross and microscopic findings	19	foundation, scope.  THE WITNESS: So if I may just
20	in [the] case are consistent with those found	20	point out that on the final page of that
21	following the ingestion of paraquat."	21	letter from Dr. Henry, he suggested that
22	Right?	22	the degenerative changes in the brain
23	A. Yes, it does.	23	that we have just been describing are
24	Q. The substantia nigra is the part of	24	consistent with anoxia, which is
25	the midbrain that controls dopamine production,	25	a technical term meaning the lack of
PATRICULAR PROPERTY AND INC.		And in case of the last of the	

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1	oxygen; in other words	1	particular situation here or is that a general
	BY MR. TILLERY:	2	statement'?
3	Q. All right.	3	Q. General statement.
4	A. So there are there was an	4	A. Paraquat is I agree that
5	explanation for why these effects could have	5	paraquat is able to enter the brain.
	occurred.	6	Q. All right. And can accumulate
7	Q. He also said, the results "The	7	in the brain, right?
8	gross and microscopic findings in this case are	8	A. It can accumulate in the brain,
9	consistent with those found following the	9	yes.
10	ingestion of paraquat," doesn't he?	10	Q. Okay.
11	A. That is correct, and	11	MR. NARESH: Steve, I don't know if
12	Q. All right.	12	you you're on mute as far as I can
13	A especially so in the lungs, yes.	13	tell.
14	Q. So let me go back to my question.	14	MR. TILLERY: Yeah. Give us about
	Armed with this knowledge, would it have been	15	two minutes off record. Thank you.
	reasonable at that time for the only	16	MR. NARESH: Yeah, sure.
17	manufacturer of paraquat to undertake studies	17	MR. TILLERY: I'm moving to a new
	to determine whether or not this indicated	18	subject matter. Could we take about
	central nervous system damage from paraquat?	19	a less-than-five-minute break, just
20	MR. NARESH: Same objections as	20	a couple minutes, okay?
21	to the prior question.	21	MR. NARESH: Sure. Yeah, I think,
22	THE WITNESS: Given that the more	22	if my clock is correct, it's, what, about
23	likely explanation at that time was that	23	11:50 a.m. your time, Dr. Botham?
24	the effect on the brain was an indirect	24	THE WITNESS: It is, yes.
25	result of damage to the lungs, which was	25	MR. NARESH: So we would also break
	Page 580		Page 582
1	the well-known findings that are referred	1	for lunch in about half an hour or so,
2	to here, that would not necessarily have	2	so I don't know how that affects your
3	led to a conclusion that a direct effect	3	planning, Steve.
4	on the brain would needed to have been	4	MR. TILLERY: Like I said, he can
5	investigated.	5	break whenever he wishes. I'm only
6	BY MR. TILLERY:	6	looking for a couple of minutes.
7	Q. Okay. So are you telling the ladies	7	Thank you.
	and gentlemen of the jury that that's what	8	MR. NARESH: Thank you.
	ICI decided, that it was	9	THE VIDEOGRAPHER: We are going off
10	A. No, I'm giving you my	10	the record. The time is 11:49.
	interpretation of what could have happened in	11	(Off the record.)
	response to this letter.	12	THE VIDEOGRAPHER: We are back on
13	Q. And there's other alternative	13	the record. The time is 11:57.
	explanations; that they just didn't do the	14	MR. TILLERY: I'm going to refer
	study, right?	15	you to Plaintiff's Deposition
16	A. Of course I can't rule out other	16	Exhibit No. 48. For the record, this is
	explanations.	17	SYNG-PQ-23457731.
18	Q. And you don't know which one of them	18	(Botham Exhibit 48 marked for
	it was, do you?	19	identification.)
20	A. No, of course.	20	BY MR. TILLERY:
21	Q. Okay. By comparing paraquat	21	Q. Please take a look at that document.
	concentrations in the brain and blood, can you	22	Tell me when you're ready to address
	say whether paraquat had accumulated in the	23	questions about the document.
	brain?	24	A. Okay, I've read that.
25	A. Are you referring to this	25	<ul> <li>Q. And would you, for the court and</li> </ul>

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1	jury, please identify the document.	1	A. I
2	A. This is a letter from Dr. Gage,	2	MR. NARESH: Objection to form.
3	in the medical department of ICI,	3	Go ahead.
4	to Dr. Snowdon, who was described as the	4	THE WITNESS: I don't know what
5	division toxicological liaison officer at ICI.	5	that date might have been.
6	Q. And he's in the technical	6	BY MR. TILLERY:
7	department, Billingham civision, Durham, right?	7	Q. Okay. Certainly by October 1958
8	A. That's right.	8	ICI knew this, didn't it?
9	Q. Okay. And the date of the letter	9	A. Well, this letter indicates that,
10	is October 13, 1958?	10	as it says here, dipyridyl appears to have
11	A. That's correct.	11	a moderate toxicity mainly by affecting the
12	Q. And what is the subject matter of	12	central nervous system.
13	the letter at the top?	13	Q. Okay. And the date of this letter
14	A. The toxicity of 2,2-prime	14	is 1958, isn't it?
15	dipyridyl.	15	A. That's correct.
16	Q. Okay. And J.C. Gage, what was his	16	Q. Okay. So this is a letter from
17	role in the medical department?	17	J.C. Gage of the ICI medical department
18	A. I'm not sure what his precise role	18	to Dr. F.F. Snowdon as division toxicological
19	was, I'm sorry.	19	liaison officer at ICI, right?
20	Q. Okay. And Dr. Snowdon, do you know	20	A. Right.
21	what his role was?	21	Q. The letter indicates that the ICI
22	A. Well, a division toxicological	22	medical department has studied the toxicity of
23	liaison officer, I'm aware that that was	23	2,2 dipyridyl by injection and by application
24	the a generic job description for a person	24	to the eye, correct?
25	in a particular part of the company, ICI in	25	A. Correct.
	Page 584		Page 586
1	that case, who had responsibility for	1	Q. And this he indicated that before
2	toxicology.	2	issuing a toxicological strike that.
3	Q. Okay. He would have been	3	He indicated that before issuing
4	a high-ranking official at that point in time	4	a toxicological report, Mr. Gage was inquiring
5	in the company, wouldn't he, in terms of the	5	whether there would be exposure to vapors
6	science development?	6	during distillation, correct?
7	A. Well, yes, he would certainly have	7	A. Yeah, I think what it actually says
8	been a senior person in the department at that	8	is that on the toxicological inquiry form that
9	time, yes.	9	came from Dr. Snowdon, that it was a question
10	Q. Okay.	10	about exposure to vapor during distillation.
11	In an earlier part of this	11	Q. Okay. And this particular chemical
12	deposition, you confirmed that ICI recognized	12	is what that they're looking at?
13	paraquat's herbicidal characteristics in 1955,	13	A. This is paraquat.
14	correct?	14	Q. All right. And he concludes the
15	A. Correct.	15	first paragraph by saying that if fumes are
16	Q. And that's when you had the patent	16	likely, his laboratory would attempt further
17	issued, correct?	17	investigations, correct?
18	A. Correct.	18	A. Correct.
19	Q. And paraquat was first sold in the	19	Q. All right. And the final paragraph,
20	United States in 1965, right?	20	he informs Dr. Snowdon that 2,2 dipyridyl has
21	A. Correct.	21	a moderate toxicity because it affects the
22	Q. What was the very first date on	22	central nervous system, correct?
23	which ICI or Syngenta learned that paraquat had	23	A. Correct.
24	a toxicity affecting the central nervous	24	MR. NARESH: Object to the form.
25	system?	25	Go ahead, sorry.

*1	Page 587	1	Page 589
1	BY MR. TILLERY:	1	CUSA-00383879.
2	Q. And this is about	2	(Botham Exhibit 49 marked for
3	MR. TILLERY: Sorry, you were	3	identification.)
4	MR. NARESH: I	4	MR. TILLERY: It's this one here.
5	MR. TILLERY: finished, Ragan?	5	THE WITNESS: Okay, I can see that
6	MR. NARESH: Yes.	6	document.
7	BY MR. TILLERY:	7	BY MR. TILLERY:
8	Q. This was about seven years before	8	Q. All right. I don't I want
9	paraquat was first sold in the United States,	9	to make sure you understand the context, and
10	right?	10	if you need more context I have other documents
11	A. Correct.	11	surrounding this.
12	Q. Now, after hearing that paraquat was	12	But the question I would have
13	toxic by affecting the central nervous system	13	would be that Chevron and ICI were working
14	in 1958, what studies were undertaken	14	to develop paraquat as a no-till product for
15	to determine just how it caused toxicity to the	15	soyabeans relatively soon after it was sold
16	central nervous system?	16	in the United States, correct? That's your
17	A. I	17	understanding?
18	MR. NARESH: Objection to form.	18	A. I'm you may be right. I can't
19	THE WITNESS: I don't know the	19	confirm that but I take your word for it.
20	answer to that question.	20	Q. Yeah, I've got other documents
21	BY MR. TILLERY:	21	around this. It will just delay this
21 22	Q. Were any neurotoxicity studies ever	22	deposition and they are of no account. Please
23		23	
	undertaken before paraquat was sold in the US		let me represent to you that's what the
24 25	seven years later?  A. I'm not sure what studies were	24 25	documents show
	Page 588	+	A. Okay.  Page 590
١.			
1	conducted.	1	Q that ICI and Chevron were
2	Q. Do you know if ICI ever took this	2	attempting to sell the product to other
3	information from their own medical laboratories	3	companies as an additive to other chemicals,
4	to investigate neurotoxicity before this	4	like atrazine, simazine, Lorox, Lasso, that
5	product was launched for sale in the United	5	were manufactured by other chemical companies,
6	States?	6	like Geigy or DuPont or Monsanto, and this was
7	A. No, I don't know whether that was	7	a time period where they were trying to market
8	the case.	8	that.
9	Q. Were the inhalation analyses	9	I'll ask you to assume it but
10	mentioned by Mr. Gage, or Dr. Gage, ever done	10	I'm happy to show you documents to verify that
11	then?	11	if you wish to see them. Okay?
12	A. I don't know.	12	A. No, I'm happy to accept that.
13	MR. TILLERY: Now if we could move	13	Q. All right, okay.
14	on to and this is that last exhibit	14	Now, Chevron and ICI sold paraquat
15	that we just mentioned, I hope	15	at times for mixing with other products sold by
16	I referenced on the record, was	16	other chemical companies, didn't they?
17	Plaintiff's Deposition Exhibit No. 48,	17	A. Yes.
18	Dr. Botham, okay?	18	Q. All right. They wanted to be able
19	THE WITNESS: Right, okay.	19	to market paraquat for use as a residual
20	MR. TILLERY: All right. Now we're	20	with residual herbicides from other companies,
21	going to go to Deposition Exhibit No. 49,	21	as far as you know?
21	and if you would pull this up, please,	22	A. Yes.
			A C
22		23	O Now if you would look at this
	for him.  This, whilst he's doing that,	23 24	Q. Now, if you would look at this April 23, 1969 memo from Chevron's Don F. Dye

	CONFIDENTIAL FORDOAN	1	
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1	registration, to T.W. Reed, manager technical	1	encourage the use of Paraquat in any way."
2	coordination, and, again, the reference number	2	Do you see that?
3	is CUSA-00383879.	3	A. I do.
4	A. Okay.	4	Q. Okay. And then if you skip down
5	Q. All right. Here Mr. Dye is	5	here, you'll look and the second paragraph,
6	reporting to Mr. Reed about a conversation	6	last sentence. Do you see that?
7	he had about paraquat with J. Hood [sic], vice	7	A. Yes.
8	president of Geigy Agricultural Chemicals,	8	Q. "Geigy felt they had sufficient
9	correct?	9	liability with their own products and did not
10	A. Correct.	10	want to increase their liability by having
11	Q. And he is giving a memo back to his	11	Paraquat included [in] these products."
12	boss, it looks like, where he is saying that	12	Do you see that?
13	he's reporting what he learned on	13	A. I do.
14	a conversation with Geigy about their	14	Q. Okay.
15	acceptance or use of paraquat along with their	15	Now, did you understand, then, that
16	product. That's what this is about, isn't it?	16	Geigy refused to buy or use or promote the sale
17	A. Yes. I haven't full read all	17	of paraquat because they considered it to be
18	the way through yet. I don't know if you want	18	hazardous?
19	me to make sure that I	19	MR. NARESH: Objection to form.
20	Q. Oh, no, no, no, I want you to no,	20	THE WITNESS: This is this is
21	I want you to read it all the way through.	21	certainly what this implies, yes.
22	Take your time, sir.	22	BY MR. TILLERY:
23	A. Okay.	23	Q. All right. And were you aware that
24	Q. You tell me when you're ready.	24	they wrote a follow-up letter where they said
25	A. Thank you.	25	exactly that? And I can show you this, where
	Page 592		Page 594
1	Okay. I've read that now,	1	Mr. Wood said:
2	thank you.	2	"Following a thorough review of all
3	Q. All right.	3	the information we have on paraquat, including
4	So in this memo, do you understand	4	the Industrial Hygiene and Toxicology Bulletin
5	it to be a memo from Mr. Dye where he's	5	distributed and other information supplied
6	reporting on a conversation he had with	6	by Chevron, we have made the decision [not to]
7	vice president of research from Geigy	7	label or promote the combination of paraquat
8	Agricultural Chemicals	8	with the various triazine herbicides at this
9	A. Yes.	9	time."
10	Q and that was a Dr. John J. Wood,	10	Were you aware of that document
11	right?	11	A. No, I was not aware of that.
12	A. Yes.	12	MR. NARESH: I'll object to the
13	Q. All right. And he's reporting	13	form. If you'd like to show him the
14	to his boss what that conversation was,	14	document, please feel free.
15	correct, and that's about whether or not Geigy	15	MR. TILLERY: Okay, let's put that
16	would start buying paraquat to add to their own	16	up. We'll pull up 50 so we can verify
17	chemicals that they sold to farmers around the	17	for counsel that comment.
18	country, correct?	18	MR. NARESH: Thank you.
19	A. Correct.	19	MR. TILLERY: And that's
20	Q. And here he says:	20	CUSA-00383840, Plaintiff's Exhibit
21	"John [who he's reporting to] said	21	No. 50.
22	that Geigy felt that Paraquat was a potentially	22	(Botham Exhibit 50 marked for
23	hazardous chemical and they were not doing any	23	identification.)
24	research on this product. Their Marketing	24	BY MR. TILLERY:
25	people have been advised to not promote or	25	Q. If you could take a look at that,

17.	Page 595		Page 597
1	Dr. Botham. Do you have it in front of you?	1	know from them upon what information or
2	A. I do.	2	scientific findings they based their decision?
3	Q. I was reading directly from	3	A. I would have expected that to be
	paragraph 2.	4	true, yes.
5	A. Yes, I agree that that is what you	5	Q. Okay. Have you, in all your
6	said previously.	6	evaluation of records, ever seen one indication
7	Q. It is precisely as I reported it on	7	that ICI did any of that?
8	the record, isn't it, sir?	8	A. I don't recall any of that, no.
9	A. It is.	9	Q. Okay. Are you aware of Chevron ever
10	Q. And that is a June 23, 1969 letter	10	doing that?
11	from J.J. Hood, vice president, Geigy	11	A. I am not.
	Agricultural Chemicals, to Mr. D.F. Dye,	12	Q. Okay.
	supervisor, product registration, ortho	13	Do you know if any other companies
	division. Correct?	14	refused to apply a product to paraquat, your
15	A. Correct.	15	product?
16	Q. And that's Chevron Chemical Company.	16	A. I'm not aware of any other
17	A. Correct.	17	examples.
18	Q. They were not going to use paraquat,	18	Q. Okay.
19	were they, and they didn't?	19	MR. NARESH: Steve, if you're
20	Now, when you you have to answer	20	shifting topics, I would suggest that now
21	out loud.	21	might be a good time for a lunch break,
22	A. I'm sorry. Yes, I assume that they	22	given the time difference.
23	didn't, yes, but this certainly indicates they	23	MR. TILLERY: It's your call,
	had no intention to.	24	Ragan, I told you.
25	Q. Let me ask you, after you received	25	THE WITNESS: Just whilst we had
	Page 596		Page 598
1	information that another major chemical company	1	the previous break, I confirmed that my
2	in the United States thought paraquat was too	2	lunch will be here at 12:30. We can go
3	hazardous to use with their own products, did	3	for another 15 minutes if that's okay.
	you initiate any further evaluation,	4	MR. TILLERY: That's fine. That's
5	investigation studies to verify what their	5	perfectly fine with me. Hold on one
6	concerns were?	6	second.
7	A. I'm not aware of what might have	7	BY MR. TILLERY:
8	been done directly in response to this, no.	8	Q. Dr. Botham, would you agree with me
9	Q. Did you ask them to turn over their	9	that companies like Chevron and Syngenta,
	laboratory findings to determine what they	10	who are in the business of manufacturing and
	based their decision on?	11	distributing pesticides like paraquat, have
12	A. I don't know whether that was done.	12	a duty to act responsibly to ensure the health
13	Q. Okay. Would that have been	13	and safety of the consumers of their products?
	a prudent thing to do?	14	MR. NARESH: Objection; foundation.
15	A. It could have been, yes.	15	THE WITNESS: I would agree with
16	MR. NARESH: Objection; form.	16	that.
	BY MR. TILLERY:	17	BY MR. TILLERY:
18	Q. I don't know if the reporter got	18	Q. And would you agree with me that
	your answer'?	19	companies like Chevron and Syngenta, who are
20	A. I said it could have been the	20	in the business of manufacturing and
	prudent thing to do, certainly.	21	distributing pesticides like paraquat, have
22	Q. I mean, if you're selling a product	22	a duty to be truthful in dealing with
	to another company and the company sees	23	regulatory agencies?
	laboratories come back and say this stuff is	24	MR. NARESH: Same objection.
25	too hazardous to sell, wouldn't you want to	25	THE WITNESS: I would certainly

	Page 599		Page 601
1	agree with that.	1	BY MR. TILLERY:
2	BY MR. TILLERY:	2	Q. Okay.
3	Q. Okay. Would you agree with me that	3	What does "state of the art" mean in
4	companies like Chevron and Syngenta, who are in	4	the context of paraquat as you referred to it
5	the business of manufacturing and distributing	5	earlier?
6	pesticides like paraquat, have a duty	6	A. Do you mean state of the art
7	to disclose lists of serious harm from their	7	in terms of the scientific assessments that
8	products to the consumers of their products?	8	would be done?
9	MR. NARESH: Objection; scope.	9	Q. Yes.
10	THE WITNESS: I agree.	10	A. Well, that was meant to indicate
11	BY MR. TILLERY:	11	that you the state of the art would be
12	Q. Okay. Would you agree with me that	12	governed by, first of all, the science and
13	companies like Chevron and Syngenta, who are	13	understanding of potential toxicity that
14	in the business of manufacturing and	14	a compound like paraquat might have, so how
15	distributing pesticides like paraquat, have	15	much scientific understanding is there,
16	a duty to conduct scientific research with the	16	combined with what the regulatory requirements
17	highest standards of professionalism and good	17	might be, which, I think as I said earlier,
18	science?	18	have moved forward over the period that we're
19	MR. NARESH: Same objections.	19	talking about.
20	THE WITNESS: I agree.	20	Q. Do you believe that paraquat was
21	BY MR. TILLERY:	21	designed and manufactured according to the
22	Q. Okay. Would you agree with me that	22	state of the art at the time existing in 1965?
23	companies like Chevron and Syngenta, who are	23	A. Manufactured rather than sold?
24	in the business of manufacturing and	24	Q. I'll say sold. Let's modify it and
25	distributing pesticides like paraquat, have	25	say sold.
	Page 600		Page 602
1	a duty to be transparent regarding their	1	A. It's hard for me to answer that
2	research findings and to publicly disclose	2	precisely because I can't, sort of, recreate
3	research results of significance in an	3	all of the historical information in my head
4	objective and accurate way?	4	to answer that.
5	MR. NARESH: Same objections.	5	Q. All right.
6	THE WITNESS: I agree.	6	Would you say that there was any
7	BY MR. TILLERY:	7	time after 1965 when it was sold where the
8	Q. Okay. Would you agree with me that	8	state of the art for chemical manufacturers
9	companies like Syngenta and Chevron, who are in	9	changed?
10	the business of manufacturing and distributing	10	A. Yes, absolutely. The state of the
11	pesticides like paraquat, have a duty	11	art changed over time.
12	to communicate information concerning health,	12	Q. And you said it changed in the late
13	safety and toxicity in a timely and responsible	13	'70s with the introduction of regulatory
14	manner?	14	matters, right?
15	MR. NARESH: Same objections.	15	A. That's when there was a greater
16	THE WITNESS: I agree.	16	requirement for what are now the standard
17	BY MR. TILLERY:	17	toxicological studies that are done.
18	Q. Would you agree with me that these	18	Q. And when you say toxicological
19	general principles guiding corporate duties and	19	studies, you're saying a requirement that's
20	responsibilities have remained generally	20	imposed by regulatory bodies to do minimal
21	constant from the first development of	21	toxicological studies, correct?
22	paraquat?	22	A. These are the requirements imposed
23	MR. NARESH: Same objections.	23	by regulatory authorities to do the
24	THE WITNESS: Yes.	24	package/the toxicity tests that regulatory
25	///	25	authorities deem to be needed to assure the

	Page 603	-	Page	605
1	safety of a product.	1	the science, the state of the art changed	
2	Q. Does FIFRA, or the EPA, provide the	2	over a period of time, so before these	
3	only guidance or standards for pesticide	3	guidelines appeared, a different standard	
4	manufacturers in the United States?	4	was applied.	
5	MR. NARESH: Objection; foundation,	5	BY MR. TILLERY:	
6	scope.	6	Q. Okay.	
7	THE WITNESS: FIFRA certainly is	7	What safety testing of pesticides	
8	the one area where the requirements are	8	did US regulators require pre market in 1965?	
9	can be found but they are also based	9	A. I -	
10	on international requirements,	10	MR. NARESH: Objection; scope,	
11	guidelines, governed, for example, by	11	foundation.	
12	the OECD.	12	THE WITNESS: I haven't got a list	
13	BY MR. TILLERY:	13	of the requirements at that time.	
14	Q. OECD?	14	BY MR. TILLERY:	
15	A. Yes, the Organisation for Economic	15	Q. Would the answer be you don't know?	
16	Co-operation and Development, OECD.	16	A. Which so, in other words,	
17	Q. Tell us about that. What is the	17	I don't know.	
18	OECD?	18		
19	A. The OECD is an international	19	Q. All right.	
20	organization which includes a branch which is	10000	Has the United States EPA ever	
21		20	required Syngenta to conduct neurotoxicity	
22	responsible for standards of safety testing, toxicological testing that we're now talking	21	studies of paraquat?	
23		22	MR. NARESH: Objection; scope.	
23 24	about, and they, over the years, have issued	23	THE WITNESS: Yes, it has. We have	
2 <del>4</del> 25	specific guidelines about how to conduct	24	conducted a specific neurotoxicity study	
25	toxicology studies.	25	according to FIFRA and OECD guidelines.	
	Page 604		Page	606
1	Q. So besides OECD and FIFRA, are there	1	BY MR. TILLERY:	
2	any other standards that provide guidance for	2	Q. And what was the first year that was	
3	pesticide manufacturers in the United States?	3	done?	
4	A. Those are the main ones in the	4	A. I don't recall when that was	
5	United States. There are other countries	5	exactly when that was done. That would be	
6	also have their own regulations.	6	certainly after 1980, probably in the 1990s,	
7	Q. Does OECD apply to the United	7	but I would have to check.	
8	States?	8	Q. What was the study?	
9	A. Yes	9	A. It was a 90-day dosing study, a	
10	MR. NARESH: Objection to form.	10	neurotoxicity study according to the	
11	THE WITNESS: the United States	11	guideline, where a chemical like paraquat is	
12	has signed up to what's called the Mutual	12	given to rats.	
13	Acceptance of Data, which means that	13	Q. Was it fed to a rat?	
14	studies should be done according to OECD	14	A. Correct.	
15	guidelines.	15	Q. And who was the author or principal	
16	BY MR. TILLERY:	16	investigator of that study?	
17	Q. And are you saying that you had	17	A. I don't recall who that would be,	
18	a lesser standard of care before FIFRA, EPA and	18	who that was.	
19	OECD guidelines were applicable?	19	Q. Was it published?	
20	A. I wouldn't	20	A. It was submitted to the regulatory	
21	MR. NARESH: Objection; scope,	21	agencies as required.	
22	form, foundation.	22	•	
23			Q. Okay. Was it published?	
23 24	THE WITNESS: I wouldn't put it	23	A. Not as an external peer-reviewed	
24 25	that way. I think what I'm saying is	24	publication, no.	
دے	that, as you said earlier, the state of	25	Q. Okay. Were there any others?	

	Page 607		Page 609
1	A. Well, the other FIFRA studies,	1	directly. Do you know whether or not, in that
2	which are required since the 1980s, include	2	particular study, the brains were even
3	other toxicological studies which incorporate	3	evaluated?
4	investigations of the nervous system. So the	4	A. I would need to check exactly what
5	one I've just described is a specialist	5	was done on the brain.
6	neurotoxicity studies study, but many other	6	Q. Okay. You don't know whether
7	of the required studies include investigations	7	A. Not at this moment in time.
8	of part of the nervous system.	8	Q in a cancer study, whether or not
9	Q. Are there any other sources of	9	they even evaluated the brain, do you?
10	standards or customs in the pesticide industry	10	A. As I say, normally speaking, the
11	besides the ones you have mentioned, OECD and	11	brain would have some investigation. I can't,
12	FIFRA?	12	right now, tell you exactly what was done.
13	MR. NARESH: Objection; foundation,	13	Q. And what investigations of the
14	scope.	14	nervous system were made?
15	THE WITNESS: There are as	15	A. Normally, and, again, this is part
16	I indicated, every region and country	16	of the state-of-the-science question because
17	has publishes their own requirements	17	these guidelines continue have continued
18	and guidelines, which are mostly based on	18	to evolve, and normally today one would look
19	OECD guidelines.	19	at not just the brain but also the peripheral
20	BY MR. TILLERY:	20	nervous system, nerves elsewhere in the body,
21	Q. So you're saying the United States	21	including histologically, as we were talking
22	has published guidelines as well?	22	about earlier.
23	A. Yes, which is FIFRA, yes.	23	MR. TILLERY: Yeah. I move
24	Q. Can you give examples of the studies	24	to strike the answer as unresponsive.
25	that incorporate neurotoxicity that were done?	25	///
	Page 608		Page 610
1	A. Yes. So, for example, the chronic	1	BY MR. TILLERY:
2	toxicity study where a paraquat or another	2	Q. What I'm asking you is the studies
3	chemical is given to a rodent, usually a rat,	3	you mentioned, you talked about
4	over a lifetime, would include investigations	4	a lifetime-feeding study of rats. What
5	of the nervous system.	5	investigations of the nervous system were made?
6	Q. What was that study?	6	A. I would need to check that report.
7	A. That would be a two-year	7	Q. All right. You don't know, do you?
8	chronic/carcinogenicity study in the rat and	8	A. Not right now, no.
9	usually also in the mouse.	9	Q. Was dopamine measured?
10	Q. And that particular study was done	10	A. I think that's very unlikely.
11	when?	11	Q. Any other neurotransmitter?
12	A. Again, I don't can't give you an	12	A. I think that's unlikely.
13	exact date.	13	Q. To your knowledge, were neurons
14	Q. And that was a study not testing	14	measured in those carcinogenicity studies?
15	neurotoxicity but was really designed to test	15	A. Neurons measurement, as such, not
16	whether or not paraquat caused cancer, wasn't	16	likely.
17	it?	17	Q. Okay.
18	A. Cancer and also other chronic	18	So you indicated that based upon
19	toxicities, any other target-organ toxicities.	19	FIFRA/OECD, there were codes or standards
20	Q. The brains weren't even evaluated in	20	applicable to the chemical industry generally
21	that study of the animals, were they?	21	or pesticide manufacturers in particular.
22	A. The brain is certainly one of the	22	Can you give us examples of those that are
23	tissues that one needs to perform some	23	applicable to Syngenta in the United States?
24	investigations on.	24	A. Could you clarify that question?
25	Q. Well, let's answer my question	25	Examples of precisely what, please.

	Page 611		Page 613
1	Q. Of codes or standards that you	1	that.
2	indicated would be based upon OECD or FIFRA.	2	MR. NARESH: Steve, can I have
3	A. So these are the definitions of the	3	a standing objection to this line of
4	study types that would be required to be	4	questioning on scope and foundation?
5	conducted, so the sort of examples that we've	5	MR. TILLERY: You sure can, sir.
6	just been discussing.	6	This, for the record, is going to be
1 7	Q. Yeah. What I was asking is,	7	relatively brief.
8	is there any other code or standard other than	8	Then we can take our lunch break
9	what the regulatory body orders you	9	for you, sir, okay?
10	to undertake as a minimum standard for use of	10	THE WITNESS: Okay, thank you.
11	a product.	11	Yes, I can see this document.
12	A. Right. Well, a company of course	12	BY MR. TILLERY:
13	always has the right, and will often do	13	Q. All right. If you go to page 24 of
14	additional studies that are not necessarily	14	the document. Just for the record, this is
15	required by regulatory authorities in order	15	the Syngenta Code of Conduct, correct?
16	to investigate potential human-health issues.	16	A. Correct.
17	Q. And a company like Syngenta would	17	Q. Okay.
18	enact a code of conduct, too, right?	18	A. I'm just having difficulties in
19	A. Of course.	19	locating page numbers on my screen here.
20	Q. And when did Syngenta or its	20	Q. Okay. I'm sorry it's not
21	corporate predecessors launch a code of	21	Bates-numbered that I can direct you to.
22	conduct?	22	But it starts at the top of the page, "Science,
23	A. I	23	products and property rights."
24	MR. NARESH: Objection to scope.	24	A. Yes, okay, I've got that.
25	THE WITNESS: couldn't comment	25	Q. Of that, I think it's 26. Okay.
	Page 612		Page 614
,	on that. I don't know.	7	You have it?
1 2	BY MR. TILLERY:	1 2	
			A. Yes, I have that.
3	Q. You've been with the company since	3	Q. Would you mind looking at those two
4	it started, haven't you?	4	pages, 18 and 19, or the page and its following
5	A. I've been with the company since	5	page.
6	1980.	6	A. Yes, I've read that.
7	Q. Okay. So for 40 years.	7	Q. All right.
8	A. Correct.	8	Now, I'm going to direct these
9	Q. Now, was there always a code of	9	questions primarily to that Syngenta Code of
10	conduct?	10	Conduct. Do you agree that one of the
11	A. I believe that there was. I think	11	principles in the Syngenta Code of Conduct is:
12	I've been more aware of that, say, in the last	12	"We will investigate all credible
13	20 years than before then.	13	reports of previously unknown short and
14	Q. Okay.	14	long-term effects associated with the correct
15	MR. TILLERY: So let's pull up that	15	use of our products and take appropriate
16	exhibit. And which one would that be?	16	actions."
17	MS. BRUMITT: 51.	17	Do you see that?
18	MR. TILLERY: Sorry?	18	A. Yes, I do.
19	MS. BRUMITT: 51.	19	Q. All right. Do you agree with that?
20	MR. TILLERY: We're going to call	20	A. I do.
21	this Plaintiff's Deposition Exhibit	21	Q. Okay. You agree that another
22	No. 51.	22	principle of the Syngenta Code of Conduct is:
23	(Botham Exhibit 51 marked for	23	"We will publicly disclose research
24	identification.)	24	and development results of significance in an
25	MR. TILLERY: We'll move forward on	25	objective and accurate way"?

	Page 615		Page 617
١,	_	١,	conducted.
1	A. Yes.	1 2	
2	Q. Do you see that? Do you agree with	3	Q. So this that how you feel it's
3	that, too?	4	been conducted, meaning that these codes have been applicable, right, throughout that
4	A. Yeah. I do, yeah.	5	
5	Q. Do you see that? Okay. And does	6	40-year period, right?
6	the Syngenta Code of Conduct also state:	7	A. Yes.
7	"We will carefully identify hazards,	i .	Q. In other words, whether you or
8	assess risks associated with the use and alert	8	I agree or disagree about whether or not
9	users of consequences from misuse of a product	9 10	there's been compliance with these principles,
10	on the product package, leaflet and label.	ı	you're telling me that these principles have been in existence and been there for
11 12	Products carry clear end user instructions	11	
	concerning safe storage, use and disposal."	12	people to follow for the last 40 years at
13	Do you see that?	13	Syngenta or its predecessor entities, correct?
14	A. Yes.	14	A. They undoubtedly were not written
15	Q. Is that on the Syngenta Code of	15	down exactly as they have been done here in
16	Conduct?	16	this more modern version, but certainly
17	A. Yes.	17	in my experience the principles I recognize as
18	Q. Does another principle of the	18	having been present throughout my career.
19	Syngenta Code of Conduct say:	19	Q. All right.
20	"Syngenta employees will apply the	20	Syngenta was the original
21	highest ethical and scientific standards and	21	manufacturer of paraquat and held a patent
22	adopt robust processes and controls. They will	22	on it, right?
23	be alert to wider societal concerns about	23	A. Correct.
24	technology and its impacts, as well as applying	24	Q. How long was Syngenta the only
25	rigorous scientific risk assessment."	25	manufacturer of paraquat?
	Page 616		Page 618
1	Do you see that?	1	MR. NARESH: Objection; scope.
2	A. Yes.	2	THE WITNESS: I can't remember the
3	Q. And does the code also state:	3	exact number of years.
4	"Syngenta ensures the quality and	4	BY MR. TILLERY:
5	state of its products and services by applying	5	Q. Okay.
6	state of the art science and technology	6	Do you agree that a company that
7	standards throughout a product life cycle and	7	holds a patent, and by that I mean has a legal
8	ensuring adequate training for our employees	8	monopoly for the manufacture, sale and
9	and customers."	9	distribution of a product, has a responsibility
10	Do you see that?	10	to make a scientific inquiry into all the
11	A. I do.	11	dangers associated with use of that product?
12	Q. Now, whether or not these were the	12	MR. NARESH: Objection; scope,
13	specific words used in the Syngenta Code of	13	form.
14	Conduct as of 2000 when the company formed,	14	THE WITNESS: I think that any
15	or through its predecessors' existence, which	15	company that is in that situation should
16	would include Zeneca and ICI when you were	16	certainly have that, yes.
17	there, okay, has this been, in large measure,	17	BY MR. TILLERY:
18	- <b>6 7</b>	18	Q. Well, what I'm saying is when
19		19	no other company has the lawful right to sell
20	employment at Syngenta?	20	your product because you hold the patent, does
21	A. Yes. In my personal experience,	21	that impose upon you a standard of ensuring
22	working in the part of the company that I have	22	that people who buy your product and apply
23	done, the essence of what has been codified	23	it don't get hurt by it?
24	in this more recent code of conduct is,	24	MR. NARESH: Objection; scope,
25	I feel, exactly how things have been	25	form, foundation.

	Page 619	-	Page	621
1	THE WITNESS: I would expect that	1	Q. Okay.	
2	any company that buys a product from	2	Would you agree with me that	
3	a patent-holder would, as part of that,	3	a company that holds a patent and has a lawful	
4	be given the necessary information to	4	monopoly on the manufacture, sale and	
5		5		
	make that judgment. BY MR, TILLERY:		distribution of a hazardous product has the	
6		6	responsibility to spearhead scientific research	
7	Q. Well, what I'm saying is, is whether	7	to make the product safer?	
8	it's a company or it's a farmer, like	8	MR. NARESH: Same objections as	
9	Mr. Schmidt or Mr. Rowan or Mr. Niebruegge,	9	before.	
10	Mr. Mills, what I'm saying is, is that when	10	THE WITNESS: If a hazard has been	
11	you're the only manufacturer of that product	11	identified, then I think it is the	
12	and there is no other competitor, do you agree	12	responsibility of a company to properly	
13	with me that you have an obligation to make	13	manage that hazard, and that could take	
14	sure that the scientific aspects of that	14	a number of different ways forward.	
15	product are explored thoroughly to determine	15	BY MR. TILLERY:	
16	whether or not there's any dangerous or	16	Q. Well, I mean, one of those ways of	
17	hazardous component to the use of the product?	17	management is not to do stand by and do	
18	MR. NARESH: Same objections.	18	nothing. Would you agree with me?	
19	THE WITNESS: Yeah, yes, when it	19	A. It depends on the nature of the	
20	a scientific when it's scientifically	20	hazard, how critical it is believed to be	
21	known that there is a hazard associated	21	in terms of human health.	
22	with a product, that, indeed, should be	22	Q. Well, let's say you get a report	
23	made known.	23	from your medical department that says that	
24	BY MR. TILLERY:	24	it can cause central nervous system effects.	
25	<ul><li>Q. And in 1958, your own laboratories</li></ul>	25	Is it okay just to sit back and say, "I'm going	
	Page 620		Page	622
1	told you that this chemical product caused	1	to do nothing"?	
2	central nervous system effects by virtue of	2	MR. NARESH: Objection; foundation,	
3	the document I just showed you in this	3	scope.	
4	deposition, didn't it?	4	THE WITNESS: Well, with the	
5	MR. NARESH: Objection; form.	5	looking at that from today's perspective,	
6	THE WITNESS: My interpretation of	6	the answer to that question would be you	
7	that is that it was a believed that	7	would want to first of all, you'd want	
8	that could be the case. What I don't	8	to confirm if that was the case. You	
9	know is what further investigations were	9	would not always rely on one piece	
10	done at that time which said that that	10	of information. This is, again, the	
11	was clearly the case.	11	scientific method.	
12	BY MR. TILLERY:	12	BY MR. TILLERY:	
13	Q. Okay. So you don't know because you	13	Q. Okay. Let me ask you something.	
14	don't know that any were ever undertaken,	14	Did you ever see evidence that there was	
15	correct?	15	follow-up scientific analysis to determine	
16	A. I don't know what else was done	16	whether J.C. Gage's conclusion that "dipyridyl	
17	to follow up from that letter you've	17	appears to have moderate toxicity mainly by	
18	described.	18	affecting the central nervous system"? Did you	
19	Q. Well, just so the jury and the judge	19	ever see evidence	ı
20	is not in any way left in doubt, in all those	20	A. No, I've not seen evidence to	
21	documents you've seen in 40 years with this	21	no, I've not seen that evidence, no.	
22	company, have you ever seen evidence that any	22	Q. And that was 1958, wasn't it, sir?	
23	scientist ever followed up on that 1958 report?	23	A. Yes.	
24	A. I can't say that I've seen any	24	Q. That was seven years before this	
25	evidence for a direct follow-up to that.	25	chemical was even sold in America, wasn't it?	

	Page 623		Page 625
1	A. Yes.	1	done, yes.
2	Q. All right.	2	Q. That's done by being reported back
3	Does industry regulation or custom	3	to Chevron of people who were poisoned and
4	require you to perform any testing on	4	killed, right?
5	pesticides before selling them in the United	5	A. Yes, correct.
6	States?	6	Q. Did Syngenta or Chevron do any
7	MR. NARESH: Objection; scope,	7	on their own other than evaluating brain matter
8	foundation.	8	that was sent to them by coroners from around
9	THE WITNESS: You temporarily just	9	the country because these people had ingested
10	cut out there. Could you repeat that	10	paraquat?
11	question, please?	11	MR. NARESH: Objection; foundation.
12	MR. TILLERY: Actually, I'm going	12	THE WITNESS: I don't know.
13	to withdraw it.	13	BY MR. TILLERY:
14	BY MR. TILLERY:	14	Q. Okay.
15	Q. In 1965, could Syngenta have done	15	In 1965, was the technology
16	a behavioral study using animals exposed	16	available to count neuronal cell loss in people
17	to paraquat for different periods of time,	17	exposed to paraquat?
18	at different doses and by different methods of	18	A. I think that's not very likely.
19	exposure to see whether paraguat caused any	19	Q. Okay. What do you base that opinion
20	detectable central nervous system effects?	20	on?
21	MR. NARESH: Objection to form.	21	A. Well, there are two parts to that
22	THE WITNESS: The technology would	22	question. One is you've indicated in people,
23	have been available to do an	23	so that would mean in humans, and so that
24	investigation of that sort, yes.	24	would require very specialized histological
25	///	25	techniques to be done on human brain tissue,
	Page 624		Page 626
1	BY MR. TILLERY:	1	and I'm not sure that the state of the science
2	Q. Was that done was that done	2	at that time would have allowed that.
3	A. I'm not aware that that was done.	3	Q. Well, then let me change the
4	No, I'm not aware that that was done.	4	question a little bit. In 1965, was the
5	Q. In 1965, was the technology	5	technology available to count neuronal cell
6	available to analyze brain tissues to see	6	loss in animals exposed to paraquat?
7	if paraquat was present in the brain of test	7	A. Again, I think it would be it
8	animals exposed to it?	8	would have been quite difficult to do that
9	A. The technology was certainly	9	because the technology and the stains and
10	available to detect paraquat, yes.	10	microscopy were not available at that time.
11	Q. Was that done, to your knowledge?	11	Q. Okay. Were you practicing at that
12	A. In animals, I'm not sure whether	12	time?
13	that was done at that time.	13	A. No, I was not. I was still at
14	Q. Have you ever seen a study	14	school.
15	indicating that it was done by Syngenta at that	15	Q. Okay.
16	time?	16	In 1964, were in vitro studies of
17	A. I don't recall studies from that	17	neuronal cell lines feasible?
18	time.	18	A. Again, I can't accurately say but
19	Q. In 1965, was Syngenta able	19	I think it's not very likely because the
20	to analyze postmortem brain tissues to see	20	technology came somewhat later.
21	if paraquat was present in paraquat-poisoning	21	O. When did it come?
22	cases?	22	A. You start to see studies in the
144			
23	A. Yes, I believe that's right.	23	1970s and 1980s.
	<ul><li>A. Yes, I believe that's right.</li><li>Q. Were those studies done?</li></ul>	24	1970s and 1980s. Q. Were nonhuman primate studies

	Page 627		Page 629
1	A. They were.	1	were done in around 1965, how many were done
2	Q. Were other chemical manufacturers	2	later. Some were done later than that, sir.
3	testing their products on nonhuman primates	3	Q. And were these neurotoxicity
4	at that time, to your knowledge?	4	studies?
5	MR. NARESH: Objection. Objection;	5	A. Not at all.
6	foundation.	6	Q. What were they?
7	THE WITNESS: To my knowledge	7	A. They were to look at the acute
8	to my knowledge, certainly there were	8	toxicity, so the acute poisoning, people who
9	some testing in nonhuman primates.	9	might ingest a single dose of paraquat and
10	BY MR, TILLERY:	10	what the toxicity of that is.
11	Q. Did Syngenta or its predecessors do	11	Q. Okay. So these weren't studies
12	any nonhuman primate studies with paraquat	12	to determine whether or not paraquat got into
13	any nonhuman primate studies with paraquat at that time?	13	the brain of the nonhuman primate, correct?
13 14		14	
	A. They did. They were more		A. Not at all, no.
15	to investigate the acute toxicity of paraquat.	15	Q. These were studies where you loaded
16	Q. Okay. So what study are you	16	up a squirrel monkey or some other nonhuman
L7	referring to in 1965 on nonhuman primates that	17	primate and saw how long it took to kill them,
18	Syngenta did?	18	right?
19	A. Well, there were studies done	19	A. Essentially, yes.
20	to look at how toxic, acutely toxic, paraquat	20	Q. Okay.
21	was in the nonhuman primate, and that	21	MR. NARESH: Steve, is it a good
22	eventually led, after that date, to studies	22	time to break?
23	to look at whether paraquat could be made	23	MR. TILLERY: We'll take a break
24	safer with regard to its acute toxicity.	24	now. That's fine. How long did you want
25	Q. What I'm asking are the specific	25	to take? A half an hour, thereabouts?
	Page 628		Page 630
1	studies in 1965 of nonhuman primates you're	1	THE WITNESS: That's fine by me.
2	referring to.	2	Thirty minutes will be good.
3	A. Yeah, I can't give you that level	3	MRTILLERY: If you need thirty
4	of detail today.	4	minutes is fine. We'll break at this
5	Q. Well, can you think of a single one	5	point and resume at 7:25 local time,
6	of them?	6	Central time.
7	A. Not right now, no.	7	Okay. Thank you.
. 8	Q. Okay. Can you tell me who might	8	THE VIDEOGRAPHER: We are going off
9	have done such studies? Were they done	9	the record. The time is 12:51.
10	internally or externally?	10	(Lunch break taken.)
11	A. My recollection is that they were	11	THE VIDEOGRAPHER: We are back on
12	mainly done externally by contract research	12	the record. The time is 1:36.
13	organizations.	13	BY MR. TILLERY:
14	Q. And you don't know who that	14	Q. Dr. Botham, when we were discussing
15	contractor is or was?	15	these documents that involved autopsies in the
16	A. I can't accurately recall the name.	16	earlier part today, I omitted one particular
16 17		17	document which is marked now as Plaintiff's
	It will be a speculation to give the name	18	
18	right now.		Deposition Exhibit No. 52. It's CUSA-00283683
19	Q. And do you have a copy of that study	19	and it runs through 699.
20			
21			
22		t:	
23		1	
24 25			
	available so we can look at it maybe?  A. There are Q. You can direct counsel to A. Yeah, there are certainly studies available, yes. And, again, I can't give you an accurate date as to whether how many	20 21 22 23 24 25	If you would look at that, and I'm going to be asking you questions about for the first page, page 4, page 13. I believe that's it. First page, page 4 and page 13.  So if you could take some time and look at it, please, before I ask you some

	Page 631		Page 633
١.	an actions	1	post-ingestion from respiratory failure."
1 2	questions.  A. Okay, I will do that.	2	Do you see that?
3	(Botham Exhibit 52 marked for	3	A. I do.
	identification,)	4	Q. Now, if you now go to page 695, and
4		5	Table 1 is what I want to direct your attention
5	THE WITNESS: Did you say page 13,	6	-
6	because that is a page of references in	7	to. A. Yeah, I'm there.
7	the copy I'm looking at.	8	
8	BY MR. TILLERY:	1	Q. All right. Table 1 says "Tissue
9	Q. Well, let me give you the specific	9	Paraquat Levels," doesn't it?
10	CUSA number. Page 4, last three digits are	10	A. It does.
11	686, and page the next one would be 695.	11	Q. And it says "Time Until Death,"
12	A. Okay. That's helpful, thank you.	12	"Patient 1 - 22 days post-ingestion."
13	Okay, yeah, I've had a look at	13	Do you see that?
14	those.	14	A. Yes.
15	Q. All right.	15	Q. Tissue assayed includes brain,
16	Plaintiff's Deposition Exhibit 52	16	heart, kidney, liver, lung and spleen, right?
17	is a paper entitled "Paraquat Poisoning:	17	A. Yes.
18	An Analytical Toxicologic Study of Three	18	Q. And the paraquat levels are measured
19	Cases." Correct?	19	in micrograms per gram, correct?
20	A. Correct.	20	A. Correct.
21	<ul> <li>Q. Okay. The handwritten print says</li> </ul>	21	Q. And what is the highest level of any
22	"Accepted toxicology 5/1/79." Correct? If you	22	of them?
23	see it on the front page.	23	A. It's 0.089, which is in the brain.
24	A. Yes, I do.	24	Q. The brain was higher than the heart,
25	Q. Okay. And one of the authors is	25	it was higher than the kidney, higher than the
	Page 632	2	Page 634
1	James Leary. Do you know that he is an	1	liver, higher than the lung and higher than the
2	employee, or was at that time an employee, of	2	spleen, wasn't it? It was the highest of any
3	Chevron Corporation?	3	of the organs, correct?
4	A. No, I did not know that.	4	A. That is correct.
5	Q. I'll ask you to accept that or	5	Q. Okay. Twenty-two days after
6	assume that, that James B. Leary, one of the	6	ingesting paraquat, among all of the tissues of
7	authors, if you look at the title	7	Patient #1 that were measured, the highest
8	A. Yes.	8	concentration was found in the brain. Correct?
9	Q was a Chevron employee. Okay.	وا	A. That is correct.
10	Now, please turn to page 4, which is	10	Q. So over time, paraquat accumulated
11	686, and this is a reference to Patient 1.	11	in Patient 1's brain, would you agree?
12	Tell me when you're there, please.	12	A. The paraquat's certainly got into
13	A. Yeah, I'm there.	13	the brain. You can't use the word accumulate
14	Q. All right. And it referenced	14	just on the basis of one day's assay; you
15	Patient 1, who accidentally ingested a mouthful	15	don't know whether it was higher or lower
16	of 29 percent paraquat. Correct?	16	before and after.
17	A. Correct.	17	Q. Okay.
18	Q. And the patient history says:	18	Now, let's go back to 686. Tell me
18 19	"A 17-year-old caucasian male was	19	when you're there, and I'm referencing
	transferred to the University of California,	20	Patient #2.
20	· · · · · · · · · · · · · · · · · · ·	21	A. Okay, I'm there.
21	Irvine Medical Center five days after	22	
22	accidentally ingesting a mouthful of 29%	23	Q. Okay. Patient #2, who is a 16-year-old Caucasian male was admitted
23	paraquat."		
24	And then at the end, it says:	24 25	to the same medical facility 30 minutes after
25	"The patient died 22 days	145	purposefully ingesting a mouthful of 29%

	Page 635	1	Page 637
1	paraquat. Correct?	1	techno-regulatory team was prompted by recent
2	A. Correct.	2	literature linking paraquat to Parkinson's
3	Q. " the patient died 23 days after	3	disease, wasn't it?
4	ingestion from severe pulmonary fibrosis."	4	A. I believe that was the case.
5	A. Correct.	5	Q. All right.
6	Q. Now, let's go back to that chart	6	Now, would you agree that one
7	again, if you wouldn't mind, and that's on,	7	purpose of the techno-regulatory team, after
8	I think, CUSA, the last three digits 695.	8	it had formed following literature in the late
9	A. Yeah, I'm there.	9	'90s and early part of the 2000s, was to get,
10	Q. Okay. And like Patient 1, what was	10	sort of, into the game about the literature and
11	the highest level measured of the organs	11	the reaction to the literature, linking
12	measured in Patient #2?	12	paraquat to Parkinson's disease?
13	A. 0.07 in the brain.	13	MR. NARESH: Object to the form.
14	Q. In the brain. So they measured	14	THE WITNESS: Yes, that was
15	adipose tissue, they measured brain, they	15	certainly one of the main factors to
16	measured kidney, they measured liver, and the	16	in recognition of the publications on
17	brain was the highest for paraquat found of all	17	this, in this area, for us to better
18	those parts of the human body, correct?	18	understand and determine what else
19	A. Correct.	19	we might be able to do to contribute
20	Q. Okay. Thank you.	20	to that science.
21	Now, there was a techno-regulatory	21	BY MR. TILLERY:
22	team or group formed within Syngenta in the	22	Q. And to actually engage in
23	early 2000s, wasn't there?	23	affirmative behavior as well, correct?
24	A. Yes, I believe there was.	24	A. If you mean by affirmative being
25	Q. And when did you become involved	25	proactive rather than just reactive, yes.
	Page 636		Page 638
1	with that group?	1	Q. And that would include one of the
2	A. I had some involvement because of	2	affirmative actions would include influencing
3	my role as a senior leader in the 2000s.	3	academia, regulatory and non-governmental
4	I had some involvement between the years 2003	4	organization environments, correct?
5	to 2006/2007, but not as a permanent member	5	A. It would be to ensure that we were
6	of the team.	6	having appropriate dialogue with some of those
7	Q. And who was the leader of the team?	7	stakeholders. I think influencing is perhaps
8	A. I think at the time it would be	8	not quite the right word.
9	people like Dr. Mike Clapp and then Dr. Barry	9	MR. TILLERY: Okay. Well, then
10	Elliott.	10	let's pull up this 543.
11	Q. And Nick Sturgess?	11	What exhibit number is this?
12	A. Nick would certainly have been	12	MS. BRUMITT: 53.
13	a member of that team, yes.	13	MR. TILLERY: 53. We're going to
14	O. And Nicola Wallis?	14	show you number 53.
15	A. She would yes, again, I can't	15	(Botham Exhibit 53 marked for
16	remember if she was a permanent member of the	16	identification.)
17	team but she would have been involved at some	17	BY MR. TILLERY:
18	point, I agree.	18	
19	Q. Okay. And was the techno-regulatory	19	Q. Please read this, and then I'm going to direct your attention to paragraph 11, which
20	team proposed in October 2001 at a paraquat	20	
21	Parkinson's disease task meeting?	21	is on the next page. That's actually page 5,
22	A. I don't remember that precisely but	22	I believe, so if you could take a look at the
23		23	document.
24	that makes it makes sense that that may have been the case.		Okay. Have you read it?
25 25		24	A. Yes, I'm just finishing now.
23	Q. And the reason for the	25	I'm just on the last page.

	Page 639		Page 641
1	Q. Okay, thank you.	1	pesticides.
2	A. Okay, thank you, I've done that.	2	Q. Would that be roughly the equivalent
3	Q. All right. If we go to the first	3	of the EPA in the United States?
4	page of the document, okay. If you look under	4	A. It's a much narrower remit, but,
5	number 2, third paragraph, do you see that?	5	yes, a similar function.
6	A. Yes.	6	Q. All right.
7	Q. Follow along with me if you wouldn't	7	" has advised PSD there is no
8	mind and tell me if I'm reading this correctly.	8	basis to link PQ to neurotoxicity. The ACP
9	And before I do, present at this meeting was	9	has, however, recommended an epidemiological
10	Mike Clapp. George Krinke, what was his role?	10	study to look at the possibility of a link
11	A. He was a neuropathologist based in	11	between pesticides and PD."
12	Switzerland.	12	What does that stand for?
13	Q. Okay. And Ted Lock, what did he do	13	<ul> <li>A. PD stands for Parkinson's disease.</li> </ul>
14	at Syngenta?	14	Q. Okay.
15	A. An investigative toxicologist based	15	Now, if you go to the end of this,
16	at CTL.	16	the last page, you'll see a reference to
17	Q. Okay. And Chris Sheard?	17	number 11.
18	A. A product toxicologist working	18	Do you see that?
19	alongside Mike Clapp.	19	A. I do.
20	Q. And Nick Sturgess?	20	Q. All right. And it says "Proposal
21	A. An investigative toxicologist	21	for" what? What word do they use?
22	working with Ted Lock.	22	A. Yeah, they use the term
23	Q. And Nicola Wallis?	23	"influencing strategy."
24	A. A pathologist based in CTL.	24	Q. Okay. So this is the word you
25	Q. And these are minutes and actions	25	didn't like a few minutes ago when I was
	Page 640		Page 642
1	from the paraquat/Parkinson's disease task	1	questioning you, right?
2	meeting at CTL on October 18, 2001, correct?	2	A. That's right, and I can explain
3	A. Correct.	3	that if you wish.
4	Q. Okay. If we go down to 2, third	4	Q. Okay. So this committee says
5	paragraph, it says:	5	"influencing strategy" and here's what it says:
6	"It is known that PQ"	6	"A science-based approach to an
7	Is that referencing paraquat?	7	influencing strategy was proposed. This should
8	A. PQ is paraquat.	8	be supported by position statements. Position
9	Q. Okay.	9	statements should support this. Any
10	"It is known that PQ can give rise	10	development of the strategy must consider how
11	to non-specific brain lesions in suicide cases	11	best to influence academia, and regulatory and
12	but even in such patients (who are [currently]	12	NGO 'environments'."
13	suffering irreversible multi-organ failure)	13	Correct?
14	there is no evidence of functional	14	A. Correct.
15	neurotoxicity. Diquat is known to cause brain	15	Q. "It was agreed that a techno-
16	item infarcts but, again, only following high,	16	regulatory team is required that can identify
17	suicidal doses."	17	the threats to paraquat from [Parkinson's
18	And then if we skip down, it says:	18	disease] [or] PD [referenced] hazard models.
19	"On a 'weight of evidence' basis,	19	The team should promote a science-based
20	the Advisory Committee on Pesticides has	20	understanding of the issues surrounding the
21	advised PSD"	21	implication of paraquat in [a] PD-like effects
22	What is that?	22	in man in order to maintain and safeguard
23	A. PSD is the Pesticides Safety	23	paraquat registrations."
24	Directorate which was the regulatory authority	24	Is that what it says?
25	in the United Kingdom responsible for	25	A. It does.

Г	Page	643		Page 645
1	Q. Okay. Let's make sure we're clear		1	minutes this says the objective, and this
2	for the court and jury "maintain and safeguard		2	let's identify the exhibit first. This is
3	paraquat registration" means your ability to		3	minutes of a June 9, 2003, what's that is it
4	continue to sell the chemical, doesn't it?		4	PO RDT?
5	A. That's right.		5	A. PQ that is, paraquat.
6	Q. Because if you don't maintain and		6	Q. PQ, paraquat. "RDT - Regulatory
7	safeguard the paraquat registrations, it		7	science foresight," Parkinson's disease, right?
8	becomes unlawful to sell the product in the	- 1	8	A. That's correct.
9	country, correct?		9	Q. All right. It has attendees and
10	A. Correct.	- 1	10	it lists a large number of people and
11	Q. Okay. And so the action that was	- 1	11	identifies where they're from?
12	going to be taken from this document: MGLC		12	A. That's correct.
13	[sic], what is that?		13	Q. These people are all these are
14	A. MJLC are the initials of Mike	ı	14	all scientists associated with Syngenta,
15	Clapp.	- 1	15	correct?
16	Q. So MJLC, Mike Clapp:		16	A. They are indeed, yes.
17	" would set up an initial meeting	- 1	17	Q. Okay. Here we go to the minutes and
18	with appropriate techno-regulatory input from	- 1	18	if you look about halfway through the minutes,
19	individuals before the year-end, to discuss the		19	it says:
20	key issues and start to formulate PQ		20	"The objective is to move from a
21	influencing strategy."		21	
22	Is that what it says?		22	situation where we were predominantly
23	A. It does.		23	[reactive] in discrete scientific disciplines
24				to a situation where we have a coherent
25	Q. All right.		24 25	strategy across all disciplines focussing on
2.5	MR. TILLERY: Now, let's go to the		25	external influencing, that proactively diffuses
		044		Page 646
1	next exhibit. Which is?		1	the potential threats that we face."
2	MS. BRUMITT: 54.	- 1	2	Correct?
3	MR. TILLERY: 54?	ı	3	A. Correct.
4	MS. BRUMITT: 54.		4	Q. Would you agree with me that the
5	MR. TILLERY: Number 54,	- 1	5	threat they face that they were mentioning
6	Plaintiff's Exhibit No. 54 for counsel.		6	was not being able to sell paraquat?
7	This is SYNG-PQ-01023454. Plaintiff's		7	A. That would certainly be one of the
. 8	Deposition Exhibit 54.		- 8	threats that was being implied here, yes.
9	(Botham Exhibit 54 marked for		9	Q. Actually, that was the primary
10	identification.)		10	threat that was being implied here, wasn't it?
11	BY MR. TILLERY:		11	A. Well, it may have been. I wasn't
12	Q. Okay. Take a look at this. Let me		12	in this meeting, but it's I don't disagree
13	know when you're ready to discuss it, sir.		13	with your interpretation.
14	A. Okay.		14	Q. All right.
15	Q. Are you ready now?		15	MR. TILLERY: Now let's go to
16	A. I'm looking at it now.		16	Exhibit 55.
lπρ			17	That's this one here.
17	Q. Okay, I'm sorry.		18	MS. BRUMITT: Mmm-hmm.
	Q. Okay, I'm sorry. A. Do you want me to read all the way			The state of the s
17	A. Do you want me to read all the way			MR. TILLERY: And this is
17 18 19	A. Do you want me to read all the way through this?	- 1	19	MR. TILLERY: And this is SYNG-PO-01655689
17 18	A. Do you want me to read all the way through this?  Q. This page, and I'm going to ask you		19 20	SYNG-PQ-01655689.
17 18 19 20	A. Do you want me to read all the way through this?  Q. This page, and I'm going to ask you one question in the minutes section.		19 20 21	SYNG-PQ-01655689. (Botham Exhibit 55 marked for
17 18 19 20 21 22	<ul> <li>A. Do you want me to read all the way through this?</li> <li>Q. This page, and I'm going to ask you one question in the minutes section.</li> <li>A. Okay.</li> </ul>		19 20 21 22	SYNG-PQ-01655689. (Botham Exhibit 55 marked for identification.)
17 18 19 20 21	A. Do you want me to read all the way through this?  Q. This page, and I'm going to ask you one question in the minutes section.		19 20 21	SYNG-PQ-01655689. (Botham Exhibit 55 marked for

	Page 647	1	Page 649
١.			
1	group?	1	identification.)
2	A. Yes, I would have certainly been	2	THE WITNESS: Okay, I've received
3	closer to this team by that point.	3	this.
4	Q. And is it likely you would have been	4	BY MR. TILLERY:
5	in attendance at the presentation of this	5	Q. And if you go to 941 of that,
6	PowerPoint for this meeting?	6	page 13.
7	A. I may have been. I can't recall.	7	A. Yes, I can now see a page which
8	Q. Okay. Are you able to tell us who	8	says "Influencing."
9	was present during this presentation?	9	Q. All right. And under that topic,
10	A. Well, I can only tell you from the	10	it says:
11	agenda who some of the people were. Unless	11	"Generate data - Allow vehicle for
12	there's a list somewhere.	12	entering the debate through presentation and
13	Q. It is a meeting dated November 4,	13	discussion."
14	of the techno-regulatory group, or meeting	14	Correct?
15	group that we just talked about, right?	15	A. Correct.
16	A. I believe that this would have been	16	Q. Attend conferences, correct?
17	the group that was set up as indicated in the	17	A. Correct.
18	last-but-one document, yes.	18	Q. "Present data; challenge others,"
19	Q. Right. So the earlier email we just	19	and "Network."
20	referenced a few minutes ago was a prelude	20	Correct'?
21	to the creation of this formalized group	21	A. Correct.
22	to deal with these issues. Is that a fair	22	Q. Okay. Now if we go to now if
23	statement?	23	we go back to 73 I'm sorry, it's Exhibit 55,
24	A. I think that's a fair statement,	24	the one you had before. I apologize for the
25	yes.	25	mix-up in the references. If you go back
	Page 648		Page 650
1	Q. All right. Do you know who the	1	to that and take a look at the last numbers
2	presenters were?	2	1655706.
3	A. Okay. So I'm looking at the	3	A. So we're going back to Exhibit 55?
4	agenda, page 3. So BE is Barry Elliott,	4	Q. Right. She'll pull that up.
5	NS and LM are Nick Sturgess and Louise Marks.	5	A. Okay. I'm just opening it now,
6	IW is Ian Wheals.	6	actually, from the yeah, so I'm now back on
7	Q. Okay. Now, if you go to	7	the techno-regulatory meeting, 4 November
8	SYGN-000476941, do you see the topic	8	2004.
9	"Influencing"?	9	Q. It's page 18 and the Bates number is
10	A. Excuse me, I'm just getting there.	10	706, the last three numbers.
11	MR. NARESH: Sorry, what was that	11	A. Tell me the Bates number again,
12	page number again? 941?	12	please.
13	MR, TILLERY: Yes. I have it at	13	Q. Yeah, it's 706 is
14	00476941.	14	A. Okay.
15	THE WITNESS: That doesn't make any	15	Q. It would be 01655706.
16		16	A. Okay, just getting there. Sorry,
17	sense. MR. NARESH: Yeah.	17	I have to scroll up and down to see the Bates
18		18	number all the time, that's why I'm yes,
19	MR. TILLERY: Actually, let's go to	19	I'm now on 706.
	SYNG-00476929, is it a different exhibit?	20	Q. And what's the topic of that page,
20	And we'll call		
21	MR. NARESH: Okay, it must be	21	the title?
22	a different exhibit.	22	A. "Recent Literature Developments Of
23	MR. TILLERY: Yeah, we'll call that	23	Concern."
24	Exhibit No. 56.	24	Q. Okay. And, if you would, read in
25	(Botham Exhibit 56 marked for	25	the first paragraph?

	Page 651		Page 653
1		,	
2	A. "Two US based research groups have produced a series of publications since 1999	1	black mouse after injecting the mice with paraquat; is that right?
3	implicating paraquat in a Parkinson's disease	2	A. Symptoms in some cases. Pathology
4	animal model - work still on going."	4	and other findings as well, yes.
5	Q. And the name below that?	5	Q. Incidentally, as you said earlier in
6	A. Cory-Slechta group, Rutgers,	6	the deposition, their work is what prompted
7	New Jersey, University of Rochester, New York,	7	Louise Marks's research with the Charles River
8	and Di Monte group, Parkinson's Institute,	8	black mouse. I think we covered that when
9	Sunnyvale, California.	9	we had the earlier part of the deposition in
10	Q. And then it says:	10	February.
11	"Using the C57Bl6 mouse model and	11	A. We did.
12	i.p. dosing"	12	Q. All right. You agree with that?
13	That's intraperitoneal, correct?	13	A. Yes, I do.
14	A. Correct.	14	Q. All right.
15	Q. And "i.p. dosing of PQ," that's	15	So at this point in time, we're
16	paraquat, right?	16	talking November 2004, Dr. Marks's research was
17	A. Correct.	17	still ongoing, wasn't it?
18	Q. 1-30 milligrams per kilogram,	18	A. Yes, it was.
19	typically 3 weekly doses of 10 milligrams per	19	Q. Syngenta considered the work of
20	kilogram.	20	Dr. Cory-Slechta and Dr. Di Monte groups to be
21	Am I reading it correctly?	21	threats, didn't it?
22	A. You are.	22	A. It was certainly important for us
23	Q. "Looking at three biological	23	to understand whether those findings were
24	endpoints as markers of toxicity:	24	reproducible and, hence, of concern,
25	neuropathological - loss of neurones from	25	absolutely.
	Page 652		Page 654
1	substantia nigra ([based on] sterology);	1	Q. Of concern in that if those groups
2	neurochemical - loss of dopamine from the	2	are right in their results, you shouldn't be
3	striatum [of the substantia nigra portion of	3	selling paraquat because it caused people to
4	the brain]; and neurobehavioural - reduction in	4	get Parkinson's disease, right?
5	locomotor activity."	5	MR. NARESH: Objection to form.
6	Is that what was produced and	6	THE WITNESS: If I may just add,
7	discussed at the meeting in reference to	7	as in the previous exhibit where we saw
8	Dr. Cory-Slechta and Dr. Di Monte?	8	that approach that we were taking,
9	A. Yes, that is correct.	9	we were entering the scientific
10	Q. Okay. And these were a series of	10	discussion and debate more proactively
11	publications from 1999 that were of concern	11	to try to understand that situation.
12	to Syngenta, right?	12	MR. TILLERY: Well, I move to
13	A. That's correct.	13	strike your answer as unresponsive.
14	Q. Okay.	14	BY MR. TILLERY:
15	Now, the Cory-Slechta group, that's	15	Q. And if you'd answer my question.
16	really a reference to Dr. Deborah Cory-Slechta	16	I said it would be of concern because if those
17	at the University of Rochester, New York,	17	groups were correct in their scientific
18	right?	18	analysis of the link between paraquat and
19	A. Yes, it is.	19	Parkinson's disease, you shouldn't be selling
20	Q. And the Di Monte group that's	20	the product. Would that be a fair statement?
21	referenced here was a group at the Parkinson's	21	MR. NARESH: Same objection.
22	Institute in California, correct?	22	THE WITNESS: If that was a real
23	A. That is correct.	23	effect, we would then need to understand
24	Q. Specifically, both had found	24	whether that the effects that they've
25	Parkinson's-like symptoms in the Charles River	25	seen, and possibly we also see, in the

	Page 655		Page 657
١.		١.,	
1	animal model were likely to have	1	Q. All right. If you take a look at
2	relevance to human beings. So this is	3	that, please. The purpose of the
3	just step one in a two-step process;		techno-regulatory meeting in November 2004 was
4	animal toxicology, then looking for human	4	to lay out a strategy for responding to the
5	relevance.	5	emerging threat posed by the
6	BY MR. TILLERY:	6	paraquat/Parkinson's research of the
7	Q. Well, let's look to I think this	7	Cory-Slechta and Di Monte groups, wasn't it?
8	is the same one. Let's go to 17 of that	8	A. Yes.
10	exhibit and this is headed "Paraquat &	10	Q. All right. And the objectives was to confirm the RDT definition of issue and
11	Parkinson's Disease," and that's at 705.	11	threat, right?
12	A. Yes. Sorry, it took me a while to get there. I'm there now.	12	A. Yes.
13	Q. And that's entitled "Paraquat &	13	Q. Now, what is RDT an abbreviation
14	Parkinson's Disease," right?	14	for?
15	A. Yes, it is.	15	A. I'm pretty sure it was regulatory
16	Q. And let's look at bullet number 2,	16	development team.
17	read that into the record. What did the	17	Q. Right. And the issue/threat is the
18	techno-regulatory team deem Dr. Cory-Slechta's	18	one we've already talked about, correct?
19	research to present? What did they call it?	19	A. That's correct.
20	A. "Threats to paraquat from the	20	Q. And that issue/threat posed by the
21	recent scientific literature."	21	paraquat/Parkinson's research of Cory-Slechta
22	Q. All right, thank you.	22	and Di Monte, correct?
23	Then if you go on to 708, which is	23	A. That was certainly one important
24	three pages later in that same document,	24	part of it, yes.
25	"Recent Literature Developments Of Concern."	25	Q. And the potential for regulatory
	Page 656		Page 658
1	A. Yes.	1	action or even a ban on paraquat from the
2	Q. "Cory-Slechta very vocal in her	2	US EPA, correct?
3	calls for the risk to humans from paraquat	3	A. That will be one thing that was
4	exposure be reassessed owing to: The use of	4	considered, certainly, yes.
5	[paraquat] as a desiccant on cotton;	5	Q. So another objective of the meeting
6	Occupational exposure leading to contamination	6	was to confirm the RDT proposed management
7	of workers and their families; Exposure to	7	tactics, correct?
8	paraquat in residential areas from spray drift.	8	A. Yes.
9	Cory-Slechta connections with NGOs such as	9	Q. Were those tactics ever amended?
10	PAN."	10	A. Well, I don't know that I can
11	What does that mean?	11	accurately answer that question. I would,
12	A. That means that at that time there	12	though, take the opportunity to say that
13	was a belief that Dr. Cory-Slechta had some	13	the tactics, as it says here, were
14	kind of relationship with a non-governmental	14	increasingly, from this time onwards, to
15	organization, which is called Pesticide Action	15	engage, as we said earlier, more proactively
16	Network.	16	in understanding the science.
17	Q. Okay.	17	Q. Well, let's look specifically at the
18	If you'd go now to 690, under	18	tactics, management tactics, in this Exhibit 55
19	"Objectives," and before you if you'd just	19	and go to 692.
20	identify it first.	20	A. Yeah, I'm here.
21	A. Okay. So I'm going back here.	21	Q. What is the title of that topic?
22	Excuse me, I'm just trying to get	22 23	A. "Management Tactics." Q. So one of those tactics was
23 24	there. So it's 690. Yeah, sorry, I was one behind, I've just got one more to click.	24	Q. So one of those tactics was to develop a database of neurotoxicity studies
25	Yes, I'm there now, thank you.	25	to support the continued regulatory approval of
23	1 c2' I III micie nom' many lon'	ردع	to support the communica regulatory approval of

	Page 659		Page 661
1	paraquat, wasn't it?	1	paraquat as a herbicide."
2	A. That's right.	2	Q. Okay. Number 3, you want to read
3	Q. Another tactic was to influence	3	that?
4	ongoing academic Parkinson's disease research,	4	A. "Support regulatory authorities in
5	correct?	5	dismissing the hypothesis that paraquat is a
6	A. Correct.	6	risk factor for Parkinson's Disease in
7	Q. Another was to influence ongoing	7	humans."
8	academic Parkinson's disease research, right?	8	
9	And that meant	9	Q. So part of your management tactics is to make sure that regulatory authorities
10		10	
11	A. That's what it says here, yes.		don't connect paraquat with Parkinson's
	Q influence it in a way that	11	disease. Is that a fair statement?
12	supported the continued registration and use of	12	A. Yes, but based on number 1, which
13	paraquat. That's what it meant, wasn't it?	13	is making sure that we actually have the data
14	A. I think this is where the term	14	to show whether or not that is appropriate.
15	"influence" is one which can be it can be	15	Q. And number 4, it says:
16	defined in different ways. To me, and I think	16	"Seek to demonstrate the lack of
17	being part of this team, influence was	17	independent regulatory expert [report] for the
18	is more about being able to engage with people	18	hypothesis that occupational paraquat exposure
19	like the academic community so that we can	19	is a risk factor for [Parkinson's disease] in
20	better understand what is actually happening	20	the sub-population of people exposed to [it]."
21	here with paraquat and potential Parkinson's	21	Did I read that correctly?
22	disease.	22	A. You did.
23	It was not meant to say we're	23	Q. And then the last one of your
24	trying to suppress or bad-mouth the research	24	management tactics:
25	that has been done.	25	"Create an international scientific
	Page 660		Page 662
1	Q. You wouldn't try to influence	1	consensus against the hypothesis that paraquat
2	I got a lot of feedback. I'm sorry, let's	2	is a risk factor for Parkinson's Disease in
3	withdraw that.	3	humans."
4	You wouldn't try to influence,	4	Right?
5	as you say, or silence people who had academic	5	A. Correct.
6	differences with you, would you?	6	Q. And this is all to counter the
7	A. No, I would not.	7	threat, correct?
8	Q. You'd never do that, would you?	8	A. Correct.
9	A. No, sir.	9	Q. And that threat was that paraquat
10	Q. That wouldn't be part of your	10	would no longer be able to be sold, correct?
11	influencing team, right? You personally	11	A. If the final scientific consensus
12	wouldn't approve that?	12	was that there is a relationship or
13	A. Personally, I would not approve of	13	•
14			a causative link, then yes.
	that.	14	Q. Now, you just told me a minute ago
15 16	Q. Okay. So let's go back to make sure	15	you wouldn't do anything to sort of silence the
	we're clear. Let's go to that same page,	16	scientific discussion or opposition. That's
17	number 2, and let's read into the record word	17	not what was meant; isn't that what you just
18	for word, why don't you do it, and let's let	18	told me?
19	the court and jury decide what is meant by that	19	A. I think I understand that that
20	term back in 2004. Read number 2.	20	Q. You
21	A. So number 2:	21	A. I think I said that that was my
22	"Monitor, understand and influence	22	personal view, that I wouldn't not
23	ongoing academic PD research and manage the	23	contemplate silencing people.
24	impact on paraquat registrations by putting	24	Q. You wouldn't, for example, take any
25	published findings in context of the use of	25	action to make sure certain scientists were not

	Page 663	·	Page 665
1	appointed to regulatory positions, right?	1	It would certainly be to provide
2	A. No, I would not do that.	2	a science-based independent science-based
3	Q. Okay.	3	position to the EPA.
4	Now, I want to direct your attention	4	Q. And would you agree that very
5	to another topic. What is the FIFRA Scientific	5	important for Syngenta to make sure people who
6	Advisory Panel?	6	have critical feelings on paraquat are not
7	A. FIFRA scientific advisory panels	7	allowed on the SAP?
8	are panels set up by the United States	8	MR. NARESH: Objection to form.
9	Environmental Protection Agency, EPA. They	9	THE WITNESS: I certainly wouldn't
10	are panels of independent experts, and also	10	want to put it that way. Again, speaking
11	members of the EPA will be part of the	11	personally, I don't think it would be
12	process, to investigate issues of potential	12	something that we should be attempting
13	concern in human or environmental safety.	13	to do, to say who or who should not be on
14	Q. I copied something from the website	14	a panel of that sort.
15	of the US EPA and I want to read it to you and	15 16	BY MR. TILLERY:
16	ask you if you agree with it, okay.		Q. Right. In other words, you would
17	"The Federal Insecticide, Fungicide	17	agree with me that a chemical company like
18	& Rodenticide Act (FIFRA) Scientific Advisory	18	Syngenta should not be involved in working
19	Panel (SAP) provides independent scientific	19 20	behind the scenes to make sure certain people
20	advice to the EPA on health and safety issues		aren't appointed to the scientific advisory
21	related to pesticides. The FIFRA SAP is	21 22	panel. Would you agree with that?
22	comprised of biologists, statisticians,	23	A. I mean, I, again, personally would feel that that's an action that I wouldn't
23	toxicoligists, and other experts."	24	feel comfortable with.
24 25	Would you agree with that definition?	25	Q. Actually, you wouldn't feel
25		25	
	Page 664		Page 666
1	A. I certainly would. I think	1	comfortable with it because you would consider
2	it elaborated very well what I just indicated.	2	it to be, if not illegal, certainly highly
3	Q. So is that panel also referred to,	3	unethical, wouldn't you?
4	then, as the SAP? And when we refer to in the	4	MR. NARESH: Objection to form,
5	deposition as SAP we know we're talking about	5	foundation, scope.
6	the scientific advisory panel of the US EPA.	6	THE WITNESS: I believe that it
7	Correct?	7	is not it is certainly not within the
8	A. Yes, yes.	8	spirit of the code of conduct,
9	Q. And there's five members of that	9	for example.
10	group, aren't there?	10	BY MR. TILLERY:
11	A. I don't know. I can't remember.	11	Q. The Code of Conduct of Syngenta,
12	Q. So that panel would be responsible	12	it wouldn't be consistent with that, would it?
13	for giving scientific advice to the EPA on	13	A. No, that's my interpretation of it
14	chemicals like paraquat, wouldn't it?	14	certainly.
15	A. Yes, it would.	15	Q. Well, do you know of any laws that
16	Q. For example, if paraquat's	16	might be violated for a company, subject to the
17	registration to be sold in the United States	17	regulation of a federal regulator, to try
18	were being reconsidered, the SAP would review	18	to influence the membership of the advisory
19	the scientific evidence about paraquat and make	19 20	panel that oversees their products? Do you
20	recommendations about whether it should be	21	know anything about that?  MR. NARESH: Objection; form,
21	sold, correct?  A. I don't know whether it's the	22	
22 23		23	scope. THE WITNESS: I'm not sufficiently
24	responsibility of the SAP to make recommendations as to whether a compound	24	familiar with United States law to be
25	should be sold. I'm not certain about that.	25	able to answer that question.
Electricals	SHOULD UP SULU. THE HUL CELTAIN AUGUL HIST.		acte to answer that question.

	Page 667		Page 669
1	BY MR. TILLERY:	1	A. He was an investigative
2	Q. Okay. Well, I want, before we get	2	toxicologist based at CTL.
3	into the next line of questions, to clarify	3	Q. And John Doe?
4	something about the status of certain employees	4	A. John Doe took over from Lewis Smith
5	of Syngenta.	5	as the head of CTL. John was already in
6	Greg Watson, what is his job in 2005	6	another leadership position in CTL before
7	at Syngenta?	7	that.
8	MR. NARESH: Objection; foundation,	8	Q. Okay.
9	scope.	9	MR. TILLERY: I want to direct your
10	THE WITNESS: Greg Watson was in	10	attention to and this is the first
11	the United States, in the Syngenta United	11	one
12	States regulatory team. He was the	12	MS. BRUMITT: 57.
13	I believe he was the lead regulatory	13	MR. TILLERY: which would be
14	expert for herbicides.	14	number 607.
15	BY MR. TILLERY:	15	MS. BRUMITT: Yeah, Exhibit 57.
16	Q. Mike Clapp?	16	MR. TILLERY: I'm sorry?
17	MR. NARESH: Steve, just for the	17	MS. BRUMITT: 57.
18	record, I don't have a problem with you	18	MR. TILLERY: This is Plaintiff's
19	asking these questions in his personal	19	Deposition Exhibit 57, and this is
20	capacity. I just have a standing	20	SYNG-PQ-04206065 through 067.
21	objection on scope.	21	If you'd take a look at these,
22	MR. TILLERY: You do, sir.	22	
23	BY MR. TILLERY:	23	please. (Botham Exhibit 57 marked for
24	Q. Go ahead.	24	
25	A. Thank you.	25	identification.) ///
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1	Mike Clapp was the product	1	BY MR. TILLERY:
2	toxicologist at the Central Toxicology	2	Q. And when you're finished looking at
3	Laboratory in the United Kingdom. The product	3	them, I'm going to ask you some questions about
4	toxicologist for paraquat.	4	them.
5	Q. Barry Elliott?	5	A. Okay, go ahead.
6	A. He succeeded Mike Clapp in that	6	Q. Okay. This is a series of emails
7	same role.	7	between the individuals that I had you
8	Q. Tim Pastoor, what was his job in	8	identify, correct?
9	2005?	9	A. Yes, it is.
10	A. Tim Pastoor at that time would	10	Q. And 042065 I'm sorry. 0426065,
11	have been the head of human safety in the	11	if you look at that, I think that's the first
12	United States Syngenta health assessment	12	page.
13	organization.	13	A. Yes.
14	Q. And Ian Wheals?	14	Q. Do you see it?
15	A. Ian at that time was in either	15	Greg Watson sent an email to some of
16	in the global or the European regulatory team,	16	the other men about Dr. Deborah Cory-Slechta,
17	based either in the UK or in Switzerland.	17	correct?
18		18	A. Correct.
19	I'm not sure exactly where at that time.	1	
20	Q. Lewis Smith, what was his job? A. Lewis Smith had been the head of	19 20	Q. And that was dated December 7, 2005
21			[sic]?
22	CTL, and at some point he then transferred	21 22	A. Correct.
	to the head of development in Basel; and,		Q. Okay, do you see that?
23	again, the dates, precise dates, I can't	23	A. Yes, I do.
24	recall.	24	Q. And Mike Clapp responded to Nick
25	Q. And then Nick Sturgess?	25	Sturgess, Lewis Smith and John Doe, right?

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1	A. Yes, he did.	1	
2	Q. Read his email into the record,	2	
3	please.	3	
4	A. So Mike Clapp said:	4	
5	"In case you have not seen"	5	
6	Sorry, I think the document is	6	
7	MR. NARESH: Yeah. Steve, I think	7	
8	you have it in presentation mode and it's	8	
9	moving up and down, at least from my	9	
10	perspective. It might be easier for the	10	
11	witness if it's not in presentation mode.	11	
12	MR. TILLERY: Okay. I didn't	12	Q. " dimethoate SAP FQPA Science
13	understand what it was you're saying.	13	
14	If it's not in presentation mode?	14	
15	THE WITNESS: Yeah, because I can't	15	
16	see the top of the document now.	16	
17	MR. TILLERY: Okay	17	tox panel/external expertise, & a potential
18	MR. NARESH: Yeah, he can't control	18	
19	the document in the	19	last meeting at CTL needs to be a priority for
20	MR. TILLERY: Oh, I'm sorry.	20	
21	Yeah, can you let him have access	21	
22	to it? Yeah. I'm sorry.	22	A. That's correct, that's what that
23	BY MR. TILLERY:	23	
24	Q. Do you have it now, sir?	24	
25	A. Yeah, okay, I can see the top of	25	
	Page 672		Page 674
1	the document now. So Mike Clapp wrote,	1	to Nick Sturgess, Lewis Smith and John Doe,
2	"Gentlemen"	2	
3	Q. Actually, Mike Clapp is at the	3	
4	beginning, right?	4	SAP. Not good news - but no indication of
5	A. Yes, he is.	5	
6	Q. Okay. So it starts down a little	6	I will consider the next steps. Mike."
7	ways, doesn't it?	7	Were you aware of this?
8	MR. NARESH: It's still showing up	8	A. No. As you can see, I wasn't
9	for me in presentation mode. I can no	9	copied into this, so I don't
10	longer oh, here we go. It's out now.	10	Q. You weren't you weren't part of
11	BY MR. TILLERY:	11	this exchange, right?
12	Q. So if you'd look at the earlier one.	12	A. No.
13	The way emails read, the earlier ones are at	13	Q. Is this the first you're hearing
14	the bottom and they go closer to the top	14	about any of this?
15	time-wise as we copy, don't they?	15	A. Well, directly, yes, but, I mean,
16	You understand that?	16	indirectly, I know that there were discussions
17	A. Yeah, yeah.	17	
18	Q. The same the way they would on	18	Q. Okay.
19	a computer screen, if you had a long exchange	19	MR. TILLERY: So let's do this,
20	with your friend, they would your earliest	20	if we can, let's go to and this is
21	emails would be at the top.	21	exhibit
22	So if we look down here to the one	22	What number?
23	from December 7, 2004 from Greg Watson,	23	MS. BRUMITT: 58.
24	he sends that to Mike Clapp, Barry Elliott,	24	MR. TILLERY: 58, Plaintiff's
25	Tim Pastoor and Ian Wheals, Cc's Jerry Wells,	25	Deposition Exhibit 58, and this is

## CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER

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١.			
1	SYNG-PQ-05705351 through 5352.	1	A. Well, I wouldn't
2	(Botham Exhibit 58 marked for	2	MR. NARESH: Objection to form.
3	identification.)	3	THE WITNESS: put it that way.
4	MR. TILLERY: We release that	4	He was certainly very actively engaged
5	to you to look at.	5	in professional activities with us.
6	THE WITNESS: Okay, that's come.	6	BY MR. TILLERY:
7	Okay. So I've read that.	7	Q. Okay. And Mr. McAllister was
8	BY MR. TILLERY:	8	warning Syngenta that Debbie Cory-Slechta had
9	Q. All right. This is a two mail	9	been nominated to fill a vacancy on the EPA
10	strike that.	10	Scientific Advisory Panel, correct?
11	This is a two-page email string	11	A. Correct.
12	involving even more people, isn't it? Even	12	Q. He followed the formal notice of her
13	more Syngenta people.	13	nomination?
14	A. Yes.	14	A. Correct.
15	Q. It starts at June 22, 2005, correct?	15	Q. By the Science Foundation.
16	A. Yes.	16	Did you know that she was nominated by the
17	Q. And let's identify those people.	17	Science Foundation?
18	Charles Breckenridge, Janis McFarland. Who is	18	A. Well, I don't recall that but,
19	Charles Breckenridge at that point?	19	again, as I said earlier, I was aware of these
20	A. Charles Breckenridge was a senior	20	activities going on.
21	toxicologist in the Syngenta health assessment	21	Q. Okay.
22	group in North America.	22	And the first email is 05705351,
23	Q. And Janis McFarland, right?	23	Charles Breckenridge advises Janis McFarland
24	A. Was the head of regulatory affairs	24	and Tim Pastoor of this development. That's
25	in North America for Syngenta.	25	the first one, okay?
	Page 676		Page 678
1	Q. And Tim Pastoor?	1	You see that?
2	A. The head of health assessment in	2	A. Yes.
3	the Syngenta US team.	3	Q. And what does he say?
4	Q. Jennifer Shaw?	4	A. Charles says:
5	A. I believe Jennifer was in the	5	"This is important. We do not want
6		6	to have Cory-Slechta on the SAP core panel.
	corporate affairs group of Syngenta in the US.	7	What action can be taken."
7	Q. Beth Carroll?		
8	A. Likewise, same as Jennifer.	8	Q. Okay. And then there is a response.
9	Q. And then Phil Botham. Is that you?	9	From whom? Tim Pastoor?
10	A. Yeah. That's me.	10	A. That's right.
11	Q. You're involved in this personally,	11	Q. And he says:
12	right?	12	"We should move on this, but I'm not
13	A. I was certainly copied into this,	13	sure how best to do so. Suggestions?
14	and this is why, as I said earlier, I was	14	Phil," he says.
15	aware of the SAP debate.	15	And that's referencing you, right?
16	Q. This email exchange started because	16	A. That's correct.
17	of an email Charles Breckenridge received from	17	Q. " we are mindful of the
18	Ray McAllister which starts on the page before.	18	sensitivities and need to feed our objections
19	Can you look at that?	19	in through effective channels."
20	A. Yes.	20	Do you see that?
21	Q. And Ray McAllister was with CropLife	21	A. Yes, I see that.
22	America, wasn't he?	22	Q. What's he mean by that, do you know?
23	A. He was.	23	A. Well, I -
24	Q. Very close friends with Syngenta,	24	Q. What did you take that you got
25	right?	25	that email. What were your effective channels

	Page 679		Page 681
1	you were going to use to feed in your	1	BY MR. TILLERY:
2	objections to Dr. Cory-Slechta's appointment	2	Q. And then CLA is CropLife America,
3	to the scientific advisory panel of the United	3	right?
4	States EPA? What were they?	4	A. That's correct.
5	A. Well	5	Q. So you were going to use Ray and
6	MR. NARESH: Objection; form,	6	CropLife America to send information to the EPA
7	foundation.	7	against the nomination of Dr. Cory-Slechta,
8	THE WITNESS: this was	8	weren't you?
9	absolutely the discussion that I recall	9	A. That was what was being considered
10	because I was mindful, and when he says	10	here, yes.
11	there "mindful of sensitivities"	11	Q. Right. And that was being
12	I likewise was mindful of the fact that	12	considered. Now hold on a second.
13	we should not be trying to directly	13	MR. TILLERY: What is the next one?
14	influence the appointment of people to	14	That's 548.
15	the science advisory panel. But as	15	MS. BRUMITT: 59.
16	I did not understand the process by which	16	MR. TILLERY: Let's go to
17	that happened, this was starting	17	Exhibit 59. This is SYNG-05705349
18	a discussion about whether we could	18	through 50, Exhibit 59.
19	better understand that.	19	(Botham Exhibit 59 marked for
20	BY MR. TILLERY:	20	identification.)
21	Q. Okay. So we'll go let me just	21	BY MR. TILLERY:
22	explain to you, there's more emails coming,	22	Q. Again, it starts off at the bottom,
23	okay.	23	so if you'd look at that.
24	So let's go to the top. There's	24	A. Yes. Okay, I've read that.
25	a Jennifer Shaw response, Wednesday, June 22,	25	Q. All right.
-	Page 680	+	Page 682
1	2005. Do you see that?	1	So the following day, on is it
2	A. Yes.	2	June 29 that you're looking at?
3	O. And she's To Tim Pastoor and Beth	3	A. I'm looking at June 28.
4	Carroll. And to who Cc? You.	4	Q. 28th, Tuesday?
5	A. To me. Yes, to me.	5	A. Yeah.
6	Q. Right?	6	Q. And you respond to everybody, don't
7	A. Mmm-hmm.	7	you?
	Q. Okay. And she says what? Read her	8	A. I do.
8	entire comment into this record.	9	<del></del>
10		10	Q. And on Tuesday, June 28, you respond to Jerry Wells, Jonathan Akins, Tim Pastoor,
11	A. "Ray has a tough job to do in	11	Donna Houghton, John Doe, Mike Clapp, Elliott
12	providing comments that don't come back to	12	Barry, Beth Carroll, John Street, Greg Watson
	haunt CLA [CropLife America] and be used	13	
13	against us. My suggestion would be provide	14	on "Comments on SAP nominations" and you mark
14	Ray with comments that are not seen to be	15	it urgent.  Do you see where you did?
15	critical of the person but rather objectively	16	
16	focus on the person's work products and	17	A. Yeah, I didn't make that mark
17	experience in the context of quality and	18	urgent. That was just a copy from somebody
18	relevancy."		else who put "urgent" further down.
19	Q. So she had hatched a plan and she	19	Q. Okay. Okay. And you say:
20	was going to use Ray. And that's Ray	20	"I've been trying to find out the
21	McAllister, right?	21	best way of doing this. The attached e-mail
22	MR. NARESH: Objection to form.	22	from Jenny Shaw last week seemed like a
23	THE WITNESS: Ray is Ray	23	sensible approach I'm assuming you're now
24	McAllister, correct.	24	trying to provide such comments to Ray?"
25		25	Is that what it says?

	Page	683		Page 685
1	A. Yes, that's what it said.		1	I might have said anything more.
2	Q. So you endorsed Jennifer Shaw's		2	Q. Okay.
3	approach of using Ray McAllister through		3	MR. TILLERY: Now, let's go to
4	CropLife America to effectively ghost this for		4	Exhibit 60, and that is SYNG-PQ-05707254.
5	Syngenta with the US EPA, right?		5	(Botham Exhibit 60 marked for
6	MR. NARESH: Objection to form.		6	identification.)
7	THE WITNESS: So, as I said		7	BY MR. TILLERY:
8	earlier, I was trying to explore if		8	Q. This is an email from Greg Watson.
9	the process through which nominations		9	Do you see it?
10	on to this SOP SAP were approved, and		10	A. I do.
11	the advice that I was getting from my US		11	Q. It's dated June 29, 2005, and it's
12	team is that it would be a legitimate way		12	to Ray McAllister. And he says, "Confidential
13	forward, if we wished to do so, to		13	- Comments on SAP Nominations. Importance:
14	question whether a person had the		14	High."
15	appropriate background to be a member of		15	Do you see that?
16	the SAP.		16	A. Yes.
17			17	Q. And he says, "Dear Ray."
	MR. TILLERY: I move to strike your			
18	answer as unresponsive. BY MR. TILLERY:		18	Let me read this in, the first sentence, into the the first paragraph into
19			19	
20	Q. Did you or did you not approve		20	the record. You tell me if I'm reading it
21	Jennifer Shaw's recommendation that we just		21	correctly.
22	went over?		22	"I would ask that you handle our
23	MR. NARESH: I'll object		23	comments with care & in such a way that they
24	THE WITNESS: I said		24	cannot be attributed to Syngenta. Ray, I am
25	MR. NARESH: I'll object to the		25	not aware of the common practice in these cases
	Page	684		Page 686
1	form.		1	- but it seems to me that this should be
2	Go ahead. Sorry. I'm sorry.		2	submitted informally & NOT placed on the public
3	THE WITNESS: Yeah. What I said		3	docket."
4	here is it seemed like a sensible		4	Is that what it says?
5	approach. This is not constituting an		5	A. Yeah, it does say that.
6	approval.		6	Q. Okay. So let's make sure everybody
7	MR. TILLERY: Okay.		7	knows what that means. That means your
8	BY MR. TILLERY:		8	Syngenta representative is suggesting that this
9	Q. So you said:		9	comment go to the US EPA informally and not be
10	"I've been trying to find out the		10	publicly filed, correct? Is that what it says?
11	best way of doing this. The attached e-mail		11	A. That is what this is suggesting,
12	from Jenny Shaw last week seemed like a		12	yes.
13	sensible approach. Tim - I'm assuming you're		13	Q. All right.
14	now trying to provide such comments to Ray?"		14	And then, if you look on, it says
15	And that was to Tim who?		15	he says:
16	A. Tim Pastoor.		16	"I enclose some comments on
17	Q. Tim Pastoor. So you say it's		17	Dr. Cory-Slechta from the perspective of
18	a sensible approach and say now to Tim,		18	researchers who are close to Parkinson's
19	"I'm assuming you're putting those comments		19	disease which has been a major focus of her
20	together for Ray?"		20	research effort."
21	That's your response, right?		21	Then he says if you look on,
22	A. That's right.		22	he proposes a language to her. If you look
			1	
	O Did you say any more to them at that		22	down in the third paragraph, he proposes the
23 24	Q. Did you say any more to them at that time?		23 24	down in the third paragraph, he proposes the language that CropLife America's Ray

private communication with the US EPA that's not placed on the public docket, doesn't he?  MR. NARESH: Objection on form.  THE WITNESS: Yes, that's correct.  MR. TILLERY: Exactly what he did. Now, let's move on to the next, and this is 61. This is SYNG-PQ-00353198 through 3204.  MR. TILLERY: Exactly what he did. Now, let's move on to the next, and this is 61. This is SYNG-PQ-00353198 through 3204.  A. Okay. I can see what it is now. Q. All right. Now if you go to the very last page of that string, and that's bottom of the page before, it says a reference to Stephen Knott. Do you see that?  A. Yeah. Q. Stephen Knott. Do you see that? A. Yeah. That's is what this suggests, yes.  Page 608  Page 608  I isn't he?  MR. NARESH: Objection; form. THE WITNESS: This is what this suggests, yes.  Page 609  I was seeking advice about whether there was a way in which we could provide input to that, and the way in which that was interpreted by my US colleagues was to take this route. But, of course, as you've seen, actually it was never copied into the final part of this process night be to query the emembership of SAPs, and that resulted in — that was involved in the final part of this process might be to query the ememberability of process might be to query the ememberabi		Dags (07	į.	Page 689
and placed on the public docket, doesn't he?  MR. NARESH: Objection to form.  THE WITNESS: Yes, that's correct.  MR. TILLERY: Exactly what he did.  Now, let's move on to the next, and this is 61. This is SYNG-PQ-00353198 through 3204.  By MR. TILLERY:  Q. We'll give you control of this document. You take a look at it, please.  A. Okay. I can see what it is now.  Q. All right. Now if you go to the very last page of that string, and that's bottom of the page before, it says a reference to Stephen Knott. Do you see that?  A. Not quite there yet. Oh yes.—  Q. Okay. So that's the - he did exactly what you wanted about Deborah Cory-Slechta, and what does he say at the two you wanted about Deborah Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta is not an appropriate candidate for it he very last earlier on to the US EPA, the language you wanted about Deborah Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, to under the very what you asked him to do, right?  A. Nat are a				
MR NARÉSH: Objection to form.  THE WITNESS: Yes, that's correct.  MR. TILLERY: Exactly what he did. Now, let's move on to the next, and this is 61. This is YNG-PQ-00353198 through 3204.  (Botham Exhibit 61 marked for identification.)  MR. NILLERY:  Q We'll give you control of this document. You take a look at it, please.  A. Okay. I can see what it is now.  Q All right. Now if you go to the to Stephen Knott. Do you see that?  A. Not quite there yet. Oh yes —  Q Stephen Knott. Do you see that?  A. Veah. Not please here yet. Oh yes —  Q Stephen Knott.  A. Veah. Stephen Knott, yes, US EPA. Q Okay. So this is an assistant executive secretary, FIFRA Scientific Advisory Panel, and he's with the United States EPA,  Page 688  I isn'the?  MR. NARESH: Objection; form.  THE WITNESS: This is what this suggests, yes.  BY MR. TILLERY:  Q Yeah, and it's US EPA Headquarters, Articl Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right?  A. Yes. Q Thear Steve  A Ray McAllister.  Q And he's got a section on Deborah  Cory-Slechta, and what does he say at the very last sentence: the tust explained about Deborah Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta, and what does he say at the very last sentence:  "Cory-Slechta is not an appropriate candidate for the scientific advisory panel, based on these reservations."  Is that what he says?  A. That's what it is now.  It HE WITNESS: Well, not me personally, no.  BY	1			
THE WITNESS: Ves, that's correct.  MR. TILLERY: Exactly what he did. Now, let's move on to the next, and this is 61. This is SYNG-PQ-00353198 through 3204.  MR. TILLERY: 11  Gentham Exhibit 61 marked for identification.) 10  BY MR. TILLERY: 11  CO. We'll give you control of this 0. A. Okay. I can see what it is now. 14  A. Okay. I can see what it is now. 14  Vey last page of that string, and that's 16  very last spage of that string, and that's 16  very last spage of that string, and that's 16  Now, let's what you asked him to do, right? 16  Very last spage of that string, and that's 16  A. Okay. I can see what it is now. 14  Vey last spage of that string, and that's 16  very last spage of that string, and that's 16  A. Okay. I can see what it is now. 14  Vey last spage of the scientific advisory panel, based on these reservations." Is that what he says? A. That's what it says. Q. He did exactly what you asked him to do, right? MR. NARESH: Object to form. 17 HE WITNESS: Well, not me personally, no. 18 YMR. TILLERY: Q. So are you now in this or out of this? Which way are you now? MR. NARESH: Objection to form, argumentative. 21  A. Yeah. Stephen Knott, yes, US EPA. 22  A. Yeah. Stephen Knott, yes, US EPA. 23  A. Yeah. Stephen Knott, yes, US EPA. 24  MR. NARESH: Objection to form. 24  Executive secretary. FIFRA Scientific Advisory Panel, and he's with the United States EPA. 25  BY MR. TILLERY: 11  A. Yeah. Stephen Knott, yes, US EPA Headquarters, Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right? Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right? Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right? Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right? A. Peah. Q. Orand he's got a section on Deborah 15  A. Yeah. Q. And he's got a section on Deborah 15  A. That's right. 10  A. That's right. 10  A. That's right. 10  A. That's right. 10  Deborah Cory-Slechta, and whoe say at the twe very last sentence: "Cory-Slechta, an	2			
5 MR. TILLERY: Exactly what he did. 6 Now, let's move on to the next, and this is 61. This is SYNG-PQ-00353198 8 through 3204. 9 (Botham Exhibit 61 marked for identification.) 10 MY MR. TILLERY: 11 Q. We'll give you control of this document. You take a look at it, please. 12 A. Okay. I can see what it is in ow. 13 3204. Can acse what it is in ow. 14 A. Okay. I can see what it is in ow. 15 Q. All right. Now if you go to the very last page of that string, and that's 16 bottom of the page before, it says a reference 19 to Stephen Knott. Do you see that? 12 A. Yeah. Stephen Knott, yes, US EPA. 23 Q. Okay. So this is an assistant executive secretary; FIFRA Scientific Advisory Panel, and he's with the United States EPA,  1 isn't he? 2 MR. NARESH: Objection; form. 2 THE WITNESS: This is what this suggests, yes. 3 BY MR. TILLERY: 4 Q. Yeah, and it's US EPA Headquarters, Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right? 4 A. Yea. 5 Q. "Dear Steve" 10 Poron Croplefe America, right? 4 A. Yeah. 5 Q. And he's got a section on Deborah 6 Cory-Slechta, and what does he say at the very last sentence:  1 be the very last sentence:  1 che very last page sent on the serservations.  1 Is that what the says?  A. That's what it says.  2 A. That's what the says' nather says in the wery last page reference to do, right?  4 A. Yeah. Stephen Knott.  2 A. Yeah. Stephen Knott	3	MR. NARESH: Objection to form.	3	
6 Now, let's move on to the next, and this is 61. This is SYNG-PQ-00353198 8 through 3204. (Botham Exhibit 61 marked for identification.) 10 identification.) 11 BY MR. TILLERY: 11 12 Q. We'll give you control of this document. You take a look at it, please. 13 13 document. You take a look at it, please. 13 14 A. Okay. I can see what it is now. Q. All right. Now if you go to the very last page of that string, and that's 16 16 very last page of that string, and that's 16 17 3204 actually, the last two pages. In the bottom of the page before, it says a reference 18 18 bottom of the page before, it says a reference 18 19 to Stephen Knott. Do you see that? 19 20 A. Not quite there yet. Oh yes 20 21 Q. Stephen Knott. Do you see that? 20 22 A. Yeah. Stephen Knott, yes, US EPA. 21 23 Q. Okay. So this is an assistant 22 24 executive secretary, FIFRA Scientific Advisory Panel, and he's with the United States EPA, 25 26 MR. NARESH: Objection; form. 26 27 MR. NARESH: Objection; form. 27 28 MR. NARESH: Objection; form. 29 29 MR. NARESH: Objection; form. 31 20 MR. NARESH: Objection; form. 32 31 THE WITNESS: This is what this 32 32 Suggests, yes. 34 34 Suggests, yes. 35 35 MR. NARESH: Objection; form. 35 MR. Naresh: Objection; form. 36 36 MR. Naresh: Objection; form. 37 37 MR. Naresh: Objection; form. 38 38 MR. Naresh: Objection; form. 39 39 MR. Naresh: Objection; form. 39 30 MR. Naresh: Objection to form, argumentative. 30 31 MR. Naresh: Objection to form, argumentative. 31 32 MR. Naresh: Objection to form, argumentative. 32 32 MR. Naresh: Objection to form, argumentative. 32 33 MR. Naresh: Objection to form, argumentative. 32 34 MR. Naresh: Objection to form, argumentative. 32 35 MR. Naresh: Objection to form, argumentative. 32 36 MR. Naresh: Objection to form, argumentative. 32 37 MR. Naresh: Objection to form, argumentative. 33 38 MR. Naresh: Objection to form, argumentative. 34 39 MR. Naresh: Objection to form, argumentative. 34 30 MR. Naresh: Objection to form, argumentative. 34 31 MR. Naresh: Objection to form, a	4	THE WITNESS: Yes, that's correct.	4	the US EPA, the language you wanted about
this is 61. This is SYNG-PQ-00353198 through 3204.  (Botham Exhibit 61 marked for identification.)  BY MR. TILLERY:  Q. We'll give you control of this document. You take a look at it, please.  A. Okay. I can see what it is now. Q. All right. Now if you go to the very last page of that string, and that's are very last page of that string, and that's bottom of the page before, it says a reference to Stephen Knott. Do you see that?  A. Not quite there yet. Oh yes 20 Q. Stephen Knott. Do you see that?  A. Not quite there yet. Oh yes 20 Q. Stephen Knott. Yes, US EPA. Q. Okay. So this is an assistant executive secretary, FIFRA Scientific Advisory Panel, and he's with the United States EPA,  THE WITNESS: If you remember, my question was if we can we understand the process through which members of the SAP are appointed, and  I isn't he?  MR. NARESH: Objection; form. THE WITNESS: This is what this suggests, yes.  BY MR. TILLERY:  Q. Yeah, and it's US EPA Headquarters, Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right?  A. Yes. Q. "Dear Steve"  Now, who signed that letter? A. Ray McAllister. Q. From CropLife America, right? A. Yeah. Q. And he's got a section on Deborah Cory-Slechta, doesn't he? A. That's what he says? A. That's what it says. Q. He did exactly what you asked him to do, right?  MR. NARESH: Object to form. THE WITNESS: Well, not me personally, no. BY MR. TILLERY: Q. So are you now in this or out of this? Which way are you now? THE WITNESS: If you remember, my question was if we can we understand the process through which there was a way in which we could provide input to that, and the way in which that was interpreted by my Us colleagues was to take this route. But, of course, as you've seen, actually I was never copied into the final persons of this so I didn't see the final product, so that's why I said, you know, it wasn't me that was involved in the final part of this process.  BY MR. TILLERY: Q. Okay. So you just told them to do it? A. Yeah. Q. And he's got a se	5	MR. TILLERY: Exactly what he did.	5	Deborah Cory-Slechta, and what does he say at
8 through 3204. (Botham Exhibit 61 marked for identification.) 10 identification.) 11 BY MR TILLERY: 12 Q. We'll give you control of this document. You take a look at it, please. 13 document. You take a look at it, please. 14 A. Okay. I can see what it is now. 15 Q. All right. Now if you go to the very last page of that string, and that's 16 bottom of the page before, it says a reference to Stephen Knott. Do you see that? 19 to Stephen Knott. Do you see that? 10 Q. Okay. So this is an assistant a candidate for the says? 11 A. Not quite there yet. Oh yes are the personally, no. 12 Q. Okay. So this is an assistant a candidate for the says? 13 document. You take a look at it, please. 14 A. Okay. I can see what it is now. 15 Q. All right. Now if you go to the very last page of that string, and that's 16 bottom of the page before, it says a reference to Stephen Knott. Do you see that? 19 A. Yeah. Stephen Knott, yes, US EPA. 20 Q. Okay. So this is an assistant a candidate for the says? 21 A. That's what it says. 22 Q. All right. Now if you go to the too, right? 23 Q. O all right. Now if you go to the too. 24 Q. So are you now in this or out of this? Which way are you now? 25 Which way are you now? 26 MR. NARESH: Objection to form, argumentative. 27 THE WITNESS: If you remember, argumentative. 28 THE WITNESS: If you remember, argumentative. 29 THE WITNESS: If you remember, argumentative. 20 THE WITNESS: If you remember, argumentative. 21 I was seeking advice about whether there was a way in which we could provide input to that, and the way in which that was involved in put to that, and the way in which that was involved in the final part of this process. 20 Q. Yeah, and it's US EPA Headquarters, Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, DC. Right? 21 A. Ray McAllister. 22 Q. The did exactly what you asked him to do, right? 24 A. Yeah. 25 Day and the sevent of the says. 26 The WITNESS: Well, not me personally, no. 27 Q. So are you now in this or out of this? Which way are you now? 28 I was seekin	6	Now, let's move on to the next, and	6	the very last sentence:
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to be very, very, very familiar, I believe, 119 a question to 11m Pastoor and the chain of	19	to be very, very, very familiar, I believe,	19	a question to Tim Pastoor and the chain of
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	Page 691		Page 693
1	this exchange, they came back to Mr. McAllister	1	Honolulu in February 2004.
2	and said could you give us some more	2	Is that what he references?
3	information about Debbie Cory-Slechta, didn't	3	A. Yes.
4	they?	4	Q. And her the objection to her
5	MR. NARESH: Objection to form.	5	was he puts it in quotes, from listening
6	THE WITNESS: Yes, that's correct.	6	to what she said, "Our data support the need
7	BY MR. TILLERY:	7	for the PQ [that's paraquat] human health risk
8	Q. Okay. And he came back to his	8	assessment to be re-evaluated."
9	friends at Syngenta and said can you give me	9	Right?
10	more information about her, right?	10	A. Correct.
11	MR. NARESH: Objection to form.	11	Q. And she says:
12	THE WITNESS: That is correct.	12	"Our data are in support of
13	BY MR. TILLERY:	13	anecdotal evidence from e-mail communications I
14	Q. Okay. And that's all laid out in	14	have had with farmers and their families
15	this exchange. And they went to different	15	[which] have used PQ and have subsequently
16	people within the organization to find out what	16	developed Parkinson's disease."
17	could be said.	17	Is that what Mr. Sturgess says?
18	Now, if you'd go to 3200 of same	18	A. It is.
19	exhibit and look at the bottom where it says	19	
20	Nick Sturgess.	20	Q. And he also comments similar things she said in other presentations, correct?
21		21	A. Correct.
22	Do you see that?	22	
23	A. Yes. Yes, I'm there, yeah.	23	Q. Okay. MR. TILLERY: Now, let's go to the
24	Q. Nick Sturgess writes on		
25	September 16, 2005, "Guys," and he's referring	24 25	next exhibit, and that's to
25	to Barry Elliott, Mike Clapp, Greg Watson,  Page 692	25	MR. NARESH: Steve, do you have Page 694
1	"Comments on SAP nominations."	1	a while longer on this line of
2	Do you see that?	2	questioning or are you reaching the end
3	A. Yes.	3	of it?
4	Q. He says:	4	MR. TILLERY: I'm just about at the
5	"Guys, It is going to be very	5	end of this, okay.
6	difficult to pin something really specific on	6	MR. NARESH: All right.
7	D C-S"	7	MR. TILLERY: All right.
8	That means Deborah Cory-Slechta,	8	MR. NARESH: Can we take a break
9	doesn't it?	9	after this line of questioning?
10	A. It does.	10	MR. TILLERY: Yeah. I'm about
11	Q. " since it is more of an overall	11	right at the very end of this, with three
12	perception in her presentation style and	12	or four more minutes and we're done, then
13	language which is not strictly objective and	13	we'll take a break, okay?
14	lacks the complete story which would actually	14	MR. NARESH: Okay.
15	put her findings [in] a more relevant	15	MR. TILLERY: Okay. All right.
16	perspective. That said there may be some	16	What is this one?
17	angles as follows"	17	MS. BRUMITT: 62.
18	And then, if you go to the page	18	MR. TILLERY: 62?
19	next page of his email, he says she has made	19	MS. BRUMITT: Yes.
20	verbal comments when presenting and answering	20	MR. TILLERY: All right. Let's go
21	questions following her presentation at	21	to Plaintiff's Deposition Exhibit 62,
22	different scientific meetings, one of which was	22	if you could look at that.
23	at the 20th International Neurotoxicology	23	(Botham Exhibit 62 marked for
24	Conference in Little Rock, and the 21st	24	identification.)
25	International Neurotoxicology Conference in	25	THE WITNESS: Yeah, okay, I can see

	Page 695	5	Page 697
1	that.	1	MR. TILLERY: Okay, let's go to
2	BY MR. TILLERY:	2	this is exhibit what? Sorry?
3	Q. In this email, Watson summarizes	3	MS. BRUMITT: 63.
4	what Syngenta has asked McAllister to write	4	MR. TILLERY: 63. Pull that up.
5	in response to this as a follow-up inquiry from	5	(Botham Exhibit 63 marked for
6	the US EPA, right?	6	identification.)
7	A. Yes.	7	MR. TILLERY: And that's 552,
8	Q. He says Debbie Cory-Slechta, this is	8	right?
9	what we've done, and he tells them exactly what	9	MS. BRUMITT: Yes.
10	to write. Okay.	10	BY MR. TILLERY:
11	Now, Syngenta was successful, wasn't	11	Q. If you'd look at this exhibit.
12	it?	12	A. Okay, I can see that.
13	MR. NARESH: Objection; form.	13	Q. All right. If you see that, what
14	THE WITNESS: Successful in what?	14	this is is a August 3, 2010 email from Charles
15	BY MR. TILLERY:	15	Breckenridge to Lewis Smith. And to who else
16	Q. Well, were you aware that	16	on that line?
17	Dr. Deborah Cory-Slechta's SAP nomination was	17	A. To me, yes. So this
18	defeated?	18	Q. Phil Botham.
19	A. To be honest with you, I may well	19	A. This is indeed
20	have known that at the time, but I'd forgotten	20	Q. Phil Botham.
21	that.	22	A. Yes, that's right. Q. Phil Botham, right. And to Alan
22 23	Q. Oh, you'd forgotten, okay.	23	Nadel, who is the head of the legal department
24	By defeating her nomination, Syngenta removed a threat to their continued	24	for Syngenta Crop Protection, LLC, right?
25	sale of paraquat, didn't they?	25	MR. NARESH: Objection; form.
	Page 696	+	Page 698
1	A. They we believe that, as this	1	BY MR. TILLERY:
2	says, Dr. Cory	2	Q. And for Jonathan Sullivan, who is
3	Q. Can you answer my question. Can you	3	a lawyer from Basel, right?
4	answer my question, sir? I know you want	4	A. That is correct.
5	to answer something else but I'll ask it	5	Q. All right. And what's it reference?
6	again.	6	"SAP nominees - comment period," FIFRA SAP
1 7	A. Mmm.	7	nominations. What's he say? Read what he
8	Q. I'm asking a specific question.	8	said.
9	By defeating Dr. Debbie Cory-Slechta's	9	A. "Note that Cory-Slechta has been
10	nomination to the scientific advisory panel of	10	nominated to become a permanent member of
11	the US EPA, Syngenta removed a threat to the	11	the USEPA SAP. We should discuss whether we
12	continued sale of paraquat, didn't it?	12	wish to comment."
13	MR. NARESH: I'll object to the	13	Q. Okay. And did you comment?
14	form.	14	A. I've got I cannot remember
15	THE WITNESS: A potential threat,	15	whether we did or not.
16	yes.	16	Q. Okay. Well, let me refresh your
17	MR. TILLERY: Okay.	17	recollection.
18	BY MR. TILLERY:	18	MR. TILLERY: Let's go to what
19	Q. Now, that really wasn't the end of	19	would this exhibit be?
20	the chapter about Dr. Debbie Cory-Slechta's	20	MS. BRUMITT: 64.
21	appointment, was it?	21	MR. TILLERY: 64. Pull that up for
22	A. Please elaborate.	22	him.
23	Q. Well, she was nominated to the	23	(Botham Exhibit 64 marked for
24	advisory panel five years later by the National	24	identification.)
25	Science Foundation.	25	///

## CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER

	Page 6	599		Page 701
1	BY MR. TILLERY:		1	O. And it's directed to Dr. Frank
2	Q. Go ahead and refresh yourself there,		2	Sanders, US EPA, right?
3	too. The print is very small, Dr. Botham, but		3	A. Correct.
4	it's I think you can probably adjust it on		4	Q. It says, "Docket ID EPA
5	your device to read it. This is how it was		5	Nominations to the FIFRA Scientific Advisory
6	presented to us.		6	Panel; Request for Comments," and he references
7	A. Okay.		7	those numbers. August 4, 2010.
8	Q. All right. And if you look on that		8	Do you see that?
9	exhibit at 192, which is the front page,		9	A. Correct.
10	there's an email that's dated September 3,		10	
11	2010, correct?		11	Q. And if you look on the second page in the fourth paragraph, why don't you look at
12	A. Yes.	- 0	12	that and tell me if that isn't exactly word for
13			13	
14	Q. And that's from Dan Campbell, right?  A. Correct.			word what Syngenta's Dan Campbell drafted and
15			14	sent out, saying, "Do you agree with this?
15 16	Q. And it's referencing comments on SAP		15	I think it works."
16 17	nominations. He sends that to Tim Pastoor,		16	A. Yes.
	right?		17	Q. This is word for word.
18	A. Yes.		18	A. Yes.
19	Q. And that he says:		19	Q. So
20	"Do you agree with this?"		20	A. May I add at this point that
21	And he writes:		21	this is a perfectly
22	"CropLife America recommends that		22	Q. No, I'm asking
23	Dr. Deborah Cory-Slechta not be selected to		23	MR. TILLERY: Excuse me, I move to
24	serve on the FIFRA SAP. Dr. Cory-Slechta		24	strike
25	generally projects an anti-pesticide advocacy		25	MR. NARESH: Steve. Steve
1	Page 7	700		Page 702
1	through her research program. Her research		1	MR. TILLERY: Your counsel can
2	interpretations and views inappropriately		2	raise it
3	identify causal effects without quality data,		3	MR. NARESH: You can move to strike
4	between pesticides and various diseases,		4	if
5	notably neurodevelopmental diseases		5	MR. TILLERY: Your counsel can
6	including"		6	raise it
7	What's that last word?		7	MR. NARESH: He wants to
8	A. Parkinson's.		8	MR. TILLERY: No, he cannot.
9	Q. Parkinson's disease, right, okay.		9	It's my deposition.
10	And he says:		10	MR. NARESH: You can move to
11	"I think it works. Thanks. Dan."		11	strike
12	Right?		12	MR. TILLERY: Not your deposition.
13	A. Correct.		13	It isn't
14	Q. All right.		14	MR. NARESH: You can move to strike
15	MR. TILLERY: Now let's go to the		15	it
16	next exhibit. Which one?		16	MR. TILLERY: It isn't. No.
17	MS. BRUMITT: 65.		17	it isn't. No, it isn't. You're not
18	MR. TILLERY: Number 65.		18	doing it. Not with me.
19	(Botham Exhibit 65 marked for	- 1	19	MR. NARESH: Steve
20	identification.)	- 1	20	
21	BY MR. TILLERY:		21	MR. TILLERY: I'm too old. Listen,
22				we are not.
	Q. Take a look at that. This is		22	BY MR. TILLERY:
23	a CropLife America letter, September 3, 2010.	- 1	23	Q. What's going to happen is you're
24	Correct?		24	going to answer my questions and then he can
25	A. Yes, correct.		25	raise them. That's what you do.

	Page 703		Page 705
1	MR. NARESH: Steve Steve, you've	1	Q. That's the fact
2	cut off the witness multiple times	2	A. No. No, not at all.
3	MR. TILLERY: No well, listen,	3	Q. And what
4	I'm not	4	A. I
5	MR. NARESH: Steve, you're not	5	Q. And what was your and were you
6	even letting me talk.	6	successful again?
7	MR. TILLERY: Make your objection.	7	MR. NARESH: I'll object to this
8	MR. NARESH: You're not even	8	and the last three or four questions.
9	letting me talk.	9	I don't know what the pending question
10	MR. TILLERY: Make your objection.	10	is. Could you please just ask whatever
11	MR. NARESH: My objection is you	11	the pending question is so he can answer.
12	keep cutting the witness off. If you	12	BY MR. TILLERY:
13	keep doing it	13	Q. Were you successful again? Was her
14	MR. TILLERY: Well	14	nomination defeated? After the National
15	MR. NARESH: we'll have issues.	15	Science Foundation of the United States of
16	Let the witness answer the questions.	16	America nominated this scientist once again,
17	If you don't like the answers, then ask	17	did you defeat her nomination a second time?
18	a different question or move to strike	18	MR. NARESH: Objection to form.
19	it, but you cannot cut the witness off	19	THE WITNESS: Well, I'm going to
20	time and time again.	20	say the same as I did before because it's
21	MR. TILLERY: We've got an we've	21	the truth. I can't remember, and I think
22	got an issue right now.	22	that reflects that I was not directly
23	BY MR. TILLERY:	23	involved in this process.
24	Q. Now I asked you a question.	24	BY MR. TILLERY:
25	My question to you is very simple: Is that	25	Q. All right. So let's abbreviate the
	Page 704		Page 706
1	letter from CropLife America, on page 2, word	1	third one. Were you aware of the fact that she
2	for word what Syngenta drafted? That	2	was nominated five years later to the SAP of
3	Mr. Campbell from Syngenta drafted, was that	3	the United States Environmental Protection
4	what they sent to the US EPA? Was it or not?	4	Agency?
5	A. Well, I've not done a document	5	A. Clarify, please, five years later
6	compare but it is very similar, yes.	6	than when?
7	Q. You don't have any reason to suggest	7	Q. 2015. Nominated again. Were you
8	it isn't, do you?	8	aware of that, four years
9	A. No, but that was the whole part of	9	A. I may have been but, as I say, it's
10	the process; Syngenta was providing	10	not an area that I've focused on at all in my
11	information for CropLife America legitimately	11	role.
12	to comment on recommendations to membership	12	Q. Did CropLife America get involved
13	of the SAP.	13	for you again?
14	Q. Why didn't you do it yourself?	14	A. They may have done but I can't
15	Why didn't Phil Botham write a letter, that	15	I can't recall that.
16	letter, to the US EPA?	16	Q. Did you successfully beat back
17	A. Because this was not my	17	a threat to paraquat once more
18	accountability. I was leading the Health	18	MR. NARESH: Objection to form.
19	Science Team, the science part of this,	19	BY MR. TILLERY:
20	so that was not something that I was	20	Q over a period of 2005, 2010,
21	responsible for.	21	2015, defeat a scientist nominated by the
22	Q. You went through a third party so	22	National Science Foundation? You defeated her
23	your identity could be hidden; that's the	23	nomination to one of the most important
24	truth, isn't it?	24	scientific panels in the United States. Would
25	A. Not at all.	25	you agree with that, sir?

	Page 707		Page 709
1	MR. NARESH: Objection to form.	1	we'll refer to is SYNG-PQ-00486987.
2	THE WITNESS: We were we were	2	This is entitled "Update on Syngenta's
3	entitled, I think, to provide an input	3	Research Program."
4	to that process on the basis, as it says	4	THE WITNESS: Yes, I can see that.
5	here, of the way in which we feel	5	(Botham Exhibit 66 marked for
6	we felt Dr. Cory-Slechta projected the	6	identification.)
7	implications of her research program.	7	BY MR. TILLERY:
8	MR. TILLERY: So we'll take a break	8	Q. Okay. If you'd go to, on this
9	right now, okay.	9	document, 992 which is page 6 of the 47 pages.
10	THE VIDEOGRAPHER: We are going off	10	Do you have control of the document,
11	the record. The time is 3:13.	11	sir?
12	(Off the record.)	12	A. I do, thank you.
13	THE VIDEOGRAPHER: We are back on	13	Q. All right. When you find it and get
14	the record. The time is 3:33.	14	to that point, let us know so we can take it
15	BY MR. TILLERY:	15	back off of that control so it can be
16	Q. Dr. Botham, who is Dr. Donato	16	videotaped.
17	Di Monte?	17	A. Yeah, I'm there, thank you.
18	A. He is a researcher in neurology who	18	Q. All right.
19	was formerly based at the Parkinson's	19	Okay. This is a document I think
20	Institute in North America. He is now at the	20	we've referenced earlier. If we didn't,
21	German center for neurotoxicological research.	21	we looked at something very close to it.
22	Q. Okay. When he was at the	22	That is, if we look at this, it says "Several
23	Parkinson's Institute in California he was the	23	active research groups working on the paraquat
24	director of fundamental research for the	24	mouse model."
25	institute, correct?	25	Do you see that?
-	Page 708	23	Page 710
,	-		
1	A. That's correct.	1	A. Yes.
2	Q. Dr. Di Monte has run research	2	Q. And it says:
3	programs into paraquat in the Charles River	3	"Two US based research groups have
4	black mouse at both the Parkinson's Institute	4	produced a series of publications since 1999
5	and the German Center for Neurodegenerative	5	using paraquat in a Parkinson's disease animal
6	Diseases, correct?	6	model - their work is still on going."
7	A. That's correct, yes.	7	We've referenced Dr. Cory-Slechta
8	Q. Dr. Di Monte's group at the	8	before, but here we refer to Dr. Di Monte,
9	Parkinson's Institute published several studies	9	formerly Parkinson's Institute, Sunnyvale
10	finding paraquat caused loss of dopaminergic	10	California.
11	neurons in the substantia nigra of the Charles	11	Do you see that?
12	River black mouse, didn't he?	12	A. I do.
13	A. He did.	13	Q. Then it says, at the very bottom:
14	Q. And his group also found a loss of	14	"Other research groups are also
15	striatal dopamine in paraquat-treated mice,	15	actively working with PQ [or paraquat] in
16	correct?	16	rodents."
17	A. That's correct.	17	Now, would you agree with me that
18	MR. TILLERY: Can we go off the	18	part of the influencing strategy that we've
19	record on a technical thing, real quick.	19	talked about and that we've shown exhibits on
20	You don't have to stop the video.	20	includes reaching out to members of the
21	(Off-the-record discussion.)	21	scientific community and discussing this issue
22	MR. TILLERY: Let's go to the next	22	with them and trying to convince them of the
23	exhibit. Which is?	23	position that Syngenta took? Would you agree
24	MS. BRUMITT: 66.	24	with that?

	Page 71	1	Page 713
1	It's certainly reaching out to the scientific	1	administratively later.
2	community to see if we can come to a better	2	MR. NARESH: Okay.
3	understanding of what the research is telling	3	MR. TILLERY: Okay.
4	us.	4	BY MR. TILLERY:
5	Q. And in some ways to learn from those	5	Q. Can you look at this, sir.
6	people in the scientific community, correct?	6	A. Yes, I'm looking at it.
7	A. Absolutely, yes, yes.	7	Q. Okay. These are minutes of the
8	Q. So a person like Dr. Di Monte, who	8	Syngenta paraquat regulatory development team,
9	you viewed as being an expert in this area,	9	right?
10	would that be correct?	10	A. That's correct.
11	A. That is correct.	11	Q. And it's June 9, 2003?
12	Q. Okay, that you would reach out to	12	A. Correct.
13	her I'm sorry, strike that.	13	Q. And the meeting focused on
14	You would reach out to him and ask	14	regulatory science foresight with respect
15	to consult with him and learn what his research	15	to paraquat and Parkinson's disease, didn't it?
16	has developed in terms of any correlation or	16	A. It did.
17	connection or relationship between paraquat and	17	Q. What does regulatory science
18	Parkinson's disease; would that be fair?	18	foresight mean?
19	A. That is a very fair way of stating	19	A. It's having an ability to predict
20	it, yes.	20	what scientific developments may have
21	Q. All right.	21	implications for future regulation and also
22	MR. TILLERY: Now, let's go to 74.	22	future regulatory status of substances.
23	Has that been marked? No, it hasn't.	23	Q. Okay. And who recorded the minutes,
24	Next exhibit. What number is that? 67?	24	do you know?
25	MS. BRUMITT: 67.	25	A. I'm not sure who that might
	Page 712	2	Page 714
1	MR. TILLERY: Plaintiff's	1	have been.
2	Exhibit 67 I don't think you'll need to	2	Q. If you turn to is it page
3	look at yourself.	3	excuse me. I'm sorry. Let's go to page 4 of
4	(Botham Exhibit 67 marked for	4	that document, which is 354.
5	identification.)	5	A. Yeah, okay. Yeah, so you have
6	MR. TILLERY: Just for the record	6	control at the moment so I
7	for counsel, this is SYNG-PQ-01662351.	7	Q. Yeah. Do you see that?
8	BY MR. TILLERY:	8	A. I see what you're showing me, yes.
9	Q. It's entitled, is it, sir, Minutes	9	Q. Yes. And there's a reference to
10	of the June 9, 2003, "PQ RDT - Regulatory	10	it says:
11	science foresight - PD."	11	"Good contact with, and evaluation
12	Would you translate that, what that	12	of, the key research groups have been
13	means, with all these abbreviations?	13	established. Their predicted future research
14	MR. NARESH: Steve, sorry to	14	activity is being mapped."
15	interrupt. Is this the same exhibit as	15	Now, do you see the first one?
16	Exhibit 54?	16	A. Yes.
17	MR. TILLERY: I can't tell you the	17	Q. Syngenta characterized
18	answer to that. It deals with	18	Dr. Di Monte's group as currently advocating
19	MR. NARESH: I don't have a problem	19	paraquat as an academic, not a causative model,
20	with you doing it a second time. Just	20	right?
21	for the record, I do think it's the same	21	A. Yes, I see that.
22	as an exhibit that you've already	22	Q. And Syngenta characterized that the
23	introduced.	23	Di Monte group has "high scientific
24	MR. TILLERY: Okay, it might be.	24	creditability," right?
25	If it is, you know, we can deal with it	25	A. Yes.

	Page 715		Page	717
1	Q. The second research group on that	1	BY MR. TILLERY:	
2	list was Dr. Cory-Slechta at Rutgers	2	Q. We're at SYNG-PQ-01662356.	
3	University, right?	3	A. Okay.	
4	A. Yes.	4	Q. And there's a section that says:	
5	Q. And Dr. Cory-Slechta is	5	"The comments were made that it is	
6	characterized by Syngenta as "implicitly	6	in Syngenta's interests"	
7	advocating paraquat as a potentially causative	7	Do you see that? Find that?	
8	model of Parkinson's disease." That's what it	8	A. Yes, I'm there, thank you.	
9	says.	9	Q. Okay. Do you see that?	
10	A. That's correct.	10	A. Yes.	
11	Q. Syngenta characterized her group as	11	Q. All right. Now, let's go back on	
12		12	wherever that is.	
13	"considered to be making excessive claims from the available data."	13		
			Yeah, back down. Yeah, there we go,	
14	A. Yes, that's correct, and that's	14 15	fine. Okay. If you see I'm having trouble with that one. I think we don't have it	
15	what our concern was in our previous			
16	discussion about the SAP.	16	I see it. "The comments were made that it was	
17	Q. Now let's look at page	17	in Syngenta's interest," do you see that at the	
18	MR. TILLERY: I move to strike your	18	middle of the page? The third bullet point	
19	answer as unresponsive, sir.	19	says:	
20	BY MR. TILLERY:	20	"If a third party emerged to	
21	Q. Can we ask you again the question:	21	figuratively act as a referee between the	
22	Syngenta characterized Dr. Cory-Slechta's group	22	Di Monte and Cory-Slechta groups different	
23	as "considered to be making excessive claims	23	perspective of PQ (academic model [versus]	
24	from the available data."	24	potentially contributory agent)."	
25	Is that what it says?	25	Do you see that?	
	Page 716		Page	718
1	A. That's what it says.	1	A. I do.	
2	Q. All right.	2	Q. What was meant by that?	
3	Now, let's turn to page 6, if you	3	A. Well, what was meant by that is	
4	wouldn't mind, please, and that's 356.	4	that we wanted, as part of our exploration of	
5	A. I'm in your hands here because	5	what the science was really telling us, to be	
6	I don't have control of the document.	6	able to to get a common view if possible	
7	Q. Yeah. We'll give it to you in just	7	from two very key and important research	
8	a second	8	groups, namely those of Di Monte and	
9	MR. NARESH: And Dr. Botham, if you	9	Cory-Slechta, because we felt that they were	
10	feel like you need to review any portion	10	really, as it says here, giving quite	
11	of the document in order to answer	11	a different perspective on whether there was	
12	a question, obviously just please feel	12	a clear relationship between paraquat exposure	
13	free to ask Mr. Tillery that.	13	and Parkinson's disease.	
14	MR. TILLERY: We're happy to do	14	Q. Right. My question, though, is who	
15	that and start over if you want and then	15	is the third party referenced? What's the	
16	direct you. Did you want to do that now?	16	third party?	
17		17	A. I don't know who was intended	
18	MR. NARESH: It's your call, Dr. Botham.	18	because I don't believe I was in this meeting,	
19			so I can't comment exactly who may have been	
	THE WITNESS: Well, I think it	19	•	
20	will be good to make sure I can see all	20	in mind, whether it was just a general	
21	of this document so if you wouldn't mind.	21	description of the type of person or whether	
22	MR. TILLERY: All right.	22	they had a particular person in mind.	
23	All right. No problem.	23	Q. And what's the difference between	
24 25	Give it back to him, please.	24	an academic versus a causative model?	
0.5	///	25	A. Well, a causative model is one	

	Page 719		Page 721
1 where the researcher has as	s their hypothesis	1	there; understanding the ACP review was part
2 that a chemical agent, in th		2	of the input to what was described as the
3 is responsible for/causative		3	influencing strategy for the EU.
4 state, in this case Parkinson		4	MR. TILLERY: Okay. Let's go
5 So they're generating data t		5	to 14. What number will that be, the
6 hypothesis.		6	exhibit number?
7 An academic model	would be one	7	MS. BRUMITT: 68.
8 where either that was a much		8	MR. TILLERY: We're going to
9 hypothesis, in other words		9	Plaintiff's Exhibit 68 and that's
10 effect paraquat may have o		10	SYNG-PQ-00034773.
11 system, including whether		11	(Botham Exhibit 68 marked for
12 Parkinson's disease, or, alte		12	identification.)
whether using the model as		13	BY MR. TILLERY:
the disease of Parkinson's d		14	Q. If you would take a look at this
15 necessarily saying that para		15	exhibit, sir. The title is "Paraquat Health
16 in Parkinson's.		16	Science Team." It's 17-18 September 2008,
17 Q. Okay. Did Syngen	ta ask Dr. Di Monte	17	isn't it?
18 to publicly comment on any		18	A. That's correct.
19 Dr. Cory-Slechta's work wi		19	Q. And this was a meeting at the Harte
20 A. I don't recall having		20	and Garter Hotel, Windsor, UK, right?
a conversation that said that		21	A. That's correct.
Q. At the bottom of th	e page that we're	22	Q. And present was Lewis Smith, Charles
looking at now and this,	for the record,	23	Breckenridge, Martin Wilkes, Kim Travis,
24 is SYNG-PQ-01662356 1		24	Nick Sturgess, Andy Cook, Kersten Mewes and
25 items coming out of the me	eeting, correct?	25	Dave Berry, right?
	Page 720		Page 722
1 A. Correct.		1	A. Correct.
2 Q. One is to develop a	and implement a PD	2	Q. Clive Campbell and John Tomensen
3 influencing strategy in the		3	participated by phone; and then Professor Colin
4 Right?		4	Berry, Professor Nicotera were there as well,
5 A. Correct.		5	right?
6 Q. "To include definit		6	A. That's correct.
7 targets of the influencing p	rogram." Okay?	7	Q. And then there's a guest speaker
8 A. Right.		8	referenced, a Professor Donato Di Monte, right?
9 Q. Do you see that?		9	A. That's right.
10 A. Yes.		10	Q. And the presentations were from
11 Q. And it says:		11	Professor Di Monte and Dr. Martins, right?
12 "To clarify status of		12	A. That's right.
and to work with Diane Ca		13	Q. Okay. Now, what function does the
influencing strategy for the		14	Paraquat Health Science Team serve?
15 So what's the ACP the		15	A. Well, this was a team that was set
16 A. That's the Advisory		16	up in 2007/08 to be responsible for generating
Pesticides which was the in		17	a science program to look at the way in which
responsible for advising the		18	paraquat may influence the ability for it
Directorate, PSD, that we n		19	to cause Parkinson's disease; so it was
aspects of safety of pesticid		20	specifically a research program team.
Q. So these were the t		21	Q. And Syngenta invited Dr. Di Monte
influencing strategy coming	g out of this	22	to speak, correct?
meeting, correct?		23	A. Correct, yes.
A. In the latter case it		24 25	Q. And actually paid him to come and
a direct influencing on the	ACT as it says	145	speak, correct?

What is ROS again? We talked about it earlier.  A. We did. This is reactive oxygen  species, so this is the what paraquat does when it gets into cells, it generates  something called a reactive oxygen species  which can cause damage to the cell.  Q. Then he says:  "An initial toxic exposure pre-disposes to damage by subsequent challenges."  Correct?  A. Yes.  Q. Right.  Q. And then there's:  "[Reactive oxygen species] formation is likely to play an important role in [paraquat]-induced neurodegeneration."  That's what he told you at that meeting, correct?  We talked about it earlier.  13 Q. Then he says:  "An initial toxic exposure pre-disposes to damage by subsequent challenges."  Ocorrect?  A. Yes.  Q. And then there's: "Microglial activation (neuroinflammation) is a mechanism by which dopaminergic neurons could be 'primed' to toxic damage."  So when that term "microglial		Page 723		Page 725
2 Case. 3 Q. Would that be the usual situation 4 when you ask an outside scientist to come, 5 you pay them an honorarium for their day? 6 A. We sometimes pay an honorarium, 7 we sometimes just pay travel expenses. 8 I don't know what happened on this occasion. 9 Q. And Dr. Di Monte gave a presentation on his research into paraquat in the mouse, right? 10 A. Yes, that's correct. 11 Q. And if we go to page 2, which is 12 A. Yes, that's correct. 13 Q. And if we go to page 2, which is 14 34774, we can look at the main conclusions of 15 Dr. Di Monte's presentation. 16 A. Yes. 17 Q. Okay. The first one is the 18 administration of paraquat to mice causes 18 administration of paraquat to mice causes 19 a significant loss of nigral dopaminergic 10 neurons, correct? 10 A. Correct. 11 Q. The loss is selective and affects 12 neuronal cell populations that are also  Page 724  1 targeted in PD." 1 That's Parkinson's disease, correct? 2 A. That's right. Q. Okay. Then third is:    "The PQ model represents a valuable experimental tool for studying mechanisms of dopaminergic cell degeneration and neuroprotective strategies."  Do you see that? 1 That was another point. 1 A. Yes. 2 Do you see that? 1 That was another point. 1 A. Yes. 2 Do you see that? 1 That was another point. 1 A. Yes. 2 Do you see that? 1 That was another point. 1 A. Yes. 2 Do you see that? 1 That was another point. 1 A. Yes. 2 Do you see that? 2 Q. And then it says ROS formation. 3 What is ROS again? We talked about it earlier. 4 A. We did. This is reactive oxygen species 3 which can cause damage to the cell. 3 Q. And then it says ROS formation 4 which can cause damage to the cell. 4 Page 724 That's right. 5 Page 725 That's which can cause damage to the cell. 5 Page 726 That's what he told you at that more and page to the cell. 6 Page 726 That's what he told you at that more and page to the cell. 7 Page 726 That's what he told you at that more and page to the cell. 8 Page 726 That's what he told you at that more and page to the cell. 9 Q. Right — "Reactive oxy	1	A. I can't recall whether that was the	1	O He also said:
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8 neuroprotective strategies." 9 Do you see that? 10 That was another point. 11 A. Yes. 12 Q. And then it says ROS formation. 13 What is ROS again? We talked about it earlier. 14 A. We did. This is reactive oxygen 15 species, so this is the what paraquat does 16 when it gets into cells, it generates 17 something called a reactive oxygen species 18 which can cause damage to the cell. 19 Q. Right. 20 Right. 21 Reactive oxygen species] formation 22 [Reactive oxygen species] formation 23 That's what he told you at that 24 meeting, correct?  8 he told you that sensitivity to oxidative 9 stress could explain the vulnerability of 10 certain subpopulations of dopaminergic neurons 11 to paraquat, correct?  A. That's correct, yes.  Q. Then he says:  4 "An initial toxic exposure 15 pre-disposes to damage by subsequent 16 challenges." 17 Correct? 18 A. Yes. 19 Q. And then there's: 18 "Microglial activation 20 "Microglial activation 21 (neuroinflammation) is a mechanism by which dopaminergic neurons could be 'primed' to toxic damage." 24 So when that term "microglial			6	
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A. We did. This is reactive oxygen  species, so this is the what paraquat does when it gets into cells, it generates  something called a reactive oxygen species which can cause damage to the cell.  Q. Right.  "Ran initial toxic exposure pre-disposes to damage by subsequent challenges."  Correct?  A. Yes.  Q. And then there's:  "[Reactive oxygen species] formation is likely to play an important role in [paraquat]-induced neurodegeneration."  That's what he told you at that  meeting, correct?  Wan initial toxic exposure pre-disposes to damage by subsequent challenges."  O. And then there's:  "Microglial activation (neuroinflammation) is a mechanism by which dopaminergic neurons could be 'primed' to toxic damage."  So when that term "microglial	12	Q. And then it says ROS formation.	12	A. That's correct, yes.
A. We did. This is reactive oxygen  species, so this is the what paraquat does when it gets into cells, it generates  something called a reactive oxygen species which can cause damage to the cell.  Q. Right.  "Reactive oxygen species] formation  "Reactive oxygen species] formation  is likely to play an important role in  [paraquat]-induced neurodegeneration."  That's what he told you at that  meeting, correct?  "An initial toxic exposure pre-disposes to damage by subsequent challenges."  Correct?  A. Yes.  Q. And then there's: "Microglial activation (neuroinflammation) is a mechanism by which dopaminergic neurons could be 'primed' to toxic damage."  So when that term "microglial	13	What is ROS again? We talked about it earlier.	13	
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when it gets into cells, it generates 16 challenges."  17 correct?  18 which can cause damage to the cell. 19 Q. Right. 20 "[Reactive oxygen species] formation 21 is likely to play an important role in 22 [paraquat]-induced neurodegeneration." 23 That's what he told you at that 24 meeting, correct?  16 challenges."  17 Correct?  18 A. Yes.  19 Q. And then there's:  "Microglial activation  20 (neuroinflammation) is a mechanism by which dopaminergic neurons could be 'primed' to toxic damage."  24 So when that term "microglial"	15		15	
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19 Q. Right. 20 "[Reactive oxygen species] formation 21 is likely to play an important role in 22 [paraquat]-induced neurodegeneration." 23 That's what he told you at that 24 meeting, correct?  19 Q. And then there's: 20 "Microglial activation 21 (neuroinflammation) is a mechanism by which 22 dopaminergic neurons could be 'primed' to toxic 23 damage." 24 So when that term "microglial	18			1
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22 [paraquat]-induced neurodegeneration." 22 dopaminergic neurons could be 'primed' to toxic 23 That's what he told you at that 24 meeting, correct? 24 So when that term "microglial"	21			
That's what he told you at that 23 damage." 24 meeting, correct? 24 So when that term "microglial	22			
24 meeting, correct? 24 So when that term "microglial				
<b>5</b> /				•
25 A. Correct.   25 activation" is used what does it mean?	25	A. Correct.	25	activation" is used, what does it mean?

	Page 727		Page	729
		_		129
1 A. It means mic		1	A. Absolutely. That was one reason	
2 cells that are found in the	,	2	why we wanted to talk to him.	- 1
3 for example, where v		3	Q. Because he'd been studying it.	- 1
4 the dopaminergic neuro		4	He'd been doing the studies, right?	- 1
	rounding those neurones	5	A. You	- 1
6 and that it could be that		6	Q. Without doing the studies without	- 1
7 dopaminergic neurone		7	doing I'm sorry, I interrupted you.	- 1
8 an inflammation due to	an effect on these	8	Go ahead.	- 1
9 microglial cells.		9	A. No, no, I no problem.	- 1
Q. So the paraquat		10	No, absolutely, he but bear in mind that	- 1
11 I'll start that over. We	got a lot of	11	some of what he was saying was not necessarily	- 1
12 feedback.		12	fully experimentally proven. Some of this was	- 1
So the paraquat		13	hypothesis. But, yes, he certainly had	- 1
inflammation of the mi		14	he added to our body of knowledge.	- 1
in turn, causes damage	to the dopaminergic	15	Q. But he had done the studies that	- 1
16 neurons, correct?	1414	16	Syngenta hadn't done, right?	- 1
A. It's not quite as		17	A. No, he'd done some he'd done	- 1
What he was saying is t		18	some studies which were similar to the ones	- 1
the microglial cells, neu		19	that Syngenta had done, but, yes, he had taken	- 1
is known to occur, for e		20	it somewhat further and, in turn, led us to do	
disease. So bacteria car activation. And he was		21	more work in this area ourselves.	- 1
		22 23	Q. Did Syngenta know that sensitivity	
8,		24	to oxidative stress could explain vulnerability	- 1
5 P		25	of sub-populations of dopaminergic neurons	
25 Could make neurones in	ore susceptible to things	25	to paraquat before Dr. Di Monte came?	
	Page 728		Page	730
1 like paraquat.		1	A. Yes, that piece we knew. I think	- 1
Q. Well, actually,		2	we discussed that last time.	- 1
3 it does say "primed,"		3	Q. Okay. And did Syngenta know that	- 1
4 "Microglial activ		4	reactive oxygen species formation is likely	- 1
	opaminergic neurons could	5	to play an important role in paraquat-induced	- 1
6 be 'primed' to toxic dam	iage."	6	neurodegeneration before Di Monte appeared	- 1
7 A. Yeah, that's		7	and spoke to you?	- 1
8 Q. That's exactly w	what he says.	8	A. Yes. Yes, we did.	- 1
9 You agree with that		9	Q. Right. How long had you known that?	- 1
10 A. I think that's wh	nat I was trying to	10	A. Oh, many years, probably ten years	- 1
say as well, yeah.		11	before that at least. Probably longer.	1
Q. You agree that's		12	Q. Okay. And did Syngenta know that	
13 right?		13	the loss of dopaminergic neurons is selective	
A. Yes, it is. Yes.		14	and affects neuronal cell populations that are	
Q. Did Syngenta k		15	also targeted in Parkinson's disease before	
16 he came?		16	Dr. Di Monte came to speak to you?	
17 A. I'm not sure tha		17	A. Yes, we did.	
fully understood that the		18	Q. How long had you known that?	
complicated than a direct		19	A. Again, ten years or more.	
a direct effect on dopam		20	Q. Okay. Did Syngenta know that the	
21 I think this was part of t		21	administration of paraquat to mice causes	
	,	22	a significant loss of micro dopaminergic	
23 bringing us.		23	neurons before he came to speak to you?	
		24 25	A. Yes, we did.	4
25 did is what you're sayin	g, right:	45	Q. And how long have you known that?	

A. Same again; this was because the literature had started to appear in the late 2 literature had started to appear in the late 3 liyous.  4 Q. Okay. 5 Now, he also told you that 6 microglial could play a critical role in triggering paraquat redox cycling in promoting 8 oxidative damage, didn't he? 6 A. Yes. 10 Q. You knew that, too, didn't you, 11 before he came? 11 before he came? 12 A. I don't know that we did. 12 lit may be that there's something on record 13 which suggests that but I don't immediately 14 recall that. 16 Q. So how did he learn that? Did he tell you in the presentation how he knew that microglial could play a critical role in 19 triggering paraquat redox cycling and promoting oxidative damage? 11 MR. NARESH: Objection to form. 12 THE WITNESS: So, again, I don't recall the exact details of whether 23 recall the exact details of whether 24 he had got experimental data which showed 25 that or whether this was, at that stage.  Page 732  1 still a hypothesis that he was working on. 20 Okay. Well he said — he made this statement, if you look at the top of the page, it says, "IDino Di Monte] main conclusions from the presentation."  2 Do you see that? — 10 didn't you?  A. Well, we knew that, yes, NADP oxidase is important in the cycle of even that can lead to damage. I think this was perhaps a new dimension in that this was tendica, right?  A. That's the bit that I can't remember exactly what the nature of his experimental evidence was at that time.  Q. Okay. And he also told you that alpha-symuclein pathology is another in feature of the paraquat model. Did he te that?  A. Yes, he did.  Q. And you knew that as well, didn't you?  A. Yes, how we — Q. How long had you known that?  A. A gain, over the previous few ye as publications were beginning to point out, particularly including in human reactive oxy gen species formation could all contribute to alpha-synuclein pathole Did Sy	
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8 Do you see that? 8 Dr. Di Monte came and made his presen	5).
	itation?
that. But that's right, yes, that's what that 10 we'd certainly discussed in outline but	
11 says, yes. 11 without, really, a clear understanding of	this
12 Q. Okay. So did Syngenta know that or 12 area. So alpha-synuclein was certainly	
not before he came? 13 part of the science story which we were	
14 A. No, I don't know the answer 14 to explore and get a better understanding	
15 to that. As I say, when it comes to the 15 Q. Well, did you so the answer is	
16 microglial activation, this was certainly 16 no or yes? I'm trying to understand; did	
an issue which became more prominent in our 17 you know it or not?	
thinking not necessarily immediately after 18 A. Well, we didn't have a full	
this meeting but as part of our ongoing 19 understanding of the role of alpha-synuc	elein.
20 research program. 20 Q. Have you ever done specific stu	
21 Q. And he also told you that redox 21 to measure alpha-synuclein as a reaction	
22 cycling of paraquat could be catalyzed by 22 to paraquat?	
23 microglial NADPH oxidase, didn't he? 23 A. No, we haven't.	
24 A. Yes. 24 Q. Okay. And that's up to June 202	20.
25 Q. And you knew that before, too, 25 correct?	,

	Page 73	55	Page 737
1	A. That's correct.		German Institute of Neurodegenerative Disease.
2	Q. Okay.		Q. All right. And then there's
3	MR. TILLERY: Let's go to		3 Tomensen?
4	What's the next page number or	- 1	A. John Tomensen is an epidemiologist
5	exhibit number?		who formerly of Syngenta/ICI, by that time
6	MS. BRUMITT: 69.		6 an independent consultant.
7	MR. TILLERY: 69, Exhibit 69, which		Q. And then there is D. Di Monte.
8	is SYNG-PQ-01116217.		Who is that? Is that the same Di Monte?
9	(Botham Exhibit 69 marked for		A. That's the same Dino Di Monte, yes.
10	identification.)	10	Q. So he is now an external consultant
11	THE WITNESS: I think you may still	1:	
12	have control so I can't see that yet.	12	
13	MR. TILLERY: We'll get it over	13	Q. Okay. Is he still?
14	to you in just a second, please.	14	
15	THE WITNESS: Okay, thank you.	1:	
16	MR. TILLERY: Just a second.	16	`
17	Pull that up and then turn it over	1'	
18	to him.	18	
19	THE WITNESS: Thank you. Got that.	1.9	Q. And then the last person there is
20	BY MR. TILLERY:	20	
21	Q. Okay. If you'd just look through	2:	A. He is an external expert in
22	that document, please. And I'm going to just	22	pathology.
23	initially direct your attention to 691	23	Q. Okay. All right.
24	I'm sorry, 991 on one reference.	24	So we're going to go back
25	A. I'm not sure what 991	25	to Exhibit 42 which is a document that
	Page 73	36	Page 738
1	Q. The last page.		I'm sorry, Exhibit 66, which is, let me give
2	A. It's not a number that's on this		you the Bates number, SYNG-PQ-00486987.
3	document.		I think this is one you've seen already.
4	Q. I'm sorry. I'm directing your	- 1	A. Do you want me to open that up here
5	attention to 6217. Do you see that first page?		or are you sending me that again?
6	A. Yeah, just going back. Hold on.		Q. We'll send it to you for you to look
7	Yes, thank you, I've got that.		7 at.
8	Q. All right. Now, the only point		8 A. Okay, I have that.
9	I'm referencing here is if you look at this,		9 Q. This was previously identified on
10	this is a "Paraquat Health Science Team -	10	the record as 66.
11	Action Minutes for Marlow Meeting, 5, 6, 7,	1:	
12	October 2009 - The Compleat Angler, Marlow,	12	update on Syngenta's research program,
13	UK."	1:	3 13 February, 2012?
14	And it references the Health Science	14	
15	Team: Smith; Breckenridge; you, Mr. Botham,	15	` ' '
16	were there; Sturgess; Travis; Cook; McFarland,	10	, i
17	Berry, Mewes.	1.	
18	"External," it has a few other	18	
19	people. It mentions C.L. Berry. Who is that?	19	
20	A. That's Sir Colin Berry, a retired	20	
21	independent pathologist who was a consultant,	2:	
22	still is a consultant, to Syngenta.	22	*
23	Q. Okay. And then there's a Nicotera.	2:	
24	Who is he?	24	
25	A. That's Pierluigi Nicotera from the	25	studies and considered more relevant to study

	Page 7	739		Page 741
1	PD in humans."		7	
2	Why are they more relevant?		1 2	in general terms, be considered the best animals for studying toxicity to humans,
3	A. Because they're genetically more		3	correct?
4	similar to human beings.		4	A. Potentially the most relevant but
5	Q. And is it a good plan to try to get		5	not necessarily best when it comes to ethical
6	as predictive as you can be if you're really		6	use of animals.
7	legitimately trying to assess the hazards of		7	Q. Well, of course, and that's the same
8	a chemical to the genetic profile of a human		8	thing; that's the reason we can't use human
وا	being?		9	beings to test paraquat
10	A. In an ideal world, yes. You know,		10	A. Yes. Yes, indeed.
11	you might think you would do all your		11	Q of course not.
12	toxicology in that way in the nonhuman		12	A. Yes.
13	primate, but the reality is that's not		13	Q. But to the extent that you can use
14	a particularly ethical use of nonhuman		14	primates, you would agree that primates, like
15	primates to do it routinely, so it's reserved		15	monkeys, are considered the best animals for
16	for where that's seen to be necessary for		16	studying toxicity in humans, correct? The most
17	scientific or medical reasons.		17	predictive?
18	Q. But when you're trying to determine		18	A. They certainly can be, yes.
19	whether or not a chemical could cause extreme		19	Not a hundred percent of the time. There are
20	harm, illness, injury or death to a human,		20	exceptions to that, but that's why I say,
21	using a nonhuman primate gives you probably		21	as a general statement, I wouldn't disagree
22	the more accurate information about potential		22	with that.
23	effects on a human, correct?		23	MR. TILLERY: Let's go to have
24	A. The experience from the	- 1	24	we marked 57? What number is this?
25	pharmaceutical world says that that is		25	MS. BRUMITT: 70.
	Page 7			Page 742
1	sometimes the case, yes. Not always but	- 1	1	MR. TILLERY: 7-0? Now we're
2	sometimes.	ı	2	moving to Plaintiff's Deposition Exhibit
3	Q. So have we established that the more	- 1	3	No. 70. This is SYNG-PQ-01117480.
4	species in which the adverse toxicological	- 1	4	Open that and turn that over
5	effects of a chemical are observed, the greater	- 1	5	to him.
6	concern about that chemical's toxicity,	- 1	6	(Botham Exhibit 70 marked for
7	particularly its toxicity to humans?	- }	7	identification.)
8	A. Yes, that could be the case.	- 1	8	THE WITNESS: Okay, I've received
9	Q. And does it matter in which species	-	9	that.
10	adverse effects are observed?	- 1	10	MR. TILLERY: All right.
11	A. It doesn't always matter.		11	Let's turn that over to him for him
12	The critical thing in toxicology is whether		12	to look at.
13	you can understand mechanistically whether		13	BY MR. TILLERY:
14	the effects you have seen, in whatever species		14	Q. You may have to try to work
15	they may be, could be of relevance to man.		15	to enlarge it.
16	Q. The more biologically and		16	MR. NARESH: Dr. Botham, do you
17	physiologically similar a study animal is		17	know how to do that? If not, we can go
18	to humans, the more likely it is that any		18	off the record for a moment and
19	effects observed in that species are to be		19	THE WITNESS: No, I can do that.
20	indicative of a similar effect in humans,		20	I'm doing it now. That's fine.
21	correct?		21	MR. NARESH: Okay.
22	A. As a general statement, that is		22	THE WITNESS: Okay. I can read it
23	true.	- 1	23	clearly now, thank you.
24	Q. Humans are primates and their		24	BY MR. TILLERY:
25	nonhuman cousins, like monkeys, would,		25	Q. If you wouldn't mind going down

	Page 7	743		Page 745
1	to the section it would be the fourth column		1	paraquat in squirrel monkeys, didn't he?
2	over, counting the date, and it will be under	- 1	2	A. He did, yes.
3	the heading of "Minute/Actions" and under the		3	Q. Were you there for that?
4	"Slides not available," "Comments from		4	A. Yes, I was.
5	Di Monte."		5	Q. Okay. And actually, it lists you
6	Do you see that? If you'd read that		6	at the top of the page, that you were present
7	section.		7	for this as part of the Health Science Team,
8	A. Right. I'm just struggling to find		8	along with L.L. Smith, Breckenridge, Sturgess,
9	that, sorry.		9	McFarland, Mewes, and others, right?
10	Q. Where it says "Comments from		10	A. That's right.
11	Prof Di Monte."		11	Q. Okay. And there were some guest
12	A. Is that on the first page or	- 1	12	speakers that were there as well. That
13	further down?		13	included Joan Abbott, David Brooks and Jeff
14	Oh, yes, I've got it now.		14	Wolf. Correct?
15	I'm sorry, it's on yes, I can see it now.		15	A. Correct.
16	Thank you very much, got it.	- 1	16	Q. Who was Jeff Wolf again?
17	Q. No problem.		17	A. He was a consultant pathologist.
18	A. Okay, yes, I've read that.		18	Q. Okay. Let's take a look at what
19	Thank you.		19	Syngenta recorded about Dr. Di Monte's
20	Q. All right. So these are another set		20	presentation in the meeting minutes.
21	of minutes she's going to take this back.		21	Dr. Di Monte treated four squirrel
22	MR. TILLERY: If you'd enlarge the		22	monkeys with paraquat, correct?
23	paragraph to right there. Yeah, right		23	A. Correct.
24	there. Yeah, that one. Yeah. Perfect.		24	Q. He gave the monkeys paraquat first
25	Perfect. Thank you.		25	at 5 milligrams per kilogram of their body
	Page 7	744		Page 746
1	BY MR. TILLERY:		1	weight, correct?
2	Q. Do you see that?		2	A. Yes.
3	A. Yes, I do, thank you.		3	Q. But at the 5 milligram doses,
4	MR. NARESH: I think it's getting		4	monkeys died due to lung toxicity after the
5	cut off. At least on my screen, it's		5	second or third doses, correct?
6	getting cut off on the very far right.		6	A. That's right.
7	MR. TILLERY: Okay. She'll have		7	Q. Okay.
8	to shrink it now a little bit.		8	Now, lab mice and rats have
9	BY MR. TILLERY:	- 1	9	tolerated doses greater than 5 milligrams per
10	Q. Can you still read it, Dr. Botham?		10	kilogram of body weight, haven't they?
11	<ol> <li>Yes, that's fine for me, thank you.</li> </ol>	- 1	11	A. Yes, they have. Yes.
12	Q. Okay, sure.		12	Q. In your studies, lab mice have
13	These are another set of minutes	- 1	13	tolerated paraquat up to 25 milligrams per
14	from the Paraquat Health Science Team, correct?		14	kilogram of their body weight; is that correct?
15	A. Yes, they are.		15	A. Yes, that's correct.
16	Q. And this is from a meeting on		16	Q. But Dr. Di Monte's squirrel monkeys
17	April 20-21, 2009, right?		17	died at one-fifth of that dose, didn't they?
18	A. That's correct.	- 1	18	A. Yes, they did.
19	Q. And on the fourth row, and this is		19	Q. So Dr
20	SYNG-01117480, there is an agenda item for		20	A. Can I say, it was a different route
21	paraquat study updates, correct?	- 1	21	of administration. So this was subcutaneous.
22	A. Correct.	- 4	22	The other the studies you're referring
23	Q. Okay.		23	to were intraperitoneal. That may have had
24	Dr. Di Monte gave a presentation		24	an effect.
25	of preliminary results from his studies with		25	Q. We're going to talk about that

	Page 747		Page	749
1	later. But you would agree with me that	1	Syngenta ever undertaken a study of	
2	Dr. Di Monte's squirrel monkeys died at	2	alpha-synuclein with respect to paraquat?	
3	one-fifth of the dose that the lab mice could	3	A. Yes, that is correct.	
4	tolerate, correct?	4	Q. All right.	
5	A. Yes.	5	MR. TILLERY: Now let's go to the	
6	Q. Okay. So Dr. Di Monte's squirrel	6	next exhibit, please. What number is	
7	monkeys were substantially more sensitive	7	that?	
8	to paraquat's toxicity than rodents, weren't	8	MS. BRUMITT: 71.	
9	they?	9	MR. TILLERY: 71, as she is loading	
10	A. Yes.	10	this document, is SYNG-PQ-01305484.	
11	Q. And squirrel monkeys are primates,	11	(Botham Exhibit 71 marked for	
12	right?	12	identification.)	
13	A. Yes.	13	BY MR. TILLERY:	
14	Q. You and I are primates, right?	14	Q. We're going to give this to you.	
15	A. Yes.	15	It's three pages. And then, please, if you	
16	Q. Dr. Di Monte reported, as a	16	wouldn't mind, take a look at it.	
17	preliminary assessment of his results, that	17	A. Yeah, okay, I've done that.	
18	primates are more sensitive to systemic toxic	18	Thank you.	
19	effects of paraquat. Correct, sir?	19	MR. TILLERY: Take it back.	
20	A. Correct.	20	Right there would be good enough, if you	
21	Q. Dr. Di Monte lowered the dose to the	21	can hold it.	
22		22	BY MR. TILLERY:	
23	squirrel monkeys to 2.5 milligrams per kilogram			
	of body weight to keep the monkeys from dying?	23	Q. So this particular exhibit,	
24	A. That's what he did, yes.	24	number 71, is a summary of the notes made	
25	Q. Okay. And no difference in the	25	during a presentation by Dr. Di Monte at the	
	Page 748		Page	750
1	numbers of dopaminergic neurons was observed;	1	Marlow meeting regarding his findings with	
2	is that what he said?	2	paraquat in the squirrel monkey. Correct?	
3	A. That's what he told us, yes.	3	A. Correct.	
4	Q. But alpha-synuclein was up-regulated	4	Q. It says the notes here were taken	
5	in paraquat-treated animals, correct?	5	in the presence of Syngenta's legal counsel.	
6	A. That's what he told us, yes.	6	We'll get back to that.	
7	Q. And you knew at that time the role	7	Do you see that?	
8	of alpha-synuclein in Parkinson's disease,	8	A. I do.	
9	didn't you?	9	Q. All right. Now, these notes were	
10	A. We certainly knew that	10	made by Nick Sturgess in April 2009, correct?	
11	alpha-synuclein was up-regulated in	11	A. That's correct.	
12	Parkinson's, yes.	12	Q. And if you see the third paragraph,	
13	Q. But as you told us I think a few	13	it says:	
14	minutes ago, Syngenta has never, at any time	14	"Studies with [paraquat] PQ	
15	in its history, corporate history, ever	15	conducted to replicate the mouse PQ dosing	
16	undertaken an alpha-synuclein study with	16	regimen (3 x weekly doses of 5mg/kg PQ s.c.)"	
17	respect to paraquat, correct?	17	What's the s.c. stand for?	
18	A. That is correct because we've never	18	A. Subcutaneous.	
19	been clear exactly what the role of	19	O. Subcutaneous.	
20	alpha-synuclein actually is.	20	" resulted in [at least] 50%	
21	MR. TILLERY: I move to strike your	21	[and it says] lethality."	
22	answer as unresponsive.	22	It means death, right?	
	BY MR TILLERY:	123	A If means that the animals died	
23 24	BY MR. TILLERY: Q. Would you agree with me that at	23 24	A. It means that the animals died, yes.	

	Page 751		Page 753
1	you'd kill them?	1	I meant. Yeah. It does now.
2	A. Yes.	2	MR. TILLERY: Okay.
3	Q. "Loss of striatal dopamine was noted	3	THE WITNESS: You need to go
4	in the dead animals, but this was not	4	it's on the next page as well.
5	quantified."	5	MR. TILLERY: Okay. Let's go to
6	Do you see that?	6	the next page.
1 7	A. Yes, I do.	7	(Off-the-record discussion
8	Q. That was not recorded in the Health	8	regarding electronic feedback.)
9	Science Team minutes, was it?	9	MR. TILLERY: So we're back on the
10	A. No, that's correct.	10	record.
111	Q. Okay. In the monkeys who were given	11	BY MR. TILLERY:
12	the lower dose of paraquat, Dr. Sturgess noted	12	Q. Have you had a chance to look at
13	that Di Monte did not observe a change in total	13	this document as you would wish, sir, or is
14	TH+ neurons, right?	14	there more that you want to see?
15	A. Yes.	15	A. No, I think we were in the middle
16	Q. Where does it say that?	16	of answering the question about the effect
17	"No effect on PQ on the number of	17	in the squirrel monkey. Do you want to repeat
18	TH+ neurones was observed"	18	your question so that I can answer it fully?
19	Do you see that?	19	Q. Yes, sir, I'll go back through
20	A. Yes.	20	it for you.
21	Q. Okay. But Dr. Di Monte did report	21	Dr. Di Monte reported a detailed
22	that detailed histochemical analysis indicated	22	histochemical analysis, indicated a change in
23	a change in neuromelanin-staining phenotype of	23	neuromelanin-staining phenotype of some neurons
24	some neurons when examined post examined	24	when examined four weeks post dose.
25	four weeks post dose.	25	A. Yes, he did, and so what you've
	Page 752		Page 754
1	Do you see that?	1	got in front of you now is part of that.
2	A. Yes. Yes. I can't see it at the	2	So there are two more lines on the next page.
3	moment but I	3	So, yes, he reported to us that the
4	Q. That	4	TH-positive cells, which are the ones that are
5	A. I'm sorry, I can't see it at the	5	routinely measured in the mouse model, were
6	moment, but, having looked at the document,	6	unchanged, so the dopaminergic neurones that
7	I know it's there. Sorry. You're still on	7	are normally assumed to be the focus in
8	page 1.	8	Parkinson's disease were unchanged.
9	Q. Yeah. And that finding wasn't	9	The change was in
10	reported in the action/minutes either, was it?	10	Q. Right
11	A. No, the action/minutes don't go	11	A neuromelanin staining, and there
12	into the level of detail that's here.	12	was no clear conclusion about what the
13	Q. Okay.	13	relevance of that was.
14	Dr. Di Monte observed a change in	14	Q. Well, it says at the top of the
15	the type of dopaminergic neurons in the	15	page:
16	substantia nigra pars compacta in	16	"The ratio of TH+ & neuromelanin
17	paraquat-treated monkeys, didn't he?	17	staining neurons to neuromelanin only staining
18	A. He saw	18	neurons changed in the group dosed with PQ and
19	MR. NARESH: Steve	19	assessed 4 weeks post dose."
20	THE WITNESS: Yeah. He saw a	20	Do you see that?
21	MR. NARESH: Sorry to interrupt	21	A. Yes, that's right, and that's
22	but can you I don't know that the	22	because
23	exhibit presentation is matching your	23	Q. That's what he said?
24	questions.	24	A. Yeah.
25	THE WITNESS: Yeah, that's what	25	Q. I'm asking if you see that.

	Page 755	1	Page 757
1	A. Yes.	1	Q. Compared to controls,
2	Q. Is this what he reports to you?	2	paraquat-treated monkeys had fewer of these
3	A. That's correct, yes.	3	neurons that contained both TH+ and
4	Q. Okay?	4	neuromelanin, correct?
5	A. Yes.	5	A. Yes.
6	Q. Dr. Di Monte observed a change in	6	Q. Now, if you turn to the first
7	the type of dopaminergic neurons in the	7	paragraph on page 2, do you see that?
8	substantia nigra in paraquat-treated monkeys,	8	A. Yes.
9	right?	9	Q. Dr. Di Monte reported that the ratio
10	A. I think what I'm not I don't	10	of neurons that contained both TH+ and
11	think we were clear about at the time, and	11	neuromelanin, that the number of neurons that
12	I'm still not clear about now, is whether the	12	only contained neuromelanin changed with
13	cells stained with neuromelanin were actually	13	paraquat treatment, didn't he?
14	dopaminergic neurones and whether they were	14	A. Yes.
15	different.	15	Q. The ratio went down, didn't it?
16	Q. Okay. In paraquat-treated monkeys	16	A. Yes, because the number of cells
17	there was an increase in neurons that contained	17	which were neuromelanin only went up, so the
18	neuromelanin only	18	ratio therefore went down.
19	A. Yes, that's correct.	19	Q. In the third paragraph,
20	Q correct?	20	Dr. Di Monte's preliminary conclusions are
21	A. That's correct.	21	noted, right?
22	Q. Those neurons were not	22	A. Yes.
23	immunoreactive for TH, correct?	23	Q. Please read that paragraph.
24	A. That's right, yes.	24	A. To myself or out loud?
25	Q. Okay. Which means they cannot	25	Q. The conclusion. Read it out loud.
	Page 756		Page 758
1	produce dopamine; is that right?	1	I can read it:
2	A. Which is what I was inferring, yes,	2	"The conclusion [Dr.] Di Monte drew
3	and therefore it says, as it says there,	3	from these experiments was that at the MTD in
4	"The toxicological significance of this	4	the Squirrel monkey, [paraquat] did not induce
5	apparent change is unclear." So that's	5	a lesion that resulted in neuronal cell loss in
6	exactly what my memory was telling me as well.	6	the SNpc [the pars compacta] (quite different
7	Q. Well, it means they can't produce	7	[from] the mouse model), but that it may induce
8	dopamine, right?	. 8	a change in histochemical phenotype in some of
9	A. It means that it doesn't yes,	9	the neuromelanin containing cells. The
10	first of all, they don't produce dopamine,	10	toxicological significance of this apparent
11	and, secondly, partly as a consequence of	11	phenotypic change is unclear."
12	that, their relevance to Parkinson's pathology	12	Do you see that?
13	is not clear.	13	A. Yes, and that's what I was
14	Q. Well, as a scientist, you're aware	14	mentioning earlier on, that he was indicating
15	that those that you would consider	15	he did not understand the relevance of this
16	neuromelanin cells are considered strike the	16	finding, if indeed there is any relevance,
17	question.	17	to paraquat potentially causing Parkinson's
18	There's a decrease in neurons that	18	disease pathology.
19	contain both TH+ and neuromelanin, right?	19	Q. Dr. Di Monte concluded that paraquat
20	A. Yes.	20	treatment caused a change in
21	Q. Neurons that contain both TH+ and	21	neuromelanin-containing neurons, right?
22	neuromelanin can produce dopamine, correct?	22	MR. NARESH: Objection to form.
23	A. That's possibly true, yes. I mean,	23	THE WITNESS: A change does not
24	I need to remind myself exactly of the detail	24	necessarily mean that it's of
25	here but I think that's right.	25	toxicological significance, so you have

	Page 759		Page 761
1	to read that with the sentence that	1	BY MR. TILLERY:
2	follows it.	2	Q. So there are fewer neurons that
3	BY MR. TILLERY:	3	contain TH+, right?
4	Q. Well, did he suggest and conclude	4	A. No, there are the same number that
5	that paraquat treatment caused a change in	5	contain TH+ there are fewer which contain
6	neuromelanin-containing neurons?	6	both TH and neuromelanin.
7	A. Yes, that's clear.	7	Q. And where did where did you get
8	MR. NARESH: Objection to form.	8	that conclusion, sir?
9	BY MR. TILLERY:	9	A. From the data that are above there,
10	Q. And paraquat treatment reduced the	10	so you need to go to the previous page.
11	number of neurons that contained both TH+ and	11	You'll see that the total TH+ count does not
12	neuromelanin, and increased the number of	12	change from the 61,000 that you can see there.
13	neurons that contained only neuromelanin,	13	Q. Okay. We'll get to that in
14	correct?	14	a second.
15	A. That's correct.	15	MR. TILLERY: Let's go to the next
16	Q. The last sentence in that paragraph	16	exhibit. And this is
17	is:	17	MS. BRUMITT: 72.
18	"The toxicological significance of	18	MR. TILLERY: This is 00669432?
19	this apparent phenotypic change is unclear."	19	MS. BRUMITT: Yeah. 72.
20	Right?	20	MR, TILLERY: 72.
21	A. Yes, because what you also have	21	(Botham Exhibit 72 marked for
22	to look at with the left-hand column	22	identification.)
23	Q. I	23	BY MR. TILLERY:
24	A which is that the total number	24	Q. We can turn this document over
25	of TH-positive cells remained constant.	25	to you.
	Page 760		Page 762
1	So it wasn't there was no effect on the	1	Are you familiar with this document,
2	primary type of cell of concern, which is the	2	sir?
3	cell expressing TH.	3	A. Yes, I've seen it in the past.
4	MR. TILLERY: I move to strike your	4	I've not read it recently.
5	answer as unresponsive.	5	Okay.
6	BY MR. TILLERY:	6	Q. This is a study conducted by
7	Q. The last sentence in that paragraph	7	Dr. Di Monte, by Alison McCormack and others
8	is:	8	in his lab, right?
9	"The toxicological significance of	9	A. That's correct.
10	this apparent phenotypic change is unclear."	10	Q. And this study was published in
11	Right?	11	2004, correct?
12	A. Yes.	12	A. That's right.
13	Q. But Syngenta certainly knew that the	13	Q. And that's five years before he made
14	toxicological significance of decreasing TH+	14	his squirrel monkey presentation to the Health
15	neurons and increasing neuromelanin-only-	15	Science Team
16	containing neurons is a loss of	16	A. Yes.
17	dopamine-producing neurons, correct?	17	Q is that right? You're familiar
18	MR. NARESH: Objection to form.	18	with this study. You read it at the time,
19	THE WITNESS: No, I don't think	19	I presume?
20	we do know that. I repeat what I've just	20	A. Yes, we did.
21	said. There was no loss of the total	21	Q. All right. And here, Dr. Di Monte
22	TH-positive cells in this experiment,	22	was studying dopaminergic neurons in the
23	so I think it's really not possible	23	substantia nigra pars compacta of squirrel
24	to make the conclusion you just said.	24 25	monkeys, right?
25		123	A. Yes.

	Page 763		Page 765
1	Q. The same kind of animals that he was	1	section, it says, "Age-related changes in
2	using for his analysis when he made the	2	nigral dopaminergic neurons."
3	presentation, correct?	3	Do you see that?
4	A. That's correct.	4	A. Yes, I do.
5	Q. Okay. And the results are given on	5	Q. The first paragraph starts off with:
6	page 390 of the original journal, and that's at	6	"TH immunoreactivity and NM content
7	SYNG-669435, if you would go to that section of	7	were used as criteria for the characterization
8	the article, the Results section.	8	of dopaminergic neurons in the monkey
9	A. Okay. You've taken control, so	9	substantia nigra. Based on these criteria,
10	Q. We'll give it back to you and you	10	three distinct subpopulations were identified:
11	can look at this. And that's 00669435.	11	(1) dopaminergic neurons with TH-positive cell
12	Are you tell me when you're ready	12	bodies and neurites, but without [neuromelanin]
13	to answer questions.	13	NM (TH only cells)."
14	A. Well, I'm sorry, I'm still waiting	14	A. Yes.
15	to receive the document. Nothing's happened.	15	Q. Number (2):
16	Q. Oh, I didn't know that.	16	"Neurons characterized by both TH
17	A. Sorry, I thought you were having	17	immunoreactivity and the presence of
18	problems at your end.	18	[neuromelanin] NM"
19	Q. No, no, no, we're not.	19	And then it says, "(TH/NM cells)."
20	MS. BRUMITT: Do you want me to	20	Do you see that?
21	MR. TILLERY: I'm sorry?	21	A. Yes.
22	MS. BRUMITT: Do you want me to	22	Q. And (3):
23	present?	23	"Nigral cells that contained
24	MR. TILLERY: Yes, present it.	24	[neuromelanin] but were not TH-immunoreactive
25	Yes.	25	(NM only cells)."
	Page 764		Page 766
1	All right. If you give it back	1	Okay?
2	to him and let him	2	A. Yes.
3	BY MR. TILLERY:	3	Q. "Neurons were counted in monkeys of
4	Q. Sorry, we didn't understand each	4	different ages using the optical fractionator,
5	other, Dr. Botham.	5	and the counts of TH only, TH/NM, and NM only
6	A. No, okay. That's fine.	6	cells were either added together to estimate
7	Q. What I was directing you to is	7	the total number of nigral dopaminergic
8	the Results section, which is on that	8	neurons, or considered separately in order to
9	page right there.	9	assess selective changes in these neuronal
10			subpopulations."
11		10 11	A. Yes.
12		12	
13			Q. Do you see that?
14	MR. TILLERY: If you show him the	13	A. Yes, I do.
	next page, please, and go down a little	14	Q. Do you need more time to study that?
15	further, at the bottom of that page.	15	A. No, no. Go ahead. I think
16	Yeah, there we go.	16	I'm okay so far.
17	BY MR. TILLERY:	17	Q. All right. All right.
18	Q. If you'd take a look at that	18	So this paragraph tells us that
19	"Age-related neurochemical changes," that	19	Dr. Di Monte calculated total dopaminergic
20	1 0 1 /	20	neurons to include three types: TH+ only
21	•	21	neurons, TH+ and neuromelanin-containing
22		22	neurons; and neuromelanin-only-containing
23	`	23	neurons. Correct?
24		24	A. Yes.
25	Now, if you look at the Results	25	Q. So when Dr. Di Monte uses the words

	Page 767		Page 769
1	"dopaminergic neurons," he's including	1	dopaminergic neurons remained the same,
2	neuromelanin-only-containing neurons as	2	the loss of TH+ neurons caused a significant
3	dopaminergic neurons, right?	3	reduction in dopamine levels, correct?
4	A. Right.	4	A. Yes.
5	MR. NARESH: Objection. Objection;	5	Q. Dr. Di Monte reported to the
6	foundation.	6	Paraquat Health Science Team that no difference
7	Go ahead.	7	in dopaminergic neurons was observed, right?
8	BY MR. TILLERY:	8	A. He said that there was no reduction
9	Q. In these monkeys, the total number	9	in total TH-positive cells, yes.
10	of dopaminergic neurons remained the same,	10	Q. Okay. So let's go back to 57
11	right?	11	MS. BRUMITT: 70.
12	A. Well, the total number yes, with	12	MR. TILLERY: And that's
13	age, remained the same. That is correct, yes.	13	Exhibit No. 70. I'm sorry. Plaintiff's
14	Q. But the number of each type of	14	Exhibit No. 70.
15	dopaminergic neuron changed with age, correct?	15	If you'd pull that up for him,
16	A. That's right.	16	please. If you just go to these groups
17	Q. And the overall loss of TH+ neurons	17	and they're on yeah. Let him have the
18	in these monkeys, right and there was an	18	document and I'll direct his attention to
19	overall strike that.	19	them. And turn that over to Dr. Botham,
20	And there was an overall loss of TH+	20	please.
21	neurons in these monkeys, correct?	21	MS. BRUMITT: Okay. He needs to
22	A. Yes.	22	pull it up at his end. It's already been
23	Q. The very next page that I ask you	23	introduced.
24	to look at and we'll go to now	24	BY MR. TILLERY:
25	A. Just before you do, I think it's	25	Q. It should be introduced to you,
	Page 768		Page 770
1	important that we recognize that that decline	1	Dr. Botham.
2	was specifically due to a decline of	2	A. Yeah, I've got it but it's still in
3	TH-positive only cells. If you just go back.	3	presentation ah, yeah, it's coming now,
4	Q. The very next page, do you see	4	thank you.
5	there, "Age-related neurochemical changes"?	5	Q. Where I'm going to direct your
6	Do you see that?	6	attention is to the table of neuron counts
7	A. Yes.	7	on pages 1 and 2 of Dr. Sturgess's notes.
8	Q. "The overall loss of	8	A. Yeah, yeah. Okay.
9	TH-immunoreactive neurons in the substantia	9	Q. Bottom of page 1, top of page 2.
10	nigra was accompanied by a significant decline	10	Do you see it?
11	of dopamine in the putamen of aging squirrel	11	A. Yes. Yes, I've got them.
12	monkeys."	12	MR. NARESH: Hang on, I think we're
13	Do you see that?	13	are you talking about Exhibit 70,
14	A. Yes.	14	because Exhibit 70 is not Dr. Sturgess's
15	Q. So in this study, the overall loss	15	notes. 71 is Sturgess's notes and 70 is
16	of TH+ neurons was associated with	16	the minutes.
17	a significant decline in dopamine	17	THE WITNESS: Yeah, I'm on
18	(Stenographer interruption.)	18	Dr. Sturgess's notes. I think I was
19	BY MR. TILLERY:	19	ahead of you there.
20	Q. In this study, the overall loss TH+	20	MR. TILLERY: Oh, it's 71, okay.
21	neurons was associated with a significant	21	MS. BRUMITT: That's 70.
22	decline in the dopamine in the putamen of the	22	That's 71.
23	squirrel monkeys, correct?	23	MR. TILLERY: Okay, I'm sorry, 71.
24	A. That's what that says, yes.	24	I thought it was
	Q. So even though the total number of	25	THE WITNESS: Yeah, so I'm now

	Page 77	1	Page 773
1	looking at Dr at Nick Sturgess's	1	primate, a primate becomes more susceptible
2	notes.	2	to Parkinson's disease.
3	MR. TILLERY: Let's make sure we're	3	Q. Well, it depends upon how you're
4	all using the same. Okay. Yes.	4	counting them, and we went through at great
5	Thank you, Mr. Naresh, for	5	detail how Dr. Di Monte counted them in his
6	correcting that for the record.	6	study with Dr. McCormack, didn't we?
7	BY MR. TILLERY:	7	A. Yes.
8	Q. We should be looking at Plaintiff's	8	Q. And if you look at the definition
9	Exhibit 71. I made a mistake, I'm sorry.	9	that he gave and how he counted them in the
10	Are you looking at the tables?	10	paraquat-treated monkeys that were here in the
11	A. Yes, I am.	11	study, or that he presented, and in the aging
12	Q. You tell me when you're ready	12	monkeys we discussed from his 2004 paper,
13	to talk, Doctor.	13	the total number of dopaminergic neurons
14	A. Yeah, I'm ready. Please go ahead.	14	remained the same, according to his analysis,
15	Sorry.	15	correct?
16	Q. Sorry. Okay.	16	A. I'd need to look at that again.
17	Let us take back and turn on this	17	I think as I say, I was reading the
18	document and you'll see a box at the bottom of	18	piece with you having control of the
19	the first page. That one right there, okay.	19	document, I wasn't able to fully and
20	Here, when Dr. Sturgess these are	20	completely read that, but I'm sure I read that
21	his notes referred to total TH counts, do	21	total TH-positive counts went down with age.
22	you see that?	22	Q. Well, he Dr. Di Monte saw
23	A. Yes.	23	a reduction in TH+ and NM to NM only;
24	Q. Total TH counts neurons here,	24	isn't that what you understood?
25	he meant total dopaminergic neurons as	25	A. I would need to look at the paper
	Page 77	2	Page 774
1	Dr. Di Monte used that term, correct?	1	again, I'm sorry.
2	A. Yes, I think that's right.	2	Q. Okay. So you can't answer my
3	Q. All right. In the paraquat-treated	3	questions?
4	monkeys here, just like in the aging monkeys	4	A. Well, not without having the
5	we discussed, the total number of dopaminergic	5	McCormack paper in front of me again.
6	neurons remained the same, didn't they?	6	Q. Well, let me ask you this: Let's
7	A. I think this is where we need	7	assume that my interpretation of what that
8	to look carefully because I thought that the	8	paper says is correct. Let's assume that's
9	paper we've just looked at in aging monkeys	9	correct. Then the total of the total number
10	said that the total TH-positive cell count	10	of dopaminergic neurons would remain the same,
11	went down with age, whereas here it's remained	11	wouldn't they?
12	constant.	12	MR. NARESH: Objection to form,
13	Q. Well, are you saying that	13	foundation.
14	you read it to mean that. Did you read it	14	BY MR. TILLERY:
15	to mean that when you based your conclusions	15	Q. 61,000, that number would stay the
16	on this report? Is this what you understood?	16	same?
17	A. I think this is where we were,	17	A. I think this is where we may have
18	overall, not necessarily very clear about the	18	some confusion. As I say, without having the
19	significance of these results because, yes,	19	paper in front of me, I think
20	now that I've looked again at that paper, then	20	Q. Well, let's let's go back to it.
21	I think and I think I've just re-read that,	21	You can look at the paper.
22	you would expect perhaps to see a reduction	22	MR. TILLERY: Pull the paper back
23	in total TH-positive counts, which is what	23	up for him.
24	happens in an aging animal where, of course,	24	MS. BRUMITT: Do you want me
25	you become more susceptible to in a	25	to give it back to him?

	Page 775		Page 777
1	MR. TILLERY: No. Take the paper	1	to fully interpret them.
2	from the preceding exhibit, which is	2	Q. Well, if the result is the same
3	SYNG-669435.	3	irrespective of the cause, whether it's
4	THE WITNESS: Yes, if I could just	4	paraquat or aging, would you agree with me,
5	have a look at the results bit that you	5	sir, that in other words, if it's either
6	were focusing on in the paper last time,	6	in the paraquat-treated monkeys in his
7	that would be helpful, thank you.	7	presentation to you in 2009 or the aging
8	BY MR. TILLERY:	8	monkeys he references in his 2004 paper that
9	Q. We'll do that.	9	he wrote, the total number of dopaminergic
10	There's the Results section	10	neurons remained the same as he described and
11	A. Yeah, okay, I'm if I may just	11	defined those in that first paragraph of his
12	say where I was reading before so that you're	12	paper under Results?
13	clear where I was going with this.	13	A. Yes. The total number, yes.
14	So at the bottom of page 4, you can	14	Q. All right. And the total number of
15	see the bit that says:	15	each type of neuron changed with paraquat
16	"The number of TH-immunoreactive	16	treatment, the character?
17	neurones (TH only plus TH/NM) significantly	17	A. I don't know that it did because
18	declined with age"	18	we don't there isn't a column which says
19	Q. Excuse me, sir. Excuse me.	19	total dopaminergic neurones. The columns are
20	Pardon me, sir, where are you reading from?	20	total TH+ cells, total TH+ and neuromelanin+
21	A. From the bottom of the page that	21	cells, and neuromelanin only. There isn't a
22	I can see now, on the left-hand side.	22	column which says total dopaminergic neurons
23	The paragraph that begins, "The total cell	23	in the McCormack study.
24	number did not change"	24	Q. You mean in the paper that
25	Q. Okay. Okay, fine. Thank you.	25	Dr. Sturgess created, right?
	Page 776		Page 778
1	Go ahead.	1	A. That's right. So in other words
2	A. And it says, at the bottom of that	2	Q. Okay.
3	first paragraph, the number of	3	A there's no equivalent to the
4	TH-immunoreactive neurones significantly	4	60,000 number here.
5	declined with age from 56,000 to 40,000 [sic],	5	Q. But if you look at the Results
6	and then in the next sentence it says:	6	section of his paper that he wrote, you can see
7	"This decline was due to a loss of	7	exactly how he counts them.
8	TH only neurones."	8	If that's the case, the number of
9	That's what I was picking up. You	9	neuromelanin-only-containing neurons more than
10	would expect if this if the effect of	10	doubled, and that means the number of TH+
11	paraquat was mirroring what happens in aging,	11	dopamine-producing neurons fell; correct?
12	then you would see a decline in TH-positive	12	MR. NARESH: Objection to form.
13	cells TH-positive-only cells, and you	13	THE WITNESS: Well, we don't have
14	don't.	14	those data so I don't know.
15	Q. So what you're saying is that your	15	BY MR. TILLERY:
16	interpretation of Dr. Di Monte's cell analysis	16	Q. And the loss of TH+
17	or count is inconsistent with what he put in	17	dopamine-producing neurons in the substantia
18	this study, correct?	18	nigra is an adverse finding, isn't it?
19	A. No, I'm not saying that. I think,	19	MR. NARESH: Objection to form,
20	actually, my memory serves me correctly;	20	foundation, scope.
21	I think, actually, Dr. Di Monte and ourselves,	21	THE WITNESS: Well, I'll repeat:
22	in 2009, were saying the same thing, that the	22	We don't have, as far as unless
23	effects that he saw with paraquat were not the	23	I'm missing something, we don't have,
24	same as you see in animals that were aging,	24	in Dr. Sturgess's notes, the data on
25	and therefore it wasn't necessarily possible	25	total dopaminergic neurones.

	Page 779		Page 781
1	BY MR. TILLERY:	1	the simple impact on dopaminergic cells.
2	Q. If you go back to his study,	2	So all we're pointing out is if you
3	the effects in the aging animal were due to	3	did this over and over and it happened more and
4	a reduction in TH-only neurons, correct?	4	more frequently, the total number would get
5	A. Yes. Correct, yes.	5	to that 60 or 65 percent number that you think
6	Q. But in the paraquat-treated monkey,	6	
7	there was a reduction in TH+ and NM neurons,	7	you need in order for the physical onset of
8	right?	8	symptoms of Parkinson's; isn't that correct,
9	A. There was a reduction in TH and NM,	9	sir?
10	yes, that sub-type of cells. Those that	10	MR. NARESH: Objection; form.
11	expressed TH and neuromelanin, that's where	11	THE WITNESS: Well, that is
12	the reduction was seen.	12	a possibility and, absolutely, that was
13	Q. And the effect of both would be	13	the discussion we had with Dr. Di Monte,
14	a result of a loss of TH+ function; isn't that		and the discussion was that, you know,
15	correct?	14	he was not in a position in 2009 to come
16		15	to a conclusion that you could
17	A. That's a possibility	16	extrapolate from those figures that we've
	Q. Yes.	17	seen in Nick Sturgess's notes to that
18	A but it would be a relatively	18	conclusion.
19	small reduction.	19	BY MR. TILLERY:
20	Q. Well, you said you can't calculate	20	Q. Well, let me ask you this, sir:
21	it, sir.	21	Did you ever undertake any study at any time
22	A. No, I mean	22	to sort of flesh out this confusion that you
23	Q. Would you	23	and the other scientists say you had?
24	A. No, you can't, you can't.	24	A. No, we did not progress this route.
25	Q. Would you agree with me would you	25	We chose to focus on our rodent model because,
	Page 780		Page 782
1	agree with me that the effect would be a result	1	of course, that was the work that we were
2	of a loss of TH+ function, correct?	2	investing in and which we've subsequently
3	A. You are reducing the number of	3	published.
4	cells which express TH by a small amount, yes.	4	Q. Well, were you confused at the time
5	Q. And that means less production of	5	of your meeting with Dr. Di Monte?
6	dopamine, doesn't it?	6	A. Confused is not the right word.
7	A. It could translate to that, yes.	7	I think we were it was part of the
8	Q. Even though the total number of	8	scientific inquiry which we've frequently
9	dopaminergic neurons remained exactly the same,	9	spoken about, and I think it was I think
10	per the way he counts them in his study, right?	10	everybody left that meeting, Dr. Di Monte
11	A. Well, that, I think, is where the	11	included, not yet clear about what the
12	scientific debate still is, and remembering	12	significance of the findings were.
13	that in Parkinson's disease you need to see	13	Q. Okay. So why didn't you do your
14	a significant reduction in dopaminergic cells,	14	study, then, at that time of squirrel monkeys
15	more than 70 percent reduction, before you see	15	to determine exactly what the confusion was,
16	Parkinson's disease, and this is nowhere near	16	try to solve it for yourself? You had the
17	that.	17	capability, didn't you?
18	Q. So you're saying that this you're	18	A. Yeah, well, one thing that we were
19	trying to compare this to the loss of	19	expecting, because Dr. Di Monte told us, was
20	dopamine-producing neurons in Parkinson's	20	
21	disease, and this	21	that he was going to continue his research in
22	A. Yes, in order to try and under	22	the nonhuman primate, and don't forget he was
23	excuse me.	23	a consultant to us, and so our anticipation,
24		23 24	whilst we were focusing on the rodent model,
25 25	Q. This, as you know, wasn't studying the onset of Parkinsonianism, it was studying		is that he would continue to answer, try to
<u> </u>	the onset of Parkhisonianish, it was studying	25	answer that very question that you've posed.

	Page 783		Page 785
١,	O. So you were expecting a third party	1	Q. Okay. Okay.
1 1		2	A this work of Dr. Di Monte's, and
	to do this work, right?	3	the rodent work which we were then starting
3	A. He made it very clear he made	4	to be engaged in, had not come to a conclusion
4	it very clear that this was an area that	5	
5	he was still very interested in and that	6	that paraquat was causative in Parkinson's disease.
6	he would intend at some point in the future	7	
7	to publish the finding.	1	Q. But you were continuing to sell the
8	Q. And he, to your knowledge, was not a worldwide manufacturer or distributor of	8 9	product. So you were waiting on some speculative test done by some other scientist
9	- · · · · · · · · · · · · · · · · · · ·	10	who was a consultant. Was that test ever done
	paraquat, was he?	11	
11	A. No, of course not.	12	or that study ever done?  A. Well, we believe that if it was,
12	Q. Syngenta was, right?	13	
13	A. Yes.	14	that it never reached the public domain
14	Q. And is. Okay.	15	because it was never published. There were
15	So you were speculating that maybe	16	some subsequent discussions with Dr. Di Monte
16	he would go on and do some more work and	17	and it's they didn't they did indicate that his arrival at the German Center for
17	studies and yet you didn't take it upon	1	
18	yourself to do the study that would be	18	Neurodegenerative Disease had meant that his
19	necessary to clarify if there was any truly	19	research interests had had to be modified.
20	any confusion about these results, correct?	20	MR. TILLERY: I move to strike your
21	MR. NARESH: Objection; scope.	21	answer as unresponsive.
22	THE WITNESS: No, I sorry.	22	BY MR. TILLERY:
23	No, I wouldn't put it that way.	23	Q. Was the additional study ever done?
24	We, as I said, believed that because	24	A. Well, that was my way of answering
25	we were collaborating, if you wish,	25	it. As far as we know, it was not.
	Page 784		Page 786
1	to use the right word, that he would be	1	Q. All right. And you never did it
2	continuing to take that line of research	2	either, did you?
3	himself.	3	A. No, we did not.
4	And given and that's why	4	Q. Syngenta never did it?
5	I mentioned it earlier. Given that you	5	A. No, we did not.
6	had to be very clear about the ethical	6	Q. Okay. But you continued to sell it,
7	use of animals, we wouldn't want to	7	the product, while this ambiguity existed in
8	replicate use more nonhuman primates	8	your own minds, right?
9	when they were going to be used, which	9	MR. NARESH: Objection to form.
10	we thought at the time, by Dr. Di Monte.	10	BY MR. TILLERY:
11	BY MR. TILLERY:	11	Q. Is that right?
12	Q. So do you think, instead, it was	12	A. Ambiguity is something which you
13	okay to allow Carroll Rowan, Freemon Schmidt,	13	have to work with in science all the time and
14	Mr. Mills and Mr. Niebruegge to be the test	14	you take a judgment
15	animals?	15	Q. Okay.
16	MR. NARESH: Objection to form.	16	A like you do with COVID-19 at the
17	THE WITNESS: No, of course not.	17	moment, for example. Scientific judgments are
18	That's	18	made, and our judgment at the time was that
19	BY MR. TILLERY:	19	the overall weight of the evidence was still
20	Q. Okay. Well, weren't you	20	not pointing to a clearer causation and
21	A. That's not	21	therefore we did not believe that it was the
22	Q. Well, weren't you continuing to sell	22	right course of action to withdraw paraquat
23	it?	23	from the market.
24	A. We were continuing to sell it	24	Q. Okay.
25	because	25	Dr. Sturgess noted in the header of

	Page 787		Page 789
1	that presentation that we've been discussing	1	MR. TILLERY: The next exhibit is
2	now for some period of time, that the	2	Plaintiff's Deposition Exhibit No. 73.
3	presentation was given in the presence of	3	This is SYNG-PQ-01739155.
4	Syngenta legal counsel.	4	(Botham Exhibit 73 marked for
5	Do you remember that?	5	identification.)
6	A. Yes, I do.	6	MR. TILLERY: And if you'd hand
7	Q. Is it the practice at Syngenta that	7	this to the witness, please.
8	a presentation given by an outside researcher	8	BY MR. TILLERY:
9	in the presence of Syngenta's legal counsel	9	Q. Do you have it, sir?
10	is considered attorney work product?	10	A. I do have it, thank you.
11	MR. NARESH: Objection; scope,	11	Okay, thank you. I've read that.
12	form, foundation.	12	Q. Okay. What is this?
13	You can answer in your personal	13	A. This is the an email from
14	capacity.	14	Dr. Sturgess to Dr. Barry Elliott, recording
15	THE WITNESS: I'd have to be	15	a discussion with an organization called MOTAC
16	reminded exactly what the definition of	16	Neuroscience.
17	attorney work product is. So would you	17	Q. What is MOTAC Neuroscience?
18	mind just giving me your description of	18	A. To be honest with you, I can't
19	what you think that is?	19	remember exactly what the nature of MOTAC
20	BY MR. TILLERY:	20	Neuroscience is, so I suspect that this was
21	Q. Well, let me just ask you this: Is	21	an organization a contract research
22	it the practice at Syngenta to conceal adverse	22	organization.
	results, scientific results, about paraquat as	23	MR. TILLERY: If you hand that
24	attorney work product?	24	document, if we take this document back.
25	A. No, that's not the case.	25	///
	Page 788		Page 790
1	Q. Okay. So you're telling us that	1	BY MR. TILLERY:
2	you've never been part of any effort to conceal	2	Q. The first bullet, do you see that
3	scientific knowledge or information using	3	one
4	attorney work product as an excuse, right?	4	A. Yeah.
5	A. The way in which we've been advised	5	Q where it says:
6	is to not to conceal work, no, we've never	6	"Erwan has spoken this year to
7	been instructed to answer your question	7	Prof Di Monte from the PI and has heard from
8	directly, we've never been asked to conceal.	8	him that paraquat resulted in neuronal cell
9	We've been asked to carefully consider the way	9	loss (he assumes this was the end point) in
10	in which our work is presented and when it's	10	monkeys, comparable to that seen in the C57B16
11	presented.	11	mouse. Figures of 30-40% loss were mentioned.
12	Q. Okay. And you've never been asked	12	Erwan did not know the specifics of the study
	to run your work through a lawyer to try to	13	design, but it appears that there may have been
	keep it from public scrutiny, right?	14	very few animals (1 or 2), and overt toxicity
15	MR. NARESH: Objection to form.	15	seen ( the usual toxicities expected with
16	THE WITNESS: Not to keep it from	16	PQ). We should bear in mind that the lack of
17	public scrutiny. Simply, as I said, to	17	detail here, and not necessarily take this
18	get advice on the best way of when and	18	'hearsay' (despite its source) as fact at
19	where to present.	19	present."
20	MR. TILLERY: Okay. Pull up the	20	•
21	next exhibit	21	Did I read that correctly?
22	THE WITNESS: And how. And how	22	A. Yes, you did.
23			Q. All right. In May 2007, Syngenta
24	I should say as well.  MR. TILLERY: What number is this?	23	learned that Dr. Di Monte had experimented with
		24	paraquat in squirrel monkeys and that his
25	MS. BRUMITT: 73.	25	results were potentially adverse, correct?

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١,		1	contact Dr. Di Monte regarding his squirrel
1	A. Yes, that's correct.	2	monkey study with paraquat?
2	Q. Syngenta brought him in to speak at	3	A. I can't give you a date off the top
3	the 2008 Paraquat Health Science Team. We		
4	talked about that, right?	4 5	of my head, I'm afraid.
5	A. Yes.	6	Q. When did Syngenta first learn that
6	Q. And over a year after Syngenta	i .	Dr. Di Monte observed loss of striatal dopamine
7	learned Dr. Di Monte was experimenting with	7	in paraquat-treated monkeys?
8	paraquat in squirrel monkeys, right?	8	A. That would be at the Marlow health
9	A. Yes.	9	scientist team meeting.
10	Q. That was a year later. And so we	10	Q. That was the first time?
11	know from this email, this is at 2007, that	11	A. It was the first time that
12	they were aware of it in 2007. We know that	12	I recall, and where it was properly if you
13	they'd brought him in 2008, right?	13	like, properly presented. There may have been
14	A. Yes.	14	informal discussions before that with
15	Q. Now, Dr. Di Monte spoke on paraquat	15	colleagues, but I'm I don't know whether
16	in the mouse at the September 2008 Health	16	that is the case.
17	Science Team. We know that.	17	Q. And when did Syngenta first learn
18	Who decided the topic of	18	that Dr. Di Monte observed up-regulation of
19	Dr. Di Monte's presentation?	19	alpha-synuclein in paraquat-treated monkeys?
20	A. This was a discussion between some	20	A. I believe that was at the same
21	members of the health internal Syngenta	21	time, at the Marlow meeting.
22	members of the Health Science Team and	22	Q. When did Syngenta first learn that
23	Dr. Di Monte.	23	Dr. Di Monte observed a change in neuromelanin
24	Q. Okay. It wasn't until April 2009	24	in paraquat-treated monkeys?
25	that Dr. Di Monte presented to Syngenta the	25	A. Again, I believe that it was at the
	Page 792	8	Page 794
1	preliminary results of his study of paraquat on	1	Marlow Paraquat Health Science Team meeting.
2	the squirrel monkey, correct?	2	Q. Okay.
3	A. Yes.	3	MR. TILLERY: Let's go to the next,
4	Q. And that's about two years after	4	and this would be exhibit what?
5	Dr. Sturgess's email that's marked as an	5	MS. BRUMITT: 74.
6	exhibit here, right?	6	MR, TILLERY: 74.
7	A. Yes. And I think I might be able	7	THE VIDEOGRAPHER: Mr. Tillery,
8	to explain that.	8	this is Wendy here. We're getting quite
و ا	Q. You know, if you can just bear with	9	low on media time so would it be possible
10	me. We're going to get to the end of this	10	to take a two-minute break while I change
11	A. Mmm.	11	it, please?
12	Q in just a second.	12	MR. TILLERY: Yes, you sure can.
13	But that's about two years after	13	We'll go off the record at this point.
14	Dr. Sturgess's email about a potentially	14	THE VIDEOGRAPHER: Perfect. We are
15	adverse result with paraquat in Dr. Di Monte's	15	going off the record. The time is 5:26.
16	squirrel monkeys, correct? That's what the	16	(Off the record.)
17	email says?	17	THE VIDEOGRAPHER: We are back on
18	A. That's what this says, yes.	18	the record. The time is 5:35.
19	Q. And who decided the topic of	19	BY MR. TILLERY:
20	Dr. Di Monte's April 2009 presentation. Do you	20	O. Before we get to this new exhibit,
	• • • • • • • • • • • • • • • • • • •	21	I just want to clarify something that I thought
21	know?  A. It would be the same. It would be	22	of as we took a break here and I wanted
22	a conversation between one or two members of	23	to clarify some questions for you on the issue
23		24	of Dr. Di Monte's presentation and his study
24	the Syngenta team and Dr. Dr. Di Monte.	25	in 2004.
25	Q. Okay. When did Syngenta first	123	III ZUVT.

	Page '	795		Page	797
1	In terms of the presentation he made		1	on to number 74, I believe.	
2	to you based upon the study of the squirrel		2	(Botham Exhibit 74 marked for	
3	monkeys, this was a short-term sub-acute study		3	identification.)	
4	of the impact of paraquat on dopaminergic		4	(Off-the-record discussion.)	
5	neurons in the primate substantia nigra,		5	BY MR. TILLERY;	
6	correct?		6	Q. Can you look at this. It covers	
7	A. Yes.		7	two pages so feel free to take charge of it and	
8	Q. All right. You could extrapolate		8	look at the document.	
9	from this data that there was a potential loss		9	For the record, this is	
10	of TH+ function, correct?		10	SYNG-PQ-20736066 and it's Exhibit	
11	A. Well, I think you can extrapolate		11	MS. BRUMITT: 74.	
12	a number of things, that included, but that's		12	BY MR. TILLERY.	
13	not the only extrapolation you could make.		13	Q 74.	
14	Q. But would you agree that you could		14	A. Yes, okay. Thank you.	
15	extrapolate from the data that there was		15	Q. All right. What is this?	
16	a potential loss of TH+ function?		16	A. This is an exchange of emails which	
17	A. Yeah, but don't forget that this		17	report some scientific findings which were	
18	was at a very high dose of paraquat, and in	6	18	presented at a neurotoxicology meeting in	
19	toxicology, you know, you often use very high		19	2007.	
20	doses as a surrogate for longer dosing.		20	Q. This is a chain between various	
21	So I		21	people at Syngenta in the regulatory affairs	
22	MR. TILLERY: I'm sorry but I have		22	and product safety section, right?	
23	to move to strike your answer as		23	A. Yes	
24	unresponsive.		24	Q. The first	
25	///		25	A it was largely within yes,	
	Page 7	796		Page	798
1	BY MR. TILLERY:		_		,,,,
2			1	it was. Yes, it did include regulatory	
	Q. Can you just answer me: You could		2	affairs, that's correct.	
3 4	extrapolate from this data that there was		3	Q. The first email in the chain was	
5	a potential loss of TH+ function, correct?  A. You could. I would not.		4	sent on October 23, 2007; is that correct?	
6			5	MR. TILLERY: Do you have that back	
7	Q. But you could, couldn't you?		6	yet'?	
	A. Well, as I've just said, you could,		7	MS. BRUMITT: No. Do you want me	
8	but my judgment	10.0	8	to take it?	100
10	Q. Yes.		9	BY MR. TILLERY:	
- °	A would be that you wouldn't		10	Q. We'll go to the back of this	
11	that I wouldn't do that.		11	document and open it up and we'll take it.	
12	Q. And a loss of TH function could		12	Okay. You see the first one is	
13	result in a loss of dopamine production,		13	Eileen Kennedy?	
14	correct?		14	A. Yes.	
15	A. Yes.		15	Q. Okay. All right. So this article	
16	Q. All right. Is a loss of TH function		16	claims a link between PQ, paraquat, and higher	
17	a potentially adverse result?		17	incidence of Parkinson's, right?	
18	A. In and of itself, it could be, but		18	A. Yes.	
19	it's you would normally want to see other		19	Q. Okay. And then the next one is	
20	effects, including loss of dopamine.		20	referencing "scary stuff."	
21	Q. But it could be, couldn't it, in and		21	And then there's Monty Dixon.	
22	of itself?		22	What's his job at Syngenta?	
23	A. Yes. If you believe that that was		23	A. Monty Dixon was, and still is, a	
	1 6 1 1				
24 25	a clear finding, then yes.  MR. TILLERY: All right. Now we're		24 25	regulatory expert in the North America regulatory team.	

	Page 799		Page 801
1	Q. He sends this to Dennis Hackett at	1	recommendation about disclosing this
2	USGR. What's that stand for?	2	information?
3	A. USGR is the United States	3	A. Well, we discussed it in the PRF
4	Greensboro. It's their physical location.	4	Approach Committee. I was a member of that.
5	Q. Okay. All right. What's his job	5	I may have even been the chair at the time.
6	there, Mr. Hackett's?	6	I would need to be reminded of that.
7	A. At that time, I'm not quite sure	7	I suspect I was. And we discussed what we had
8	what role Dennis Hackett had, but certainly	8	heard at the time. But I don't have the
9	he was very much involved in, for example,	9	record in front of me. This is in 2007;
10	the potentially referable findings process.	10	I can't remember exactly how that went.
11	Q. Okay. So he says:	11	Q. Okay.
12	"Eileen Kennedy just forwarded this	12	Yes, go up. Okay. That's the last
13	information to me. Can you please look at	13	entry on the document. Do you see that?
14	[this] information on page 5. I want to ensure	14	A. Yes.
15	proper steps are taken if this is reportable."	15	Q. Okay. And it doesn't tell you what
16	What does that mean?	16	happened to this, and whether there was
17	A. Reportable under 6(a)(2) as	17	a report made, does it?
18	a potentially referable finding.	18	A. No, it doesn't. No.
19	Q. 6(a)(2), what you're saying is,	19	Q. Okay.
20	is reportable to the United States	20	Tim Pastoor was a member of the
21	Environmental Protection Agency as something	21	PRF Approach Committee, right?
22	that would be required under FIFRA to be	22	A. Yes, I think he was at that time.
23	disclosed to them as some adverse issue they	23	Q. The news article reported that:
24	should know about the chemical, correct?	24	"Three new studies presented earlier
25	A. Correct, yes.	25	this month at the Collaborative Centers for
	Page 800		Page 802
1	Q. All right. Okay. And how does this	1	Parkinson's Disease Environmental Research
2	email exchange progress?	2	meeting combined information from human and
3	A. So you'll need to scroll up for me.	3	animal studies, thus strengthening the alleged
4	Q. Sure.	4	link between the disease and exposure to
5	A. Okay. So Dennis Hackett, in that	5	pesticides, scientists say."
6	capacity as the technical secretary for the	6	Right?
7	PRF Committee in the United States, sent it	7	A. Yeah, I'm not sure where you're
8	to Bob Parr-Dobrzanski, who was the technical	8	reading that from, but that is from further
و ا	secretary for the approach committee that	9	down the document
10	discussed findings to make recommendations	10	Q. We can lower the actually go down
11	as to whether they could be reportable under	11	a little further on the article, if you want.
12	6(a)(2).	12	A. Yeah, okay. Yeah, I've got that,
13	Q. And did he make a recommendation,	13	thank you.
14	do you know?	14	Q. Okay. It also says:
15	A. Well, if you scroll up.	15	"One study examined 80,000 licensed
16	Yes, that confirms what I already	16	pesticide applicators and their spouses and
17	knew, that it was agreed that this should be	17	found that farm workers exposed to the
18	discussed by the PRF Approach Committee that	18	pesticide paraquat had twice the expected risk
19	I've just mentioned.	19	of developing Parkinson's than others."
20	Q. And you're listed on these emails,	20	Right?
21	aren't you?	21	A. Yes.
22	A. On some of them, I suspect, yes.	22	Q. It also says:
		23	"A second study found that rodents
23	Q. Yeah, along with Lewis Smith?		
	A. Mmm.	24 25	exposed to paraquat had a build-up of protein alpha-synuclein in their brains. The protein

	Page 803		Page 805
1	has been linked to Parkinson's in the past, and	1	information and statements from the Parkinson's
2	the third study found that the build-up of	2	Institute."
3	alpha-synuclein destroys dopamine producing	3	He goes on to say:
4	cells - the same cells that die in people	4	"The new information which was given
5	afflicted with Parkinson's."	5	at the Neurotoxicology meeting is that non
6	Right?	6	human primates given toxic doses of PQ show
7		7	
8	A. That's what that says, yes. Q. And the article had a quote from	8	increases in alpha synuclein in the brain."
9	Dr. Di Monte of the Parkinson's Institute,	9	So Syngenta knew by, at the latest, November 2007 that Dr. Di Monte had observed
10	right?	10	up-regulation of alpha-synuclein in
11	A. Yes.	11	1 0 1 1
12	Q. And Dr. Di Monte said:	12	paraquat-treated monkeys, correct?  A. Yes.
13		13	
14	"This increase in alpha-synuclein		Q. And Syngenta knew that the
15	in the brain could be the missing link between	14	Parkinson's Institute had reported that the
	the exposure to this agent and how this agent	15	buildup of alpha-synuclein was shown to destroy
16	causes the disease."	16	dopamine-producing neurons, correct?
17	Right?	17	A. That's what was in that report,
18	A. Yes.	18	yes.
19	Q. And that was when, 2007?	19	Q. And Syngenta knew Dr. Di Monte had
20	A. Yes.	20	suggested that the increase in alpha-synuclein
21	Q. Thirteen years ago?	21	could be the missing link between how paraquat
22	A. Yes.	22	exposure causes Parkinson's disease, correct?
23	Q. So the missing link is the	23	A. Correct, and thus explaining why
24	alpha-synuclein, and you told us here today	24	we thought it was very important for us
25	in this deposition that the unequivocally,	25	to engage in conversations with Dr. Di Monte.
	Page 804		Page 806
1	that in the history of your company you have	1	Q. But not important enough to ever do
2	never investigated alpha-synuclein deposits,	2	alpha-synuclein studies yourself, correct?
3	protein deposits in the midbrain secondary	3	A. Because we chose not to go down
4	to paraquat, have you?	4	that route, for the reasons I explained
5	MR. NARESH: Objection to form.	5	earlier; in 2009
6	THE WITNESS: No, we haven't.	6	Q. Because
7	And the important word here is "could	7	A we believed that was the
8	be," the "could," and that so that was	8	research that he was doing.
9	purely hypothesis at that time.	9	Q. So on the supposition strike the
10	BY MR. TILLERY:	10	question.
11	Q. So you've can I get a clear	11	What did the PRF Approach Committee
12	answer: Have you ever done it?	12	decide to do with this information after Dennis
13	A. No.	13	Hackett forwarded this email in November 2007?
14	Q. All right.	14	A. I don't know what happened in 2007.
15	And the agent that Dr. Di Monte was	15	I know that there was a further discussion
16	referring to is paraquat, correct?	16	in 2009. That, I do remember. But in 2007,
17	A. Yes.	17	I'm not sure what the PRF committee did.
18	Q. That's what he was referring to?	18	Q. Well, let's find what did they do
19	Yeah.	19	in 2009?
20	So Lewis Smith responds to Tim	20	A. Well, we discussed what we'd heard
21	Pastoor's email and he said there:	21	at the Marlow meeting.
22	"This appears to be the same as the	22	Q. Okay.
23	press release some [time] ago."	23	MR. TILLERY: And let's look at
24	I think, yes, you have it.	24	that 2009. Could you pull that document
25	"As far as I can see it is the	25	up. It's exhibit now?

	Page 80	7	Page 809
1	MS. BRUMITT: 75.	1	A. Mmm-hmm.
2	MR, TILLERY: 75. This is	2	Q. And then A. Cook, is that Andy Cook?
3	SYNG-PQ-02601795. Exhibit No. 75 for	3	A. That's Andy Cook, yes.
4	this deposition.	4	Q. And then Mr. Davies?
5	(Botham Exhibit 75 marked for	5	A. Yeah.
6	identification.)	6	Q. And then Mr. Parr-Dobrzanski, right?
7	BY MR. TILLERY:	7	A. That's right, correct.
8	Q. We'll give you that document, sir,	8	Q. All right. Okay.
9	and it's two pages, and let you read it and	9	Dr. Di Monte made his squirrel
10	then she'll take it back for the questions,	10	monkey presentation in April 2009, right?
11	okay?	11	A. Yes.
12	A. Okay.	12	Q. This committee met the next month,
13	Q. Do you have it yet, sir?	13	right?
14	A. Yes, I've got it and I'm just	14	A. Yes.
15	getting to the bottom of the appropriate	15	Q. You were the chairman?
16	section. So, yeah, fine, I've read that now,	16	A. Correct.
17	thank you.	17	Q. One of the items the committee
18	Q. All right.	18	took up was the information provided by
19	MR. TILLERY: Let's take it back	19	Dr. Di Monte, right?
20	and put it on the screen.	20	A. Yes.
21	BY MR. TILLERY:	21	Q. The third item taken up by the
22	Q. Okay. This is the Syngenta Human	22	committee that month was review of verbal
23	Safety, Potentially Referable Findings Approach	23	presentation by Dr. Di Monte regarding
24	Committee, correct?	24	preliminary findings from experimental studies
25	A. That's correct.	25	with paraquat and MPTP in nonhuman primate
	Page 80	8	Page 810
1	Q. Minutes of a meeting held on 19 May	1	squirrel monkeys, right?
2	2009 and it's marked confidential, right?	2	A. Right.
3	A. That's correct.	3	Q. Okay. Nick Sturgess presented
4	Q. Who was the chairman of that	4	Dr. Di Monte's findings to the committee,
5	meeting?	5	right?
6	A. It was me.	6	A. Correct.
7	Q. That committee?	7	Q. And the conclusion of the committee
8	A. Me.	8	is presented here, isn't it, in this document?
9	Q. And who is Peter Hertl at that time?	9	A. Yes. You need to go to page 2.
10	A. He was the head of product safety	10	Q. Okay. Would you do that, please.
11	in North America.	11	Do you see the conclusion in front of you, sir?
12	Q. And he was also a member of the	12	A. Yes, I do. If I can just
13	Syngenta executive committee, wasn't he?	13	Q. Okay.
14	A. No, he was not.	14	A. Yeah, I can see that.
15	Q. Was he ever?	15	Q. Okay. And the committee concluded:
16	A. No, he was not.	16	"The brain findings in the non-human
17	Q. Okay. And who was J. Akins?	17	primate were unanimously agreed as constituting
18	A. He was a toxicologist in the human	18	new data."
19	safety team reporting to Peter Hertl.	19	Correct?
20	Q. Okay. And R. Lewis?	20	A. Correct.
21	A. A toxicologist in the Europe human	21	Q. The up-regulation of alpha-synuclein
22	safety team reporting to me.	22	in the squirrel monkey, that was one of them,
23	Q. And then there's N. Sturgess that	23	right?
24	we've talked about many, many, many, many	24	A. Correct.
25	times.	25	Q. And the reduction in the ratio of

	Page 811		Page 813
1	neurons containing TH+ in neuromelanin	1	it says, doesn't it?
2	to neurons containing only neuromelanin, right?	2	A. Yeah, and then the participants
3	A. Correct.	3	also noted that the toxicological significance
4	Q. The committee goes on to say:	4	of the apparent phenotypic changes, which is
5	"The participants noted that the	5	what I've just been that's what I've just
6	study had not yet been completed, peer reviewed	6	said in a longer form, is unclear.
7	or published and that the data, by	7	Q. Okay. Because it was unclear to you
8	Dr. Di Monte's own admission, required further	8	and the other scientists and because it
9	verification."	9	required further verification, you did what?
10	Right?	10	You made a decision not to report it, right?
11	A. Yes, indeed. As I indicated	11	MR. NARESH: Objection to form.
12	earlier.	12	THE WITNESS: We did, and I would
13	Q. Okay. And it's your understanding	13	like to reinforce that that was largely
14	that the preliminary data need not be reported	14	on the basis of what we had heard from
15	as a potentially adverse finding under FIFRA	15	Dr. Di Monte himself.
16	6(a)(2)?	16	BY MR. TILLERY:
17	A. No, that's not the definition of	17	Q. And you didn't report it? I want
18	non-reporting, just the fact that it's	18	
19	preliminary data.	19	to make sure the court and jury knows you did not report this to the US Government.
20	The definition is whether the new	20	Is that correct?
21	findings were interpretable in terms of	21	· · · · · · · · · · · · · · · · · · ·
22	whether they were adverse. And because of the	22	A. I'm pretty sure that we did not.
23	uncertainties, which we've been discussing,	23	Q. Okay.
24	the conclusion was that they were not	24	The committee then concluded:
25	reportable.	25	"On the basis of the preliminary
23	Page 812	25	nature of the findings and the lack of obvious
	2.		Page 814
1	Q. And let's be very specific on this.	1	adverse consequence of the findings in the
2	The exact reason for why they weren't	2	brain the data do not meet the necessary
3	reportable, tell us again. Very important.	3	technical criteria for a referral."
4	A. Because they as it says there,	4	Is that what it says?
5	for example, because there was no obvious	5	A. That's what it says.
6	adverse consequence of the findings in the	6	Q. The last sentence? Okay.
7	brain, like we were discussing before, of was	7	The potential referable findings
8	there clear evidence that dopamine levels had	8	committee decided not to refer it to the US EPA
9	changed, that there were changes in motor	9	or other regulatory bodies throughout the
10	function in the animals or other such	10	world, correct?
11	outcomes, and because Dr. Di Monte himself	11	A. Yes. We but don't forget the
12	and, more importantly, because Dr. Di Monte	12	ultimate decision was not taken by this
13	himself had told us he could not fully	13	approach committee, it was taken by the
14	interpret those findings that we were	14	I believe that would be taken by the US PRF
15	discussing earlier.	15	committee, which, you remember, we discussed
16	<li>Q. Now, where do you find that in the</li>	16	that in the last deposition.
17	conclusion of this committee? Look	17	Q. And did they follow that
18	A. It's at the	18	recommendation?
19	<ul><li>Q at the document where it says</li></ul>	19	A. That's what I think I said earlier.
20	that and then read from this where it says what	20	Yes, I believe that was the outcome.
21	you just said?	21	Q. Okay.
22	A. Well, it said that, by	22	The potentially referable findings
23	Dr. Di Monte's own admission, required further	23	committee concluded that a paraquat-induced
24	verification and	24	reduction in dopamine-producing neurons and
25	Q. That's what it says. That's what	25	increase in neurons I'm going to move

	Page 815		Page 817
1	to strike that question.	1	Instead of taking this back,
2	The potential referable findings	2	I'm going to let you keep this for these
3	committee concluded that a paraquat-induced	3	questions, okay?
4	reduction in dopamine-producing neurons and	4	A. Okay.
5	increase in neurons that don't produce dopamine	5	Q. So you can follow along with me.
6	was not adverse. Correct?	6	It might make things go quicker because I know
7	A. That was our judgment from what	7	we have to let you out in ten minutes to get
8	we had seen and heard from Dr. Di Monte,	8	out of there, okay?
9	correct.	9	A. Yeah, that's fine. Please go
10	Q. The Parkinson's Institute reported	10	ahead.
11	increased alpha-synuclein had been observed	11	Q. All right.
12	to destroy dopamine-producing neurons, correct?	12	This is a memorandum by Kim Travis,
13	You knew that at the time?	13	this is Plaintiff's Deposition Exhibit 76,
14	A. That was back in 2007, yes.	14	proposing to collaborate with Dr. Di Monte in
15	Q. Right. So you'd known for two years	15	the analysis of paraquat concentrations in the
16	at that time?	16	brains of squirrel monkeys, right?
17	A. Yes. Interestingly, I don't recall	17	A. That's correct.
18	that particular finding being discussed with	18	Q. Dr. Travis proposed that Syngenta
19	us in our Marlow meeting.	19	analyze paraquat concentrations in brain tissue
20	Q. Right. But the Syngenta potentially	20	provided by Dr. Di Monte from his
21	referable findings committee concluded that	21	paraquat-treated squirrel monkeys, right?
22	paraquat's up-regulation of alpha-synuclein	22	A. That's right, and that was
23	was not adverse, correct?	23	discussed at the Marlow meeting.
24	A. That's correct.	24	Q. Okay. In the last sentence of the
25	Q. Okay.	25	second paragraph on page 1, if you have that.
	Page 816		Page 818
1	When Dr. Di Monte made his squirrel	1	A. Mmm-hmm.
2	monkey presentation to the Paraquat Health	2	Q. Okay. Dr. Travis describes
3	Science Team he agreed to share brain tissue	3	Dr. Di Monte's work with paraquat as:
4	with Syngenta to perform a residue analysis,	4	"In essence, Dr. di Monte has
5	didn't he?	5	established a primate analogue of the C57Bl6j
6	A. He did.	6	mouse model"
7	Q. And the purpose of the residue	7	Correct?
8	analysis was to confirm the presence and	8	A. Yes.
9		9	Q. All right. The fourth paragraph
10	concentration of paraquat in the squirrel monkeys' brains, wasn't it?	10	begins:
11	A. That's right.	11	"Dr. di Monte is interested in
12	MR. TILLERY: So if we can quickly	12	understanding [the] mechanisms [of action], and
13	pull up number this one here,	13	so of course are we."
14	number	14	Right?
15	MS. BRUMITT: 76.	15	A. Yes.
16	MR. TILLERY: 76. This is	16	Q. Do you see that? All right.
17	SYNG-PQ-01188018.	17	And that refers to mechanism of action of
18	(Botham Exhibit 76 marked for	18	paraquat on dopaminergic neurons in the
18 19	identification.)	19	substantia nigra portion of the brain, correct?
		20	A. Correct.
20	BY MR. TILLERY:	21	
21	Q. If you'd take a look at that, I have	22	Q. Dr. Travis goes on to say:  "The squirrel monkey model is
22	just a few questions about it.	23	
23	Do you have it, sir?		clearly more relevant to man than the C57Bl6j
24	A. I do, yes, thank you. Mmm-hmm.	24	mouse model, due to genetic relatedness."
25	Q. Okay.	25	Correct?

	Page 819		Page 821
1	A. Yes, indeed, as we discussed	1	the analysis of paraquat in the brains from
2	earlier today.	2	Dr. Di Monte's nonhuman primates studies.
3	Q. And that's consistent with what	3	Q. Okay. So slide 18 is analysis of
4	we've already talked about in this deposition?	4	paraquat in the brain from Di Monte's nonhuman
5	A. Yes.	5	primate studies. The slide notes, Syngenta has
6	Q. And you agree that that's true?	6	the option to analyze paraquat in the brain
7	A. Yes.	7	samples, correct?
8	Q. Right?	8	A. Yes.
9	A. Yes.	9	Q. And it says results would be shared
10	Q. Dr. Travis says:	10	with Dr. Di Monte. In the middle of the slide,
11	"Therefore the results will help	11	the author says:
12	shed light on whether paraquat could partially	12	"If we did, the objective would be:
13	result in effects in the brain [of] man"	13	To establish if a significant [paraquat]
14	Right?	14	concentration was present in the brains"
15	A. Yes.	15	Right?
16	Q. And you agree with that as well,	16	A. Yes.
17	correct?	17	MR. TILLERY: Now, if we go to the
18	A. Yes.	18	next exhibit. Which is what number?
19	Q. The last paragraph on page 2 says:	19	MS. BRUMITT: 78.
20	"Dr. di Monte indicated to me he	20	MR. TILLERY: 78. If you'd look at
21	was intending to publish the results."	21	this one.
22	Right?	22	(Botham Exhibit 78 marked for
23	A. Yes.	23	identification.)
24	Q. Later in that same paragraph,	24	THE WITNESS: Okay, received and
25	Dr. Travis says:	25	I'm familiar with this.
	Page 820		Page 822
1	"If we conduct the paraquat analyses	1	BY MR. TILLERY:
2	for him, then we must provide him with the full	2	Q. You're familiar with this study,
3	results, and we must expect him to publish	3	aren't you?
4	them."	4	A. Yes.
5	Right?	5	Q. This is the study of paraguat
6	A. Yes.	6	residues in the brain tissue of Di Monte's
7	Q. Okay.	7	squirrel monkeys, isn't it?
. 8	MR. TILLERY: Now, let's go to this	8	A. Yes.
9	document, which is number 77, Plaintiff's	9	Q. And the report was dated January 21,
10	Exhibit No. 77.	10	2011, right?
11	(Botham Exhibit 77 marked for	11	A. Correct.
12	identification.)	12	Q. The study initiation date's reported
13	BY MR. TILLERY:	13	as September 13, 2010.
14	Q. If you would take a look at that	14	A. Yes.
15	exhibit, sir. Specifically, I'm going to look	15	Q. That's more than a year after
16	and ask you questions on page 18 of that	16	Dr. Travis requested permission to conduct the
17	document, 18 out of 22, and that's 858, after	17	study. The study completion date is
18	you've familiarized yourself with it.	18	October 29, 2010, right?
19	And just for the reference, this is	19	A. That's correct.
20	SYNG-PQ-01116841. It's Plaintiff's Exhibit 77.	20	Q. Okay. About three months before
21	A. Okay. And I've gone to page 18.	21	the final report was issued, right?
	Q. Okay. So what is this document?	22	A. Yes.
22			1
22	A. This is a set of slides broadly	23	Q. In the executive summary, it says:
		23 24	Q. In the executive summary, it says: "The study objective was to analyze

	Page 823		Page 825
1	Squirrel Monkeys exposed to paraquat in a	1	Q. Well, let's go to the last page
2	laboratory setting. A total of 15 treated	2	the last exhibit for this day and then we'll
3	tissue samples and 1 control tissue sample	3	call it a day, okay?
1	[was] received from SRI International under	4	A. Okay.
4	the direction of Dr. Di Monte."	5	MR. TILLERY: And what number is
5		6	this?
6	That's in the executive summary of	7	MS. BRUMITT: 79.
7	this study, right?		
8	A. That's correct, yes.	8	MR. TILLERY: 79 we'll pull up.
9	Q. The second paragraph in that section	9	(Botham Exhibit 79 marked for
10	says:	10	identification.)
11	"The monkey brain tissue samples	11	BY MR. TILLERY:
12	exhibited paraquat residues which ranged from	12	Q. Do you see it?
13	0.007 micrograms per gram to 0.256 micrograms	13	A. Yes, I do, thank you.
14	per gram, except samples 664, 666 and 732 which	14	Q. I just have a couple of questions
15	were [less than the Level of Quantification]."	15	and then we'll finish, Dr. Botham, okay?
16	A. That's correct.	16	A. Okay.
17	Q. Correct?	17	Q. This is an internal Syngenta form
18	A. That's correct.	18	Dr. Travis used to refer a potentially adverse
19	Q. So Syngenta confirmed that paraquat	19	finding with paraquat to the Syngenta
20	was present in the brains of Dr. Di Monte's	20	Potentially Referable Findings Approach
21	squirrel monkeys, didn't they?	21	Committee for consideration of disclosure
22	A. They did.	22	to regulatory authorities, including the
23	Q. Okay.	23	US EPA, isn't it?
24	If you look at the first page of	24	A. That's correct.
25	that study I think you're looking at it	25	Q. And did you get a copy of this?
	Page 824		Page 826
1	the section marked "Data Requirements: EPA	1	A. Yes, I would have done, yes.
2	Guidelines," does that mean that the study was	2	Q. And what is the subject matter of
3	performed in accordance with data requirements	3	this potentially referable matter?
4	for residue chemistry studies issued by the	4	A. So this we're talking about the
5	US EPA?	5	data that we've just been describing in the
16	A. Yeah, I guess that's right, yes,	6	squirrel monkey brain samples that we received
1 7	I wasn't involved in the	7	from Professor Di Monte.
8	(Stenographer interruption.)	8	Q. Yes, it's exactly that we just
9	BY MR. TILLERY:	9	talked about.
10	Q. Does that mean that this study was	10	A. It is.
11	performed in accordance with the data	11	Q. And in the subject matter, it says:
12	requirements for residue chemistry studies	12	"We have also analysed samples of
13	issued by the United States EPA?	13	squirrel monkey frontal cortex from a study
14	A. Yes, I believe that's the case.	14	conducted independently by [Dr.] di Monte,
15	Q. But this study was never submitted	15	which shows that the paraquat concentration did
16	to the US EPA, was it?	16	not measurably decline between samples to
17	A. I don't know. I can't confirm	17	have been taken 2 and 8 weeks after a fixed
18	that.	18	program of paraquat dosing"
19	Q. And the results of the study were	19	Then he says:
20	never disclosed, to this day, to the United	20	"Reported findings of increases in
	States EPA, were they?	21	alpha-synuclein in the brains of squirrel
21 22		22	monkeys dosed with paraquat in the same study
	A. I can't confirm that.	23	
23	Q. Or any other regulatory agency for	24	referred above have also been considered by this committee."
24	that matter, right?	2 <del>4</del> 25	
25	A. Again, I can't confirm that.	45	Do you see that?

	Page 82	,	Page	829
1	A. Yes, I do.	1	turn it in?	
2	Q. Okay.	2	A. No, no, we	
3	And then on the next page, if you	3	MR. NARESH: Object to form.	
4	look at that, "PRF Committee Comments":	4	THE WITNESS: Let's restate.	
5	"Studies of the kinetics of paraquat	5	We discussed the findings in the brain,	
6	in the brain were considered. The	6	including alpha-synuclein, in another	
7	committee considered that the findings do not	7	PRF committee, which the one in 2009	
8	represent an adverse effect or a pre-cursor to	8	that we'd looked at earlier, and in part	
9	an adverse event. Therefore the findings	9	because Dr. Di Monte himself had told us	
10	do not meet the technical criteria for	10	that the up-regulation of alpha-	
11	referral in the Product Safety PRF	11	synuclein, interestingly, when it was	
12	criteria"	12	caused by MPTP, actually resulted in a	
13	So you didn't send it to the US EPA,	13	protection of effects caused by paraquat,	
14	did you?	14	which was an interesting finding.	
15	A. That's correct, because the	15		
16		10	It was part of him himself,	
17	judgment would have been simply the presence of paraquat in the brain was (a) not a new	16 17	Dr. Di Monte, saying he was not able to	
18			fully ascertain whether that finding was	
	finding and (b) not necessarily indicative of	18	adverse.	
19	any adversity.	19	MR. TILLERY: I move to strike your	
20	Q. So despite the references and	20	answer as unresponsive.	
21	findings on alpha-synuclein, despite the	21	BY MR. TILLERY:	
22	presence of paraquat in the brain of our	22	Q. Let's finish the deposition for	
23	closest genetic cousin, a squirrel monkey,	23	today with this question: Did you report these	
24	or a nonhuman primate, your committee chose	24	findings to the US EPA or to any other	
25	not to send this to the US EPA, correct?	25	regulatory body in the world?	
	Page 828	3	Page	830
1	A. I just want to need to clarify	1	<ul> <li>A. Could you please define which</li> </ul>	
2	that. The consideration here did not	2	findings specifically?	14
3	include although it was mentioned,	3	Q. That were all of those findings	
4	it did not include the alpha-synuclein.	4	set out in that PRF report. Did you report	
5	This was specifically, as it says here, about	5	them?	
6	the kinetics of paraquat in the brain. So the	6	A. In this report, this was regarding	
7	presence in the brain was the subject matter	7	the kinetics, and I do not believe that these	
8	here.	8	were reported to regulatory authorities.	2
9	Q. But you also noticed previously	9	Q. Have they ever been reported?	
10	the reference to alpha-synuclein on the front	10	A. I'm not I don't believe they	
11	page, right?	11	were.	
12	A. Yeah, it was mentioned but that was	12	Q. Okay. Up to this day they haven't,	
13	not the essence of the reason for the	13	right?	
14	questions to the committee.	14	A. Well, I think we would need to	
15	Q. Yes, but you understand the	15	double-check that. I think that is the case	
16	significance of something in a general sense	16	but we would need to check.	
17	whether it causes people to get sick.	17	Q. Is it Syngenta's position that	
18	The question is whether or not you're dealing	18	paraquat is neuroprotective and it actually	
19	with a product that's potentially very	19	prevents problems in the brain?	
20	dangerous to people. A regulatory body is	20	A. No, no. And if you were referring	
21	looking out for the welfare of people like	21	to my previous comment, what I was saying	
22	Carroll Rowan, Freemon Schmidt, Jerry Mills,	22	there was that it appeared that it was MPTP	
	Ronald Niehmagge	122	that might have been never nectorities and	
23 24	Ronald Niebruegge.  Are you saying that just because	23 24	that might have been neuroprotective, not paraquat.	

	Page 831		Page 833
1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 21 22 23 24 25	MR. TILLERY: No further questions for today. We will resume tomorrow at the time that your counsel tells us. Would that be 4:00 a.m. Central time, counsel?  MR. NARESH: That's fine. Same as today's fine with us.  MR. TILLERY: Thank you very much. Thank you, sir.  THE VIDEOGRAPHER: We are going off the record. The time is 6:17.  (The deposition concluded for the day.)	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	*** ERRATA SHEET ***  TRANSPERFECT DEPOSITION SERVICES 216 E. 45th Street, Suit 903  NEW YORK, NY 10017 (212) 400-8845  CASE: Diama Hoffmann, et al., versus Syngenia Crop Protection, LLC, et al. DATE: June 17, 2020  WITNESS: Philip Botham REF: 27625  PAGE LINE FROM TO
2.7	Page 832	25	Page 834
1 2 3 4 5 6 7 8 9 10 11 12 13 14	I, PHILIP BOTHAM, declare that I have read the entire transcript of Volume III of my deposition testimony, or the same has been read to me, and certify that it is a true, correct and complete record of my testimony given on Wednesday, June 17, 2020, save and except for changes and/or corrections, if any, as indicated by me on the attached Errata Sheet, with the understanding that I offer these changes and/or corrections as if still under oath.	1 2 3 4 5 6 7 8 9 10 11 12 13 14	REPORTER CERTIFICATE I, LEAH WILLERSDORF, Accredited Verbatim Reporter, Member of the British Institute of Verbatim Reporters (Accreditation No. 166) and Qualified Realtime Reporter (Level 2), International Participating Member NCRA (USA), do hereby certify that: PHILIP BOTHAM appeared remotely before me via Zoom on Wednesday, June 17, 2020, was sworn by me, and was thereupon examined by counsel; that the foregoing is true and accurate to the best of my knowledge, skill and ability; that the testimony of said witness was taken and reduced to stenotype writing before me; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken; and further, that I am not a relative or employee of any attorney or counsel
15 16 17 18 19 20 21	SignedPhilip Botham  Signed and subscribed to before me. this day of, 20	16 17 18 19 20 21	employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.  IN WITNESS WHEREOF I have hereunto set my hand this June 26, 2020.  LEAH M. WILLERSDORF
21 22 23 24 25	Notary Public	23 24 25	Accredited Verbatim Reporter, Member of the British Institute of Verbatim Reporters - Accreditation No. 166, Qualified Realtime Reporter (Level 2), International Participating Member NCRA (USA)

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Page 835

IN THE CIRCUIT COURT
TWENTIETH JUDICIAL CIRCUIT
ST. CLAIR COUNTY, ILLINOIS

DIANA HOFFMANN,

individually and as

Independent Administrator

of the Estate of THOMAS R.

HOFFMANN, Deceased, et al.,

Plaintiff,

v.

SYNGENTA CROP PROTECTION,

LLC, et al.,

Defendants.

\*\*\*CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER\*\*\*

VIDEOTAPED ZOOM DEPOSITION OF

SYNGENTA CROP PROTECTION, LLC

PHILIP BOTHAM (Volume IV - pages 835-1119 inclusive)

Thursday, June 18, 2020

Berkshire, England, United Kingdom (Deponent's location)

Reported by: LEAH M. WILLERSDORF, (AVR, MBIVR No. 166, QRR2, International Participating Member NCRA.)

Job No. 27627

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$\begin{vmatrix} 1 \\ 2 \end{vmatrix}$		1	APPEARANCES (all via Zoom videoconference)		
	June 18, 2020	2	For the Defendant CHEVRON USA, INC.:		
3	10.15	3	HUSCH BLACKWELL LLP		
4	10:15 a.m. (British Summer Time)	4			
5	(Billion Gaillier Time)	5	BY: JOSEPH ORLET, Esq.		
6	Zoom videotaped deposition of SYNGENTA CROP	6	4801 Main Street Suite 1000		
7 8	PROTECTION, LLC - Philip Botham, Berkshire, England, United Kingdom, reported remotely via videoconference		Kansas City, MO 64112		
9	before Leah Willersdorf, Accredited Verbatim Reporter,	7	Telephone: (816) 983 8295		
10	Member of the British Institute of Verbatim Reporters	8	Email: joseph.orlet@huschblackwell.com		
11 12	(Accreditation No. 166), Qualified Realtime Reporter (Level 2), International Participating Member NCRA	10	ALSO PRESENT:		
13	(USA).	11	Khaldoun Baghdadi - Walkup, Melodia, Kelly & Schoenberger - Plaintiff's		
14		12	co-counsel) Nicole Graham - Korein Tillery, LLC		
15		13	Juanita Brumitt - Korein Tillery, LLC		
16 17		14	Mark Smith - Syngenta in-house counsel Wendy Viner - Videographer		
18		15 16			
19		17 18			
20		19			
22		20 21			
23		22 23			
24 25		24			
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1	APPEARANCES			Page	839
	(all via Zoom videoconference)	1 2	WITNESS INDEX Witness: Page		
3	On behalf of Plaintiffs:	3	Witness: Page PHILIP BOTHAM (Volume IV)		
5	KOREIN TILLERY, LLC BY: STEPHEN M. TILLERY, Esq.	4			
6	ROBERT L. KING, Esq. ROSEMARIE FIORILLO, Esq.	_	Examination by Mr. Tillery, continued	861	
7	One US Bank Plaza 505 N. 7th Street	5 6			
8	Suite 3600 St. Louis, MO 63101	7			
9		8			
10	Telephone: (314) 241 4844 Bmail: stillery@koreintillery.com	9			
11	rking@koreintillery.com rfiorillo@koreintillery.com	10 11			
12	On behalf of Defendant SYNGENTA CROP PROTECTION, LLC:	12			
13	KIRKLAND & ELLIS LLP	13			
14	BY: RAGAN NARESH, P.C.	14			
15		15 16			
16	Washington, DC 20004	17			
17	Telephone: (202) 389 5267 Email: ragan.naresh@kirkland.com	18			
18 19	For the Defendant GROWMARK, INC.:	19 20			
20 21	STEPTOE & JOHNSON, LLP BY: ANTHONY HOPP, Esq.	20 21			
22	227 West Monroe Street	22			
**					
23	Suite 4700 Chicago, IL 60606	23			
l	Suite 4700				

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1 2	EXHIBITS INDEX  Botham Description Page			1	EXHIBITS PREVIOUSLY MARKED
3	Exhibit No.			2	Botham Description Page Exhibit No.
4	Exhibit 80 Wording of FIFRA section 911 6(a)(2), 7 U.S.C. section			3	T-111/20 D-1 - 0 C+ T-1 - 1 - 000
	136d(a)(2)			4	Exhibit 38 Product Safety Technical 999 Evaluation - Claimed Links
5 6	(No Bates, 1 page) Exhibit 81 Wording of 7 U.S.C. section 915			١	Between Exposure to Paraquat
7	136(bb) - Unreasonable adverse effects on the			5	and Development of Parkinson's Disease - A
8	environment			6	Consideration of the
9	(No Bates, 1 page) Exhibit 82 Wording of 18 U.S.C. section 922				Potential Implications for
10	1001(a)			7	Reference Doses," dated September 2009
11	Exhibit 83 Wording of 40 C.F.R. section 928 159.158(a) - What			8	(502(d)-000416.0010018)
	information must be			9	[Confidential - Paraquat
12	submitted (No Bates, 1 page)			10	Litigation] Exhibit 36 Syngenta slide deck entitled 1034
13	Exhibit 84 Wording of 40 C.F.R section 930				"Paraquat & Parkinson's
14	159.153(b) - Qualified			11	disease - Atlanta meeting Feb 13th-14th 2008"
15	expert (No Bates, 1 page)			12	(SYNG-PQ-00105713 - 754)
16	Exhibit 85 Wording of 40 C.F.R. section 948 159.165(a)(1) and (2) -			13	
17	Toxicological and ecological			14 15	
18	studies (No Bates, 1 page)			16	
19	Exhibit 86 Wording of 40 C.F.R. section 972 159.195(a) and (b) -			17 18	
20	Reporting of other information			19	
21	(No Bates, 1 page)			20	
22	Exhibit 87 Wording of 40 C.F.R. section 1022 159.165(d)(1), (2) and (3) -			21 22	
23	Toxicological and ecological studies			23	
24 25	(No Bates, 1 page)			24 25	
	**************************************	 Page	841		Page 843
1	EXHIBITS INDEX	-		,	_
2	Botham Description Page Exhibit No.		ľ	1 2	(On the record at 10:15 a.m.) THE VIDEOGRAPHER: This is
3	Exhibit 88 Syngema slide deck entitled 1061 "Parkinson's Disease - What			3	Volume IV of the videotaped deposition of
4	can Syngenta say about the issue?"			4	Dr. Philip Botham, in the matter of Diana
5 6	(SYNG-PQ-00481037 - 1054) Exhibit 89 Syngenta slide deck entitled 1067			5	Hoffmann, individually and as Independent
7	"Paraquat Update," Syngenta Executive Committee Meeting,			6	Administrator of the Estate of Thomas
	November 9, 2009			7	R. Hoffmann, Deceased, et al., versus
8	(SYNG-PQ-13131087 - 1106) [Confidential - Paraquat			8	Syngenta Crop Protection, LLC, et al.
9 10	Litigation] Exhibit 90 Syngenta document headed 1070			9	In the Circuit Court, Twentieth Judicial
11	"Health Assessment Position - Paraquat: Effects on the			10	Circuit, St. Clair County, Illinois,
12	nervous systema and suggested link to			11	Case No. 17-L-517.
13	Parkinson's disease," May 2007			12	This deposition is being held
14	(SYNG-PQ-00477567 - 7598)		1.	13	remotely via Zoom on June 18, 2020,
15	Exhibit 91 Composite exhibit of many 1074 documents			14	at 10:15 a.m.
16	(SYNG-PQ-01586117 - 606) [Confidential - Paraquat			15	My name is Wendy Viner from
17	Litigation]			16	TransPerfect, and I am the legal video
	Exhibit 92 Draft January 25, 2008 1088			17	specialist. The court reporter today is
18	"Agenda for the PQ Scientific Review Meeting,			18	Leah Willersdorf, also with TransPerfect.
19	Westin Peachtree Plaza Hotel, Tower Room, Atlania			19	Counsel, would you please introduce
20	Georgia" (SYNG-PQT-ATR-16995053)			20	yourself for the record.
21	[Confidential - Paraquat Litigation]			21	MR. TILLERY: For the plaintiff,
22	Exhibit 93 Document headed "Action 1099		- 1	22	Stephen Tillery of Korein Tillery.
				0.0	MD MADECII E. C
23	Notes from Atlanta Meeting 13-14 February 2008"			23	MR. NARESH: For Syngenta, Ragan
				23 24 25	MR. NARESH: For Syngenta, Ragan Naresh, Kirkland & Ellis. THE VIDEOGRAPHER: Thank you.

3 (Pages 840 to 843)

	Page 844	į.	Page 846
1	Could I ask the court reporter to please	1	It's a bad time for us obviously because
2	swear in the witness and we can proceed.	2	of the disclosure of expert witnesses
3	PHILIP BOTHAM,	3	occurring on July 10. We would, however,
4	was duly re-sworn.	4	endeavor to present this to the court as
5	MR. TILLERY: Before we begin,	5	quickly as possible.
6	we have a housekeeping matter to take up	6	So I see the other alternative
7	with Mr. Naresh. Today, in this outline,	7	being to have a hearing go through as
8	which is a continuation of what	8	far as we can this morning, alert the
9	we started in the second half of the	9	court and have a hearing this afternoon
10	deposition yesterday, are contained about	10	so it doesn't disrupt this deposition.
11	three or four of the documents that you	11	It will disrupt my questioning because
12	seek to claw back, and that clawback	12	it's going to pause it. If you don't
13	comes, of course, about eight months	13	stipulate that I can question subject
14	after the documents were turned over	14	to adequate protections so that if the
15	to us and several months after a 502(d)	15	court rules against us, then that would
16	agreement was reached and where the same	16	impact the transcript sections applicable
17	documents, at least as far as I know,	17	to that exhibit and the use of the actual
18	were disclosed pursuant to that same	18	exhibit.
19	stipulation and order regarding 502(d)	19	So given the fact that these
20	disclosures.	20	documents were in our hands now for
21	Now, on the eve of this deposition,	21	literally three-fourths of the year, and
22	Syngenta has sought to pull back	22	then on the eve of the trial they're
23	documents that are important to this	23	sought to be pulled back right after
24	analysis, and I would think that	24	we've had Dr. Botham's deposition dates
25	would be very disruptive to the form of	25	secured for now over a month, and his
	Page 845		Page 847
1	this deposition transcript and to my	1	dep notice, seems to me something that
2	questioning were these documents to be	2	I would think that I would like
3	pulled back and not used in this	3	to present to the court.
4	deposition.	4	So I enlist your response as to how
5	I am trying to work out a	5	you wish to proceed and we'll do whatever
6	resolution that's comparable with the	6	makes sense, but those are, I think,
7	good faith we used in negotiating the	7	options. If you have other options,
8	502(d) order and to be able to use these	8	please let me know, okay.
9	documents.	9	What is your position on this?
10	There appear to be several options	10	MR. NARESH: Sure. You know, since
11	available to us. One would be to suspend	11	we're on the record, I disagree with your
12	this deposition and get an immediate	12	characterization of the sequence of
13	court hearing today to get a ruling on	13	events but I don't know that
14	your objections to our use and your	14	we necessarily need to go through all
15	attempted clawback of documents that	15	that, given that we do have a limit in
16	we've held on our files for almost a year	16	time on the deposition. But, for the
17	now.	17	record, I do disagree with that and
18	The second would be to try to work	18	I will note that our clawback was more
19	around this and use those in this	19	than a week ago and it was your response
20	deposition, subject to adequate	20	that we received the day before the
21	protections for Syngenta, until an order	21	deposition; it was not our email to you
22	can be achieved or reached with the court	22	the day before the deposition.
44			
23	by our presentation of the matter	123	But in any event I think one
23 24	by our presentation of the matter, or yours, whichever, in the coming week	23 24	But, in any event, I think one a fourth option would be I don't know

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	which documents are in your outline, but	1	But the fact is, is that we need
	one alternative would be if you were	2	to select one of the alternatives and one
	to send those to us now, or give me the	3	of the alternatives also, as I said, is
4	Bates numbers or whatever the numbers are	4	we can work around those and not use
	now, I will I can my client is here	5	them, but it's going to disrupt a
6	with me on this call, I know he will be	6	whole two whole sections, which
7	in and out today, but I could speak with	7	would be, I don't know, the major part of
8	him at a break about it, about which of	8	a day of questioning, and then if that's
	the three options or if there are other	9	the case, then he certainly is going
10	options, but I don't agree to any of	10	to have to have we're going to have
11	those three options without the benefit	11	to have him back to finish the dep.
12	of knowing which documents you intend	12	Dr. Botham told me yesterday he
13	to use.	13	won't be leaving the company until the
14	MR. TILLERY: Well, these are the	14	early fall, I believe were the words
15	Jeff Wolff memoranda, Fulbright &	15	he used, and we would accommodate his
16	Jaworski memoranda, the ones that you	16	schedule for doing that, until that
17	basically have produced these multiple	17	would allow you an opportunity to flesh
18	different times and ways and even	18	out your concerns about those documents
19	produced them in the 502. It's the 2008	19	being used at all with the court.
20	memorandum.	20	But one of these alternatives needs
21	That and Mr. King is on this	21	to be grabbed and agreed to right now
22	deposition and he could respond with	22	before we start this dep because that's
23	others, but there are about three that	23	right what I'm going into next. So
24	you've sought to claw back in the last	24	MR. NARESH: So when you
25	week or two. I think Friday before last	25	MR. TILLERY: I urge you to talk
	Page 849	1	Page 851
1	you sent out a letter and said you want	1	to your colleague. Let's go offline and
in the second se	these back, and these were subject to	2	see if we can't resolve it at this point
2		3	in time.
3	a 502 stipulation. I mean, the whole	4	MR. NARESH: Well
4	idea of a 502 is you're turning over	5	MR. TILLERY: The other thing is
5	documents that fall into this category.	6	it's 4:24 here, and in four hours I think
6	Now, on the eve of this dep, you're	7	one of the people here could reach out
7	pulling them back.	1	
8	This will be disruptive and,	8	to the clerk and see if we could get time
9	you know, the only another alternative	1	today to have this issue resolved with
10	would be for you to agree to produce	10	the court.
11	I will ask that Dr. Botham be produced	11	I just urge you to try to see what
12	again if we're not going to be able	12	you can do and then we'll go offline and
13	to use these documents in this	13	wait until you come back in and tell us
14	deposition.	14	you have some suggestion about how you
15	So if you want a break right now,	15	wish to proceed. Okay?
16	I would suggest rather than waiting and	16	MR. NARESH: Well, can I just ask
17	disrupting the flow of my questioning,	17	you, Steve, when you say we need
18	and talk to your colleagues, I'm happy	18	to select one of the alternatives and one
19	to do that, but I think that otherwise	19	of the alternatives is that we can work
20	we need to have a hearing.	20	around those and not use them, can you
21	Now, if the court can't afford us	21	just tell me so I understand what you're
22	an opportunity to have an emergency	22	envisioning?
23	hearing, then we're going to have to do	23	MR. TILLERY: Well, I don't know
24	one as early as he possibly can, perhaps	24	yet because I don't know how much that
25	tomorrow morning.	25	would disrupt the flow.

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1	As you know from the way I take	1	So I would prefer not to have to do
2	Dr. Botham's deposition, I follow	2	that, I think all of us would, so let's
3	a pattern of sequential series of	3	try to work it out.
4	questions, that the questions at part 3	4	Would you mind taking a few minutes
5	build upon questions of part 2 and	5	and speaking to Mr. Smith and seeing
6	part 1, and if you pull out the major	6	if you can reach accord on how you want
7	sections it's going to disrupt this	7	us to handle it, okay?
8	deposition.	8	MR. NARESH: Sure.
9	Now, that means that I you know,	9	Wendy, would you mind putting us in
10	I can't I effectively can't use the	10	our breakout rooms.
11	outline that's been prepared over the	11	THE WITNESS: Ragan, do you need me
12	last 120 days. So the fact is, is that	12	to be in that breakout room or not?
13	the answer needs to be resolved.	13	MR. NARESH: No, you don't need
14	I'm open to any suggestions. We'll	14	to join this one.
15	be reasonable with you in whatever you	15	THE WITNESS: Okay, thank you.
16	guys decide you want to do, but the	16	THE VIDEOGRAPHER: So the same
17	but pulling these documents ten days or	17	breakout room as yesterday?
18	so before a deposition is resumed when	18	MR. NARESH: Yes, but, Phil, you
19	it's pretty clear that these are	19	don't need to join.
20	documents that I want to question about,	20	THE WITNESS: No, okay. So I'll
21	that is something that, you know, we need	21	just stand by.
22	to resolve.	22	THE VIDEOGRAPHER: Okay. We are
23	I mean, I don't know which of these	23	going off the record. The time is 10:27.
24	you want to do, but we're willing to	24	(Off the record.)
25	consider any of these options to make	25	(On stenographic record only at
	Page 853		Page 855
1	this work. We don't want to do, in any	1	10:54 a.m.)
2	way, anything that will disrupt the	2	MR. NARESH: Steve, we had a chance
3	court's order, and by you issuing	3	to confirm, my client and I, and here's
4	a clawback letter for documents that were	4	what we propose. A couple of things.
5	already in our hands under a 502 stip,	5	First, our view is that this is
6	that's a very unusual circumstance for	6	attorney work product, the memos that
7	the court. The whole purpose of the	7	you referenced, and attorney work product
8	stipulation, as you know, was to avoid	8	is not covered by the 502(d) stipulation,
9	these issues, and then we get, before the	9	so that's where we're coming from on
10	dep, documents that are on the 502 stip	10	that.
11	pulled back, or clawed back.	11	My understanding is that Dr. Botham
12	I mean, forgive me for saying so	12	doesn't know these documents anyway and
13	but that appears has a very, very	13	that he's unlikely to be able to that
14	strong ring of gamesmanship to it and	14	he hasn't we certainly haven't shown
15	I don't want to sink to that level at	15	him those documents in review or
16	this point because I'd like to do this	16	otherwise, and I don't believe that he
17	amicably.	17	received them previously, though I you
18	So I urge you to try to do this now	18	know, I haven't read every email so I
19	or it puts us in the situation where	19	don't know what he could add to that.
20	we have to do something with the court as	20	All that said, I think that the
21	soon as possible.	21	
22	Judges in this part are loath to do	22	path forward that we propose here is for you to try to work around those documents
23	emergency hearings, so that's my	23	in your questioning and if, at the end of
24	reluctance to even make that call,	24	the deposition or the end of today,
25	because I don't want to do it, but okay.	25	or even a lunch break, you feel like
	been don't want to do it, but okay.	120	OI CYCH A IUHUH DICAK, YOU ICCI HKC

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1	you've been deprived of a full and fair	1	I would like an agreement that as soon as
2	opportunity to question Dr. Botham, then	2	the court rules, we would be able to get
3	we could discuss how best to present this	3	his deposition.
4	to the court, whether it's in the next	4	MR. NARESH: The reason I asked for
5	day or two or on a more reasonable time	5	Mr. Botham to join that was to get
6	period, that we go that way. If that	6	a sense of his schedule and I think the
7	means that Dr. Botham needs to be	7	back half of July or, you know,
8	available for a later deposition,	8	mid-to-late July would work for the
9	depending on how the court rules, then	9	various folks involved, if that works.
10	we would make him available at a time	10	MR. TILLERY: Then we're willing
11	suitable for everybody.	11	to accept those terms. Okay, all right.
12	MR. TILLERY: Okay. As long as	12	I will tell Dr. Botham, I have
13	we're understanding that we could at	13	nothing against him personally, it's just
14	least get some date between now and the	14	that, you know, we've seen a lot of
15	next six weeks, because here's the	15	Dr. Botham; I'd like to get this thing
16	reason: I know Dr. Botham's a busy guy	16	wrapped up so that's all I'm asking,
17	and I want to make sure we get it done	17	okay.
18	before we get in the middle of these	18	So let's proceed and I'll work
19	expert depositions and all this.	19	around them. I will need a couple of
20	I'm willing to accept those terms,	20	minutes before we get started to avoid
21	not raise these or use these documents	21	any even potential miscue by referencing
22	today and, to tell you the truth, I don't	22	those documents in this, and we'll just
23	know, other than that one, I want to make	23	figure out a way to cut those sections
24	sure and consult with Mr. King and make	24	out of the deposition.
25	sure that there's nothing else in this	25	So we'll have to go offline where
	Page 857		Page 859
1	outline that would be we certainly	1	I can speak. So if you wouldn't mind,
2	don't want to run afoul of the protective	2	put the plaintiffs in a chatroom so that
3	order or any ruling of the court.	3	I can speak directly to Mr. King.
4	That's not our intention.	4	And that would be Mr. King and whoever
5	So we'll go ahead and work around	5	else you have from yesterday. I don't
6	them. It's going to disrupt it, but with	6	know if Khaldoun Baghdadi is on the call,
7	the understanding that we can have him,	7	or Rosemarie Fiorillo, if she's on the
8	depending on how the court rules.	8	call, but Mr. King, those people should
9	And it may be that we can't finish	9	go into our chat, please.
10	anyway. I think I have a very large	10	THE VIDEOGRAPHER: Okay. I'll do
11	amount of material to cover, and whether	11	that right now.
12	we finish or not tomorrow is another	12	(Off the stenographic record at
13	issue.	13	10:58 a.m.)
14	But I would certainly want	14	(On the stenographic record only
15	an agreement that we have him by	15	at 11:14 a.m.)
16	1 August. We could do this, and my	16	MR. TILLERY: We've been through
17	preference would be to do it in the first	17	and we're able to do this: I think we
18	couple of weeks of July but it's going	18	can try to do a workaround. It's going
19	to take a while to present this to the	19	to certainly, it's going to leave big
20	court.	20	sections open. So we think we can
21	I think a more fulsome view of the	21	proceed without a hearing now and we can
22	court by the court would be the best	22	then leave out those sections and the
23	way to do it where we present	23	whole line on all that, pending what the
24	everybody presents their positions on	24	court rules later, and then instead of
25	these and then we get a ruling, but	25	an emergency hearing, which I would very,

	Page 060	1	Para 060
_	Page 860		Page 862
1	very, very much like to avoid, then	1	A. Yes, I am.
2	we can tee this up at the appropriate	2	Q. All right. And, again, we talked
3	time in the next couple of weeks and have	3	about what our expectations are, and just so
4	a hearing. Then, depending on how the	4	we're clear, during the deposition you have the
5	court rules, then we'll resume	5	opportunity to speak to counsel at breaks,
6	Dr. Botham's deposition.	6	et cetera, and after the day. But while
7	It may be we don't finish it	7	questions are pending, we have to assume that
8	anyway, so I think that's something	8	the deposition would take place in exactly the
9	we may need anyway. So we're willing	9	same way it would be if all representing
10	to do that and we're ready to proceed	10	counsel all counsel representing parties
11	with the deposition. Okay.	11	were present in that same room.
12	MR. NARESH: Okay. Stephen, can	1.2	So can you assure us there's
13	we agree to confer on after you've	13	no electronic issues or communications or any
14	completed or gone through the end of the	14	kind of devices that would violate what
15	day tomorrow, confer on, say, Monday	15	we agreed to yesterday? Does that continue
16	morning and we can see if we can work out	16	today?
17	a schedule for filing briefs and whatnot?	17	A. I can reassure you that that is
18	Does that sound okay?	18	still the case.
19	MR. TILLERY: Of course. Of	19	Q. And is that also applies to the
20	course, yes. Now, Monday morning I have	20	fact that there is nobody else there with you,
21	a deposition with you	21	right?
22	MR. NARESH: Right.	22	A. There is nobody else here with me
23	MR. TILLERY: And Mr. Oats and	23	in Jealott's Hill, no.
24	I'm sorry, I think it's Mr. Ouzt, I keep	24	Q. All right.
25	pronouncing it wrong. I'm happy to talk	25	So let's proceed, and I want to go
	Page 861	23	Page 863
1		_	
1	to you before. We'll be starting at	1	back yesterday we were because you had
2	9 o'clock your time so we can discuss	2	to leave the building at a designated time,
3	that early or Sunday is fine with me	3	we didn't really take the time to go through,
4	as well. Okay?	4	on the record, a couple of exhibits; not really
5	MR. NARESH: Okay.	5	questions so much as just identifying and
6	MR. TILLERY: Either way.	6	looking at exhibits and to identify what those
7	So we're back on now. The	7	mean and show them on this record so that they
8	videographer can start again, please.	8	can be seen.
9	THE VIDEOGRAPHER: We are back on	9	I'm going to ask that Exhibit 77
10	record. The time is 11:15.	10	be pulled up so you can take a look at this.
11	MR. TILLERY: Where is Dr. Botham?	11	We're going to pull it up page by page here and
12	THE WITNESS: I'm here.	12	on the screen.
13	EXAMINATION ON BEHALF OF PLAINTIFFS:	13	This, if you remember, was the
14	(continued)	14	what's called PQ Kinetic Study Program and it's
15	BY MR. TILLERY:	15	dated June 2009. We referenced this yesterday.
16	Q. Okay. We finally have you on the	16	Do you remember?
17	screen. All right.	17	A. I do, yes, and I can see that now,
18	Dr. Botham, are you ready to proceed	18	thank you.
19	with the deposition?	19	Q. All right. Can you see that?
20	A. Yes. Yes, I'm ready.	20	A. Yes, I can see this.
21	Q. All right. All right.	21	Q. All right. Just very quickly,
22	As I started the deposition	22	I want to go through this study, okay.
23	yesterday, I asked you, of course, where you	23	This was a presentation by Mr. Travis, wasn't
24	are. You're at Jealott's Hill in the same	24	it?
25	facility, I think, right?	25	A. Yes, that's correct.
	THE THE PARTY OF T	ركا	A. 1 CS, mai S confect.

	Page 864		Page 866
1	Q. All right. So if we go were you	1	presentation?
2	at this presentation?	2	A. As a way of describing how we would
3	A. I believe I was.	3	intend to approach conducting a kinetic study
4	Q. All right. If we could go to page 2	4	as part of our research program. So it was
5	now of this document. What are we just seeing	5	really just an educational briefing for the
6	here generally?	6	team.
7	A. This is a just a conceptual	7	Q. Okay. To the next slide, please.
8	representation that in order for a	8	And what is this?
9	toxicological effect to occur, you've got to	9	A. So this is measuring the amount of
10	actually have a biological mechanism by which	10	paraquat so this is I'm not sure if this
11	that operates, the mode of action, and of	11	is real data, I don't recall. But let's, for
12	course you need to have an amount of the	12	the sake of argument, say this is real data.
13	toxicant present, a dose of the toxicant	13	So if you give a single dose of
14	present, and that's the kinetic.	14	paraquat to the mouse model, then this shows
15	So it's a high-level conceptual	15	that if you take plasma samples, blood
16	representation.	16	samples, at various points in time the levels
17	Q. Over the next page, then. We're	17	of paraquat that you see in the plasma and
18	going to move through it rather quickly.	18	that declines over time.
19	Again, what's the gist of this page?	19	Q. All of this has really been
20	A. So this is looking specifically	20	discussing different types of analyses involved
21	at the biological mechanism, not the kinetic	21	in paraquat, right?
22	side. So if there are effects seen in	22	A. It is, yes.
23	a toxicity study, do we understand MoA	23	Q. Yes. So you're studying different
24	means mode of action, do we understand the	24	types of analyses that could be used for
25	biological basis for that. If we do, can	25	determining the impact of paraquat and how you
	Page 865		Page 867
1	we then start to establish if there's	1	would measure it, right?
2	a relevance for human beings inasmuch as could	2	A. Yeah, this is specifically
3	the mode of action that's been described in	3	measuring how much paraquat and, yes, how and
4	animals actually take actually occur in	4	when you'd measure that.
5	humans.	5	Q. Okay. The next slide. What's here,
6	And then finally, at the bottom,	6	please.
7	the kinetics comes back in. It may be	7	A. Now we've moved on from a single
8	plausible for this to happen, but are the	8	dose to giving three doses, three weekly doses
9	concentrations, the doses that humans ever see	9	which, if you remember, is the dose regimen
10	mean that that would ever actually happen in	10	used in some of the studies that we have been
11	practice.	11	talking about in the past that others have
12	Q. And then the next page, please.	12	used and we had used. So three weekly doses
13	A. So this is, again, just a	13	of either of either 10 or 1 milligram per
14	conceptual representation of how you would go	14	kilogram of paraquat, and what happens here
15	about measuring the kinetics component of	15	to the levels of paraquat in the plasma or
16	this, how much material an animal would see in	16	in the brain, and this, in this particular
17	this particular case and how you would then	17	case, is the brain.
18	relate the specific amount of chemical that	18	Q. If you wouldn't mind at this point
19	gets into the brain to, in this particular	19	going to the next page, please.
20	case also, the loss of neurones in the brain.	20 21	A. And then this is, again, looking
21 22	So it's just to illustrate a	22	over a longer period of time, so three times a week, then two times a week, for 7 to 36
23	concept rather than it being real data.	23	doses. So, again, it's a representation of
24	Q. And what was the purpose of this particular slide in terms of educating the	24	the way in which paraquat levels would be
2 <del>4</del> 25	overall group of scientists at the	25	seen, predicted and observed in that kind of
\$900 CONTRACTOR	Overall group of scientists at the	L	soon, producted and coser for in that will of

	Page 060		Page 1	070
	Page 868		Page 9	870
1	multiple application in an animal model.	1	Q. What does that mean?	- 1
2	Q. If you could move forward to 858.	2	<ul> <li>A. Well, we had already reached that</li> </ul>	- 1
3	And if you would look at this. That's from	3	agreement, I think in the Marlow meeting that	- 1
4	the same exhibit and this is page 18 of that	4	we were talking about yesterday, so this	
5	PowerPoint presentation.	5	the basis on which Dr. Di Monte had agreed	- 1
6	Could you tell us again what is	6	we could do that analysis is obviously we	- 1
7	represented here, please, sir.	7	would let him have the results, and he had	- 1
8	A. So, yes. At this time, where	8	indicated his intention to publish his study	ı
9	we had become aware from discussions with	9	and that that would include the brain analysis	- 1
10	Dr. Di Monte that we had the opportunity, with	10	that we're talking about here, the paraquat	- 1
11	his agreement, to analyze paraquat in the	11	analysis in brain.	- 1
12	brains of his nonhuman primate animals that	12	Q. Was it ever published?	- 1
13	had been dosed with paraquat, and so this was	13	A. No, it appears that it was not ever	- 1
14	a slide which was setting out options for how	14	published.	- 1
15	we might do that.	15	MR. TILLERY: Now let's move	- 1
16	Q. All right. And these were	16	to 861.	- 1
17	descriptions of different ways you could	17	MS. BRUMITT: The slide number?	- 1
18	analyze the monkey brains that he had, right?	18	MR. TILLERY: Sorry?	- 1
19	A. Yes, that's that's correct, yes.	19	MS. BRUMITT: The slide number.	- 1
20	Q. All right. Let's go through the	20	MR. TILLERY: Oh, 21.	- 1
21	second line there where it starts number	21	BY MR. TILLERY:	ı
22	6 x 2.5 milligrams per kilogram. Explain that.	22	Q. This references the human	- 1
23	A. Right. That was the dosing regime	23	microdosing study. What is this?	- 1
24	that was used by Dr. Di Monte. So if you	24	A. So in this just to go a step	- 1
25	remember, a higher dose level of 5 milligrams	25	back a minute, this whole presentation was	
	Page 869		Page (	871
1	per kilogram was toxic to the nonhuman	1	actually a discussion of potentially of	
2	primates, so the study proceeded at this lower	2	a number of potential options for how	- 1
3	dose of 2.5, and so this is simply a	3	we conduct particularly kinetic studies in the	
4	representation of the protocol for his study	4	future as part of our research program.	- 1
5	that we discussed later.	5	So what you see here is one option	- 1
6	Q. So the first several lines reference	6	that was being considered. Rather like	- 1
7	how he did his studies and how he dosed the	7		
8		8	we said yesterday, the issue, of course,	- 1
	monkeys, correct? A. That's correct.	9	is that we are looking at a disease,	- 1
9		10	Parkinson's disease, which affects humans, and	- 1
10	Q. And then at the middle of the page,	11	whilst the nonhuman primate may be a better	- 1
11 12	it says:	12	model of that disease state than the rodent,	- 1
13	"If we did, the objective would be:		if there was a way in which we could have	- 1
	To establish if a significant PQ concentration	13	get more information from the human being,	- 1
14	was present in the brains; The results would be	14	then clearly that would be potentially	- 1
15	shared with di Monte and published; [and] More	15	advantageous and	ı
16	elaborate kinetic objectives are tempting, but	16	Q. So	- 1
17	problematic"	17	A this is therefore, this was	
18	Okay. And then recites those	18	a potential study design that we could adopt	- 1
19	samples, okay?	19	if we wanted to look at a kinetic study in	
20	A. Mmm.	20	human volunteers.	
21	Q. And it says:	21	Q. So this would take six human	- 1
22	"The results would be shared with	22	beings/volunteers and you would dose them with	ւ
23	di Monte, and published."	23	small doses of paraquat, correct?	
24	Do you see that line?	24	A. That's correct, yes.	- 1
25	A. Yes, I do.	25	Q. Okay. And where would you find six	

10 (Pages 868 to 871)

Page 872	ge 874
	JC 0/4
1 people like that? 1 Q. And sorry.	1
2 A. I can't really answer that question 2 A. Just to finish. So when it says	- 1
3 right now because obviously we didn't go 3 that it would give a good prediction of brain	1
4 forward with this, as the record shows. 4 concentrations, of course we would not in an	y I
5 This would have required a lot of questions 5 way be measuring that directly; that would b	e I
6 to be asked and answered, including that one 6 a mathematical calculation extrapolating what	
7 that you mention. 7 we see in plasma to what might be in the	
8 So there are precedents for 8 brain.	
9 microdosing in human populations, but from 9 Q. And that's really you anticipated	
an ethical perspective, which is one of the my next question, Dr. Botham. That's what	
considerations I was talking about, then there 11 I was going to direct you to, was under the	1
would be it would not have been 12 Benefits, where it says, point 2:	
13 straightforward. So we didn't get to the 13 "Good prediction of brain	1
point of asking where we would get volunteers   14 concentrations and safety margins."	ı
15 from. 15 I wanted to ask you about that.	- 1
Q. But you certainly considered a human 16 How were you going to measure brain	- 1
microdosing study, didn't you? 17 concentrations and safety margins?	- 1
18 A. In this meeting, yes. Yes, we did. 18 A. So this is a well-known technology.	- 1
Q. Okay. And does this cover all the 19 It's called PBPK modeling. So because we	- 1
suggested topics for that microdosing study or 20 would have, as part of what we were talking	
21 were there more discussed? 21 about in the earlier slides, kinetic studies	
22 A. I don't recall whether there was 22 in animal models, you would be able to use	- 1
23 anything else discussed. I 23 those data and compare the plasma and urine	- 1
Q. And if you excuse me for 24 levels of paraquat in the human volunteer	- 1
interrupting you. Could you tell me, just in 25 study, in a mathematical model, this PBPK	
Page 873	ge 875
general terms, what that study, had you gone 1 model, where you've actually measured the	
2 forward and used six human beings 2 amount of paraquat in the animal model but	1
3 A. Mmm. 3 obviously you can't do so in the brain but	1
4 Q to dose them with paraquat, would 4 the mathematics would allow you to extrapol	
5 have included? What would the protocol for the 5 to how much might be getting into the human	n
6 study have been? If you could explain to 6 brain.	
7 people who aren't scientists like you, sir. 7 Q. Did anybody at this meeting stand up	
8 A. Mmm. So it would involve giving 8 and say, oh, what about redox cycling if ever	1
9 extremely low doses of paraquat. So as this 9 a molecule of the stuff gets into the	
slide shows, we're talking about micrograms 10 substantia nigra?	1
per kilogram compared to milligrams per 11 A. I don't recall whether that was	
12 kilogram that we see applied in the animal 12 the conversation that was had, but and,	
studies, so one-thousandth of the 13 to restate, we're talking here about a very,	
concentration that is given to animals.   14 very minute dose of paraquat, which is highly	y
The way in which that would be unlikely to have such an effect.	
applied would be either sorry, beginning 26 Q. Okay. But, to your knowledge,	
with intravenous injection potentially, then no one stood up and mentioned redox cycling	g m
an oral ingestion and then potentially dermal this meeting, right?	
application, and that the amount of paraquat 19 A. I don't recall whether that was	
20 that appeared in plasma by taking a blood 20 said.	
sample and the amount that was excreted in Q. Okay. Let's move to Exhibit 78 from	
22 urine, so a urine sample would be taken, would 22 yesterday. This is towards the very end again	
be those samples would all be analyzed 23 we were moving through these very quickly	ana
to give us an understanding of how paraquat  24 I wanted to come back to them.	
25 was being handled in humans, and of course 25 A. Okay. Yes, I can see that,	

	Page 876		Page 878
1	thank you.	1	Q. Okay. And all
2	Q. Do you remember this exhibit, sir?	2	MR, NARESH: Steve, I think you
3	A. I do.	3	know I know there's some technical
4	Q. All right. Instead of me asking	4	issues in terms of the presentation mode,
5	questions, why don't you take a look at this	5	but if you're reading from part of the
6	and tell us what it is.	6	study, I would just ask that the
7	A. So this is the final report of the	7	presentation mode follow along to where
8	analysis that was conducted, that we were	8	you're reading from so that
9	talking about earlier, of the amount of	9	MR. TILLERY: Okay.
10	paraquat in samples of brain taken from the	10	MR. NARESH: the witness isn't
11	nonhuman primates study conducted by	11	trying to remember from memory.
12	Dr. Di Monte.	12	BY MR. TILLERY:
13	Q. And the author of this is a	13	Q. If you look at the Executive
14	William Ray, PhD, right?	14	Summary, 1.0. Do you see that, sir?
15	A. That's correct.	15	A. Yes, I can.
16	Q. Where was Dr. Ray located?	16	Q. All samples were analyzed for
17	A. He was in the Syngenta laboratories	17	residues of paraquat according to Syngenta
18	in Greensboro, North Carolina.	18	method, and it leaves a number of it lists
19	Q. Is that where the analysis took	19	a number of numbers. The Limit of
20	place?	20	Quantification [sic] for paraquat is indicated,
21	A. That is where the analysis was	21	and the current method for recovery of paraquat
22	done.	22	brain tissue was indicated. Okay?
23	Q. And what is his job at Syngenta?	23	A. Yes.
24	A. At that time, he was engaged in	24	Q. This looks like it was done
25	analytical chemistry.	25	according to the laboratory methods that you
	Page 877	23_	Page 879
1	Q. Did he conduct the study or was	1	would have expected under these circumstances?
2	he just the author of this paper?	2	A. Yes, it was.
3	A. I believe he actually conducted the	3	Q. Okay. Then if we go to the
4	study but I would I would need to double	4	Materials and Methods section.
5	check that.	5	This tells us, under "Materials and
6	Q. Okay. So if we go to the rest of	6	Methods," "Test Substances," what was used and
7	that page, please.	7	what was measured in the analysis, correct?
8	So the laboratory project ID, it's	8	A. That's correct.
9	indicated; the performing laboratory is in	9	Q. All right. And the results were
10	Greensboro; the sponsor is Syngenta Crop	10	that you found paraquat on the brain to the
11	Protection, LLC, a defendant in this case.	11	animals, right?
12	Correct?	12	A. We did, yes.
13	A. Correct.	13	Q. All right.
14	Q. Okay. And this is the report that	14	I think the conclusion I'll just
15	indicates a study objective was to analyze	15	read it so we don't have to go there. It's one
16	paraquat residues in brain tissues from	16	sentence:
17	squirrel monkeys exposed to paraquat in	17	" Squirrel Monkey brain tissues
18	a laboratory setting. Correct?	18	were successfully analyzed for paraquat
19	A. That's correct.	19	residues as determined by a concurrent method
20	Q. And this is based upon a total of	20	recovery sample."
21	15 treated tissue samples and one control	21	Correct? That makes sense?
22	tissue sample that were received from	22	A. Yes, I can't see that but that
23	Dr. Di Monte, correct?	23	seems to be my recollection
24	A. That's yes, I think that's my	24	Q. That's what you remember?
25	recollection too, yes.	25	A. Yes, that is.

ı	Page 880		Page 88	32
1	Q. Yes. Let's go to Exhibit 79 now.	1	you tell us the difference between	
2	Let's walk through this so that	2	a Potentially Referable Findings Approach	
3	the court and jury sees exactly what we're	3	Committee and then the step up from there.	
4	talking about, okay. This is a form that's	4	A. Sure. The approach committee is	
5	used at Syngenta, isn't it?	5	a committee that resides within what was at	_ 1
6	A. It is, yes.	6	that time called the human safety organization	
7	Q. And how long has this form been in	7	of Syngenta, and it was it included senior	
8	existence?	8	toxicologists in the human safety department,	
9	A. I would say 20 years.	9	and it was the role of that committee to look	- 1
10	Q. Okay. And the form is to capture	10	at findings in studies of a number of	
11	a FIFRA 6(a)(2) reportable finding, correct?	11	different types, to make a judgment about	Ш
12	A. This is a form to capture the input	12	whether the findings could potentially	
ı	to the POTENTIAL REFERABLE FINDING approach	13	be required to be reported under the FIFRA	
13		14	6(a)(2), but it was not there to make	
14	committee.		a decision on that.	
15	Q. All right. So let's walk through	15		
16	the methodology that Syngenta employs to do	16	After the approach committee had	
17	this. Number one, you have a person let's	17	done its analysis of a study and its findings,	
18	pick, for example, Kim Travis, who is a PhD.	18	it would send the outcome of that discussion	
19	He's in England, right?	19	to the actual PRF Committee itself, which	
20	A. Yes, he is he was, yes, yes.	20	makes those decisions, and that is a committee	
21	He is in England but he's left the company	21	that's for the United States, for FIFRA	
22	now.	22	purposes, is based in the United States.	
23	Q. All right. And Dr. Travis sent this	23	Q. And then after they make strike	
24	form he would have been the one, if you go	24	that. We had a lot of feedback. Let me	
25	to the bottom of this page, do you see,	25	withdraw that.	_
	Page 881		Page 88	33
1	who says "Name of study manager originator"?	1	After the FIFRA committee in the	
2	A. Yes.	2	United States makes a decision, is there any	
3	Q. Okay. And that's Kim Travis, right?	3	further evaluation?	
4	A. That's correct.	4	A. I don't believe so, no.	- 1
5	Q. Okay. And it says the date is	5	Q. Okay. Who was on the approach	
6	June 28, 2011?	6	committee in 2011 in June?	
7	A. Yes.	7	A. I would need to see the minutes	
8	Q. And how does that correspond	8	of that meeting to check that, but probably	
9	in terms of time with the completion of his	9	I would certainly be on that committee and	
10	analysis of the Di Monte squirrel monkey brain	10	some of my toxicology colleagues.	
11	tissues?	11	Q. You were the chair, weren't you?	
12	A. So the report we were just looking	12	A. At that time, yes. That's why	
13	at was January 2011.	13	I think it's very likely that I would	
14	Q. So it's four or five months later	14	have been in the on the committee at this	
15	than that report, right?	15	time.	
16	A. That's right.	16	Q. Okay. Do you have any recollection	
17	Q. So there'd been plenty of	17	of who else would have been on the committee	
18	opportunity to evaluate the results of that	18	with you?	
19	report, to consider it. And Kim Travis, who	19	A. Well, the sort of people that	
20	had charge of that project, sent this on to	20	would be there would have been my senior	
17.17	a potential referable findings committee,	21	toxicology colleagues. The membership changed	
	a political iviviation initially by continuition,			
21		22	as people moved into different roles; so in	
21 22	correct? Is that where it went?	22 23	as people moved into different roles; so in 2011. I can't give you an exact list of	
21		22 23 24	as people moved into different roles; so in 2011, I can't give you an exact list of people.	

	Page 884		Page 886
1	A. It was a group, generally speaking,	1	particular one, I couldn't tell you whether
2	six to eight people.	2	it went to for example, to the European
3	Q. Did you physically meet or did this	3	committee, but that was always an option.
4	just get exchanged electronically after	4	Q. And would there have been a reason
5	receiving this request from Kim Travis?	5	to send it to the European committee given the
6	A. It was nearly always a physical	6	fact that it was not lawful to sell paraquat
7	meeting.	7	dichloride in the European Union at the time of
8	Q. Where did you have your meetings?	8	this period?
و ا	A. In the product safety or human	9	A. Well, quite, which is why I was
10	safety building. By 2011, that would be in	10	indicating that it may not have been relevant
11	Jealott's Hill.	11	on this for this particular one, so I don't
12	Q. Where you are now?	12	know that it wasn't sent but that may well
13	A. That's correct.	13	have been the judgment.
14	Q. And this form, you said, had been	14	Q. Well, let me ask you this: As
15	around for 20 years. Would then after	15	chairman of this committee, are you aware of
16	you've made your decision, would this form be	16	any country where this report was made from the
17	sent to the PRF Committee in the United States	17	findings that we just discussed from
18	or would just your conclusions and	18	Dr. Di Monte's squirrel monkey brain residues?
19	recommendations of your approach committee be	19	A. I'm not aware of that, no.
20	sent?	20	Q. Okay.
21	A. I believe that the form that we see	21	So let's look more closely at the
22	now, plus the recommendations of the approach	22	document, please. And then it says if you
23	committee, would have been sent by the	23	look at the first paragraph, do you see that?
24	technical secretary of the approach committee	24	The very first paragraph in the block, it says
25	to the technical secretary of the US PRF	25	in the second sentence:
	Page 885		Page 887
1	Committee for him to	1	"This document concerns the emerging
2	Q. And that	2	data on the kinetics of this small amount of
3	A decide.	3	paraquat in the brain."
4	Q. And that group in the United States	4	Do you see that?
5	would have included Montague Dixon?	5	A. Yes.
6	A. Again, as we are talking about	6	Q. All right. And then it discusses in
7	a particular point in time, I would need to	7	
8	look at the minutes of that meeting to have	8	the next paragraph how this was done. Then if you go to the very bottom, do you see the
9	that confirmed.	9	sentence that says:
10	Q. At this point in time for 2011,	11.	"We have also analysed samples"
11		10 11	Do you see that?
12	US approach committee, right?	12	A. Yes.
13	A. Yes. Because, again, the	13	
14	membership changed from time to time so	14	· · · · · · · · · · · · · · · · · · ·
15			squirrel monkey frontal cortex from a study
16		15 16	conducted independently by [Dr.] di Monte which
17		17	shows that the paraquat concentration in the
18		18	brain samples did not measurably decline
19			between samples reported to have been taken
20		19	2 and 8 weeks after a fixed program of paraquat
21		20	dosing"
22		21	That's Ray 2011 and Di Monte 2000.
23		22	What is that referring to?
24	0.00	23	A. That's referring to the study that
4 <del>4</del>		24 25	we were talking about a few minutes ago, the Di Monte protocol.
25	relevant to a particular region. For this		

	Page 888		Page 890
1	Q. Okay. This is what's referenced	1	What does that mean?
2	here, you're referencing the same study result,	2	A. So before a study manager or a
3	correct?	3	study or a project leader, as it's
4	A. Yes, that's correct.	4	described in this case, brings a finding
5	Q. Okay. Then you go to the next	5	to the approach committee, sometimes a step is
6	paragraph, and it says:	6	taken to confer with others to get a second
7	"Reported findings of increases in	7	opinion.
8	alpha-synuclein in the brains of squirrel	8	This is what happened here;
9	monkeys dosed with paraquat in the same study	9	so Dr. Travis conferred with me, as the
10	referred to above have also been considered	10	overall project leader of the Health Science
11	by this committee."	11	Team, as to whether the findings in the
12	Now, what's that referencing?	12	kinetic findings in Dr. Di Monte's study
13	A. That's referencing to a previous	13	should be brought to the approach committee.
14	discussion within the PRF Approach Committee,	14	And in line with what I nearly
15	which I believe we talked about yesterday	15	always said, which is if there's any question
16	where the findings not the kinetics but	16	about whether we should or shouldn't,
17	the findings in Dr. Di Monte's study, the	17	we should always take them to the approach
18	histology and, as it says there, the changes	18	committee; that was my recommendation.
19	in alpha-synuclein, were discussed as	19	Q. And what was your vote?
20	to whether they could also whether they	20	A. What was my excuse me, I missed
21	could be potentially referable.	21	that. Please say again.
22	Q. And the same resolution was reached,	22	Q. Yeah, let's start over because
23	wasn't it, that they weren't referable to the	23	we got a lot of feedback.
24	US EPA, correct?	24	What was your vote in this
25	A. That's correct, because, as we said	25	committee?
	Page 889		Page 891
1	yesterday, Dr. Di Monte himself, in that	1	A. We don't vote. We have
2	personal communication that's referenced here,	2	a discussion and we try to achieve consensus.
3	had indicated that there was still some doubt	3	So I the consensus of the experts, my
4	in his mind, and certainly also in ours, as	4	experts who were with me on that occasion, was
5	to the way in which his findings could be	5	that because this was, as it says here,
6	interpreted should be interpreted from	6	a kinetic study, which was not indicating,
7	a technical perspective.	7	in itself, whether the presence in the brain
8	MR. TILLERY: I move to strike your	8	was an adverse effect, that this did not meet
9	answer as unresponsive.	9	the criteria for referral.
10	BY MR. TILLERY:	10	Q. Okay. And actually, if we go
11	Q. My question was, and I'll read it	11	to what you say, the 2a, "PRF Approach
12 13	back to you:  "And the same resolution was	12 13	Committee Comments." Do you see that section
14		14	
15	reached, wasn't it, that they weren't referable to the US EPA, correct?"	15	A. Yes, yes. Yes, I do, yes. Q. It says, I'm reading for the record:
16	A. Yes, that's correct.	16	"Studies of the kinetics of paraquat
17	Q. All right. Now, if we go to the	17	in the brain across a range of species were
18	next page, there's a section 1c and it says:	18	considered."
19	"Comments from project leader,	19	Do you see that?
20	including purpose of study and reason for	20	A. Yes.
21	referral (or non-referral)"	21	Q. What does that mean?
22	And it says:	22	A. Well, it means as well as the
23	"Has been agreed with the project	23	specific study that we had done when we had
24	leader, P Botham, to refer to the approach	24	done the analysis of paraquat in the brain of
25		25	non the nonhuman primate, the squirrel

	Page 892	2	Page 894
١,		1	
1 2	monkey, for Dr. Di Monte, we'd also, by that time in 2011, done or started to do some of	1 2	optional fractionator?
3	the kinetic studies that were subsequently	3	A. No, the scope of this discussion was limited to studies of kinetics, not
4	presented and published in rodents.		to studies of effects, which the Louise Marks
5		4 5	
6	So this discussion actually,	6	studies were toxicological effect studies, not
7	I believe, was a more general discussion about	7	kinetic studies.
8	whether kinetics, just the presence of a chemical in this case paraguat in an		Q. Okay, so her name didn't come up,
9	a chemical in this case paraquat in an animal model, whether it's the brain or	8	right? Her studies didn't come up?
10	anywhere else, whether that was those kind	10	A. I'm pretty sure it would not have
11	of data, kinetic data, whether they are	111	done, no. Q. All right. Now, continuing on this
12	actually referable under the criteria of	12	
13	6(a)(2), and the judgment was that we believed	13	paragraph, it says: "The committee considered that the
14	that they were not. That was the judgment at	14	findings do not represent an adverse effect or
15	the time.	15	
16	Q. And that took a fair knowledge of	16	a pre-cursor to an adverse event. Therefore
17	the FIFRA regulations to understand that,	17	the findings do not meet the technical criteria for referral as described in the Product Safety
18	didn't it?	18	PRF Criteria for Referral Guidance Document
19	A. That's right, yes, it did.	19	(version 4 dated 16th February 2009)."
20	Q. And as president or chairman, leader	20	Correct?
21	of that committee, you had to be the one that	21	A. Correct.
22	had a good, solid knowledge of those	22	Q. Did I read that correctly?
23	regulations and the interpretation of FIFRA	23	A. You did.
24	reporting obligations; is that correct?	24	Q. And that was the conclusion of the
25	A. Yes, and the way that they were	25	committee, right?
	Page 893	_	Page 895
1	codified within the criteria document that's	1	A. Correct.
2	referred to in the paragraph that you're now	2	Q. All right.
3	looking at. But of course we were always	3	And then let's go to the following
4	completely reliant on getting advice on this	4	page, which is the last page of the document.
5	from people in the United States who were the	5	If we look under 4d, it says, "Current finding
6	true experts, the real experts in PRF	6	submitted to [the] US EPA under TSCA 8(e) or
7	criteria.	7	FIFRA 6(a)2" and then it says:
8	Q. But you understand that Syngenta has	8	"No new information in the studies -
9	not designated a person to talk to me later	9	Not reportable."
10	today about 6(a)(2) obligations under FIFRA	10	No new information, right?
11	from the United States? Do you know that?	11	A. Yes.
12	A. Yes.	12	Q. So you knew that at that time,
13	Q. You know that you're the guy that	13	your committee knew that paraquat got in the
14	they've selected to speak on behalf of not only	14	brains of primates?
15	Syngenta AG in Europe but Syngenta Crop	15	A. Yes.
16 17	Protection, LLC. You were the one they	16	Q. Okay. And you knew that. From the
	selected. You understood that, right?	17	level of exposure that was given, you knew that
18 19	A. Of course I understand that, yes.	18	it would get into the brains of primates,
20	Q. All right. Now, when you did this	19	right?
21	analysis that's discussed under paragraph 2(a),	20 21	A. Yes.
22	PRF Approach Committee, and you considered, as you said, a range of species, did you	22	Q. Okay. And that's why you said you didn't report it?
23	consider at that point disclosing Louise	23	A. Because this was the interpret
24	Marks's studies that she did, the first mouse	24	the interpretation of the PRF criteria is that
25	study, three after her failed one, from a poor	25	you need to go beyond the finding of, in this
	brace, union area not rance one, from a poor	140	Tou need to go beyond me initially of, in this

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case, paraquat in the brain to have an	1	Q. Okay. So you're telling me,
2 understanding of whether that was likely	2	Dr. Botham, that you did a residue study that
3 to have created an adverse effect, and a	3	was reported in 2011 and that was referred
4 kinetic study in and of itself, which is what	4	to your committee by Kim Travis for evaluation
5 we are talking about here, did not allow you	5	as a potential referable finding to the US EPA.
6 to do that.	6	You analyzed it and said, we don't have
	7	to report it because we just found out about
7 MR. TILLERY: I move to strike your	8	it?
8 answer as unresponsive.	9	
9 BY MR. TILLERY:	10	A. No, no, we didn't have
Q. My question is simple. You knew,	1	Q. You are
from the level of exposure that was given, that	11	A. What I said no, what I said is
it would get into the brain of primates at that	12	we don't have to report it because it was our
time, correct?	13	interpretation of the FIFRA guideline, as was
14 A. Correct.	14	written down in the guidance document that was
MR. NARESH: I'll just object to	15	referred to in the earlier part of this
the form on that.	16	document, that the presence of a chemical was,
17 BY MR. TILLERY:	17	in and of itself, not reportable.
Q. And that's the reason you listed for	18	Q. What did you put as the conclusion
why you didn't disclose this, because it wasn't	19	for why? 4d, what's read it to me?
20 new information, correct?	20	"No new information in the
21 A. Yes.	21	studies"
22 Q. Now, how long had	22	That's what it says.
23 A. I	23	A. Yes. And actually, I believe that
24 Q. How long had you	24	that part, 4d, was actually placed into this
25 A. I'm sorry	25	document by the US PRF Committee technical
Page 897		Page 899
1 Q. How long had you known this	1	secretary, who is Dennis Hackett, which is why
2 information?	2	you can see his name mentioned here.
3 A. Which information?	3	Q. Well, where does he sign this
4 Q. The fact that paraquat got into the	4	document?
5 brains of primates. How long had you known it?	5	A. Well, there is no signature as
6 A. Well, since the studies that we	6	such, but it so I you know, I can't
7 were discussing earlier, so which were	7	answer that question as to where exactly
8 reported in 2011.	8	he fitted in on this occasion.
9 Q. So you knew from 2011. And the date	9	Q. So you're trying to say that you
of this is when?	10	didn't have anything to do with this, right?
11 A. This is also in 2011.	11	A. Well, I'm not I'm trying to say
12 Q. Okay. So you're referring to the	12	that I don't know that we, in the approach
studies from Dr. Di Monte?	13	committee, wrote "No new information in the
14 A. I'm referring to the primate study	14	studies - Not reportable."
15 of Dr. Di Monte, yes.	15	I don't recall who wrote that, but
16 Q. Well, now, wait a minute. We have	16	there's a suggestion here that might have come
a little catch-22 here, don't we? You put down	17	in from the US committee but we'd need
that this is not new information because you	18	to check that.
already knew this, it wasn't reportable. So	19	Q. Well, you know, maybe you could
that means you had to know it before	20	check it but, you know, this is my opportunity
	21	to ask you questions and it's my opportunity
Dr. Di Monte's residue studies. When did you learn it? What study?	22	to ask you questions and it's my opportunity to get to the answer.
	23	You have an approach committee,
	24	or a potentially referable approach committee.
analysis that was done by Dr. Ray which was conducted or reported in 2011.		
II/5 conducted of fenomen in /IIII	25	We had a form filled out by a scientist who had

	Page 900	Π	Page 902
1 0	charge of this study. He sent it to your	1	A. I'm happy to describe it as a new
	group, you looked at it, made a decision and	2	finding.
	the form was filled out. And that form says	3	Q. All right.
	"no new information,"	4	A. I've said to you the reason why
5	What was the prior information you	5	it was not reportable, however.
	had before this residue study that paraquat got	6	Q. All right.
7 i	into the brains of primates?	7	MR. TILLERY: Let's take a
8 1	A. Yeah. I believe that this when	8	
	it says "no new information," that that's	9	two-minute break if we can, okay.
	perhaps not an accurate representation of what	10	THE VIDEOGRAPHER: We are going off the record. The time is 12:08.
	we were saying in that approach committee;	11	
	that of course the analysis that was done	12	(Off the record.) THE VIDEOGRAPHER: We are back on
	of the amount of paraquat in the brains of	13	
14 I	Dr. Di Monte's studies study, was new	14	the record. The time is 12:12.
			MR. NARESH: As we said off the
	because that analysis had not been done before.	15	record, for the record Syngenta will mark
17		16	yesterday's, today's and tomorrow's
1	Now, there are two possibilities	17	deposition transcripts as confidential
18 h	here: either the way in which this was written	18	pursuant to the terms of the protective
	here, "No new information in the studies -	19	order, and the witness will also reserve
	Not reportable," was an incorrect	20	the right to read and sign for all three
	representation of what it said on the previous	21	days.
	page, which is that the reason for them not	22	BY MR. TILLERY:
	being reportable is not because they're not	23	Q. Dr. Botham, what is the Federal
	new but because they don't rep they're not	24	Insecticide, Fungicide, and Rodenticide Act,
25 r	necessarily representing an adverse finding.	25	FIFRA for short?
	Page 901		Page 903
1	Or, at that time, and I don't	1	MR. NARESH: And Steve, may I have
2 r	recall, somebody was telling us that we it	2	a standing objection to the extent this
	was already known that paraquat gets into the	3	line of questioning is calling for legal
	orain of nonhuman primates from previous	4	conclusions?
	publications, and that bit I don't recall.	5	MR. TILLERY: You can. The issue,
6 '	Q. Well, that's what I'm asking; if you	6	though, of a referable committee puts
	have any studies you're relying on that you did	7	that into a very questionable stance, but
8 t	hat showed that paraquat got into the brains	8	the fact is I'll agree to a continuing
	of nonhuman primates, what were they?	9	objection to the extent that you think
10	A. Well, I don't believe that Syngenta	10	these are calling for legal conclusions.
	or its predecessors would have had any	11	Okay.
12 0	or its predecessors would have had any or evious studies that it had done that showed	12	BY MR. TILLERY:
	hat paraquat got into the brain of nonhuman	13	
	orimates as part of that discussion, so I		Q. Do you understand the question or do
	out, again, I may be not recalling the facts	14	you wish to have it read back?
	fully here, but that would be what I would say	15	A. So the question was what is FIFRA.
		16	So that is the legal requirements in the
18	oday.	17	United States that govern the registration and
	Q. All right. So this, then, was	18	sales of plant protection products and
	lecidedly a new finding, wasn't it?	19	pesticides.
20	A. It was a new finding; that's	20	Q. And are there similar rules in other
	certainly one interpretation, yes.	21	countries?
22	Q. Okay. Well, do you have a better	22	A. There are.
	nterpretation	23	Q. And how many countries in how
24	A. No, I	24	many countries does Syngenta sell paraquat?
25	Q as for why	25	A. The figure today, I don't have that

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1	to hand so I would need to be given notice of	1	violation topics or 6(a)(2)
2	that if you need an accurate answer.	2	interpretation of discussion points were
3	Q. Okay. Syngenta is certainly	3	reserved for him, with the exception,
4	familiar with what is commonly referred to	4	as you said, of the one pulled back for
5	as section 6(a)(2) of FIFRA, right?	5	Mr. Dixon as to US EPA, but all the
6	A. It is.	6	6(a)(2) discussions were left with
7	Q. And would you agree that, in	7	Dr. Botham under his topics.
8	general, 6(a)(2) creates a reporting obligation	8	But, anyway, we'll go forward.
9	for pesticide registrants?	9	BY MR. TILLERY:
10	A. It does.	10	Q. Do you want that question read back?
11	Q. And what is your understanding of	11	A. Please do, yes. Please read back.
12	a pesticide registrant under the US EPA rules?	12	MR. TILLERY: Ms. Reporter, would
13	A. An organization, a company that is	13	you mind reading back that question to
14	engaged in the manufacture, sales and	14	Dr. Botham.
15	marketing of pesticides.	15	(Whereupon, the record was read
16	Q. And that's the one who's primarily	16	back by the stenographer.)
17	responsible for the registration of that	17	THE WITNESS: Yes, it does.
18	chemical, right?	18	BY MR. TILLERY:
19	A. That is correct.	19	Q. And to follow up on that, that means
20	Q. And since 1965, including the	20	that EPA officers don't have enough people
21	corporate predecessor ICI for Syngenta, has	21	to sit in your laboratories or to supervise you
22	Syngenta been, either by itself or in	22	directly; they depend upon you to have
23	cooperation with Chevron, the registrant for	23	an affirmative reporting obligation, correct?
24	paraquat in the United States?	24	MR. NARESH: Objection; form and
25	A. It has.	25	foundation.
	Page 905		Page 907
1	Q. And that's from the first date of	1	THE WITNESS: Yes, they do.
2	sale of the chemical in the United States,	2	BY MR. TILLERY:
3	correct?	3	Q. So you keep, I would imagine,
4	A. I believe so.	4	extremely tight security in your laboratories,
5	Q. And that registrant position imposes	5	don't you?
6	duties and obligations on Syngenta, doesn't it?	6	A. Security in what sense are you
7	A. It does.	7	meaning here?
8	Q. Before we get into the details of	8	Q. In that I would imagine if I drove
9	this discussion, I'd just like to talk about it	9	into Jealott's Hill where you were and decided
10	from a 30,000-foot section if we can, okay.	10	I wanted to take a peek into your laboratories,
11	A registrant's duties are to assist	11	that probably wouldn't be accepted, would it?
12	an agency that has supervision over literally	12	A. It would be allowable if you were
13	thousands of different chemicals, doesn't it?	13	officially invited to do so.
14	MR. NARESH: Let me also just add	14	Q. Right. Otherwise you would escort
15	a scope objection. I believe that	15	me off the property, right?
16	there's a different witness designated on	16	A. Yes, that would be one possible
17	EPA-related topics, so I don't have	17	outcome.
18	a problem with you asking Dr. Botham	18	Q. All right. Which means that you're
19	about these in his personal capacity but	19	preserving the integrity of your research, just
20	I will note the scope objection on the	20	like other companies are doing, right?
21	record.	21	A. That's right.
22	MR. TILLERY: Well, just so we're	22	Q. Nothing unusual or untoward or
23	clear, and I'll note your objection and	23	improper. This is what you do, what companies
24	allow it to be continuing if you wish,	24 25	do.
25	but the fact is that all of the 6(a)(2)	43	A. Yes.

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1	Q. I'm not suggesting otherwise. Okay.	1	know, to the extent that it could fall within
2	So the bottom line is that you're	2	the scope of these regulations. Correct?
3	the master and have the knowledge about your	3	MR. NARESH: Objection to form.
4	findings in your laboratories?	4	THE WITNESS: Yes. In principle,
5	A. Yes.	5	that is correct.
6	Q. Right?	6	BY MR. TILLERY:
7	We just finished talking about	7	Q. All right.
8	monkey residue studies. There was no EPA	8	Now, what does 6(a)(2) require
9	representative sitting in that lab or in that	9	pesticide registrants like Syngenta to report
10	PRF Committee, were there?	10	to the EPA?
11	A. No.	11	A. Our interpretation of the guidance
12	Q. None of them knew anything about	12	on 6(a)(2) is it requires you to report and
13	what Kim Travis was doing or Dr. Ray was doing	13	here we're talking about toxicological
14	in Greensboro, were they?	14	findings. It requires you to report new
15	A. No.	15	findings, but new findings are also further
16	Q. They're relying upon your	16	defined as being findings which indicate a new
17	affirmative obligation, a good faith	17	and potentially hazardous property associated
18	obligation, to fully disclose what you know,	18	with that chemical.
19	right?	19	Q. Do you understand 6(a)(2) to require
20	A. Where we believe that that is	20	a registrant to report information regarding
21	required under FIFRA 6(a)(2), yes.	21	adverse effects on the environment of the
22	Q. Do you know of any we're going	22	pesticide?
23	to go through all of these FIFRA obligations	23	A. That's right, yes.
24	today. But do you know of any single time	24	Q. Okay. And do you understand FIFRA
25	it says, in any of the FIFRA regulations, that	25	to define adverse effect to mean "any
	Page 909		Page 911
1	you're given discretion based upon what you	1	unreasonable risk to man or the environment.
2	believe compliance is? Can you point me to	2	taking into account the economic, social and
3	a single one of those regs that say that where	3	environmental costs and benefits of the use of
4	Phil Botham believes we don't have to report	4	any pesticide"?
5	it, he's good to go, he doesn't have to report	5	A. Yes.
6	this finding?	6	Q. Okay.
7	MR. NARESH: Objection to form.	7	MR. TILLERY: Now, we're going to
8	THE WITNESS: We I wouldn't say	8	put on the screen Exhibit No. 80.
9	that that is the right question to ask	9	(Botham Exhibit 80 marked for
10	here. We follow the detail of that	10	identification.)
11	guidance that is available under 6(a)(2).	11	BY MR. TILLERY:
12	BY MR. TILLERY:	12	Q. This is FIFRA 6(a)(2) and it's also
13	Q. I mean, you understand that because	13	7 U.S.C. section 136d(a)(2).
14	there are so many companies and so many	14	Do you see that?
15	thousands of chemicals, that an administrative	15	A. I do.
16	agency, no matter how big it is, it's	16	Q. Is this what you understand 6(a)(2)
17	impossible for them to do this affirmatively on	17	to say regarding existing thoughts and
18	their own, right?	18	information?
19	A. Of course.	19	A. Well, I don't recall having read
20	Q. And you know that means, and it's	20	this document very recently, so I accept that
21	set out very clearly in the EPA's regulations,	21	what you say is correct.
22	FIFRA, very clearly that they depend upon the	22	Q. And how is it that you received your
23	honesty and integrity of the chemical companies	23	training and education on the PRF Committee
24	to come forward about their pesticides, speak	24	about FIFRA 6(a)(2) reporting obligations?
25	the truth, speak all of the information they	25	A. We received guidance on that,

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1	education on that, as you put it, from our	1	external lawyers.
2	experts on 6(a)(2) in the Syngenta United	2	Q. And how many years have you had
3	States offices.	3	lawyers, in-house lawyers and outside lawyers,
4	Q. Are those lawyers?	4	sitting in on your paraquat/Parkinson's disease
5	A. No, they would be technical people.	5	scientific discussions and meetings? How many
6	Q. Okay. So you used scientists or	6	years you been doing that?
7	other regulatory people to tell you this but	7	A. Well, in my experience,
8	not lawyers?	8	specifically for paraquat and Parkinson's
9	A. Well, I'm talking about how we	9	disease, that has been since around 2007.
10	directly receive that education. So when	10	Q. Okay. Was there something that
11	I use "technical," that includes regulatory.	11	caused you to start having lawyers present at
12	They, in turn, will undoubtedly, I'm sure,	12	that time?
13	have received guidance from lawyers.	13	A. We were advised by our internal
14	Q. And do lawyers sit in on the	14	legal department that we should do this for
15	PRF Committee meetings?	15	some of our meetings.
16	A. Not on the PRF Approach Committee	16	Q. Involving paraquat and Parkinson's
17	that I was responsible for. I would need	17	disease, correct?
18	to be reminded as to whether a lawyer sat on	18	A. Correct.
19	the US PRF Committee. I don't have that	19	Q. Okay.
20	information to hand at the moment.	20	Is there any of these FIFRA sections
21	Q. Is it common to have lawyers sitting	21	that you're aware of that Syngenta does not
22	in on scientific meetings at Syngenta?	22	have to follow?
23	A. It's not commonly done. It is done	23	A. I'm not aware of any such sections.
24	under certain circumstances.	24	Q. So we're going to go through a
25	Q. Is it common when you're dealing	25	number of sections. To your knowledge, have
	Page 913	-	Page 915
١.			
1	with paraquat and Parkinson's disease issues?	1	you ever been told by anyone, anybody at the
2	A. We, generally speaking, have, when	2	EPA or anybody at legal department, any advice
3	we've been having our discussions on paraquat	3	whatsoever, any person in your operation ever
4	and Parkinson's, to have a lawyer with us,	4	discussed with you that Syngenta gets a pass
5	yes.	5	from FIFRA on any section?
6	Q. But not when you're dealing with	6	A. The discussions we've had have been
7	other chemicals, right?	7	only have been limited to getting a proper
8	A. Not generally speaking. Some of	8	interpretation of what those FIFRA guidelines
9	the chemicals, that has occurred, but,	9	say so that we can operate them in practice
10	generally speaking, not.	10	in our committees.
11	Q. Okay. And you even go so far as	11	Q. Yeah, let's go back to my question,
12	to have outside counsel present; not just your	12	okay. Do you know of any reason why any
13	in-house people like Mr. Nadel or Mr. Solomon.	13	section under FIFRA doesn't apply to Syngenta?
14	You'd even have outside people present,	14	A. No.
15	wouldn't you?	15	Q. All right.
16	A. Not always. Sometimes.	16	MR. TILLERY: Now let's go to
17	Q. Who would those people be?	17	Exhibit 81.
18	A. They would be lawyers employed by	18	(Botham Exhibit 81 marked for
19	external counsel who had been appointed by our	19	identification.)
20	own internal counsel.	20	MR. NARESH: And Stephen, I just
21	Q. Okay. And that would again be when	21	remind you that we need a break at some
22	you have scientific discussions about paraquat	22	point in the next ten minutes or so.
23	and Parkinson's disease, right?	23	MR. TILLERY: You tell me when,
24	A. I yes, but I reiterate only some	24	Ragan
25	of those discussions. Many would not include	25	MR. NARESH: Yeah, I just

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1	if you're going to you know, if the	1	Q. Okay.
2	question on this exhibit is under	2	MR. TILLERY: I'm moving on to
3	10 minutes, I think let's do this	3	a more lengthy section. If you want to
4	exhibit, and if it's not going to be	4	break here, that's up to you. Is that
5	10 minutes, let's	5	fine?
<b> </b> 6	MR. TILLERY: Okay. All right.	6	THE WITNESS: I think that probably
7	We'll do this exhibit, it's fairly quick,	7	would be helpful if we could.
8	and then we'll finish.	8	MR. TILLERY: All right, we will.
9	BY MR. TILLERY:	9	How long did you want for your lunch?
10	Q. Are you familiar with this	10	Thirty minutes?
11	definition? This is 7 U.S.C. 136(bb),	11	THE WITNESS: Could we take
12	"Unreasonable adverse effects on the	12	40 minutes this time? I
13	environment."	13	MR. TILLERY: Yes.
14	Do you see that?	14	THE WITNESS: That would be
15	A. Yes, I do.	15	appreciated, thank you.
16	Q. Okay. It imposes on the registrant,	16	MR. TILLERY: Yes, we can.
17	and this is what I wanted to raise with you,	17	THE WITNESS: Thank you.
18	a duty to keep the administrator informed about	18	MR. TILLERY: Forty minutes.
19		19	THE WITNESS: Okay.
20	the registrant's pesticide projects, doesn't it? Do you see that?		
21	A. Yes.	20 21	MR. TILLERY: All right.
22			Thank you.
23	Q. Did you understand that when you	22	THE VIDEOGRAPHER: We are going off
	were having that PRF meeting about the monkey	23	the record. The time is 12:32.
24 25	residue?	24 25	(Lunch break taken.)
25	A. We did, because we were this is  Page 917	25	THE VIDEOGRAPHER: We are back on  Page 919
1	where the term "unreasonable adverse effects"	1	the record. The time is 1:15.
2	was part of our conversation.	2	BY MR. TILLERY:
3	Q. Okay. So you knew all that time you	3	Q. Dr. Botham, are you ready to
4	were keeping these sections in mind when you	4	proceed, sir?
5	had your meetings, right?	5	A. I am.
6	A. Yes, and the way in which we did	6	Q. Okay.
7	that was through the way in which these	7	We're back to FIFRA and that
8	requirements had been placed into our guidance	8	discussion. Sections 12(a)(2)(N) and (Q) make
9	documents for potentially referable finding.	9	it unlawful for a registrant to fail to file
10	Q. Do you have a policy in the company	10	reports required by this chapter, and that's
11	about referable findings?	11	the full cite of that is 7 U.S.C.
12	A. We do. We have a policy and	12	section 136j(a)(1)(2)(N) and (Q).
13	a guidance document.	13	Did you understand that to be
14	Q. Okay. And that guidance document	14	a FIFRA obligation?
15	was created to explain or give guidance about	15	MR. NARESH: I'll have the same
16	what you have to do under the FIFRA reporting	16	standing objection on calling for a legal
17	obligations?	17	conclusion.
18	A. That's correct, yes.	18	MR. TILLERY: And we agree with
19	Q. Have you disclosed that as	19	that.
20	a reliance document for this deposition?	20	BY MR. TILLERY:
21	A. I don't I can't answer that,	21	Q. Did you understand that was
22	I'm sorry.	22	required, sir?
		23	A. Well, this is down to a level of
23	Q. Have you looked at that guidance	23	A. Well, this is down to a level of
23 24	Q. Have you looked at that guidance document recently?	24	detail where I can't comment on the specific

	Page 920		Page 922
		١.	
1	principle, of course, yes.	1	Q. Now, aside from FIFRA, were you also
2	Q. Well, you understood that it was	2	aware from your manual your Syngenta policy
3	unlawful to fail to file the reports that FIFRA	3	manual regarding reporting obligations, which
4	called for, let's put it that way?	4	we're going to talk about in a minute that
5	A. Yes. As I say, as a general	5	there's a general false statement statute
6	principle, that's correct, yes. I understand	6	applicable in the United States?
7	that.	7	MR. NARESH: I'll object on scope
8	Q. Okay. And it's also unlawful	8	grounds as well on top of the prior ones,
9	to falsify all or part of any information	9	and have a standing objection to this one
10	related to the testing of any pesticide.	10	as well.
11	Did you understand that?	11	MR. TILLERY: Yes.
12	A. Yes, I do.	12	THE WITNESS: I'm not sure whether
13	Q. Did you understand it was unlawful	13	I was aware of that.
14	to falsify any part of any information,	14	MR. TILLERY: Well, let's pull up
15	including the nature of, any observation made	15	82 at this point.
16	or conclusion or opinion formed, which is	16	(Botham Exhibit 82 marked for
17	submitted to the administrator? Did you	17	identification.) MR. TILLERY: Perfect.
18	understand that?	18 19	
19	A. Yes.	20	BY MR. TILLERY: Q. And this is 18 U.S.C. section
20	Q. Okay. Or, even broader, that the		`
21	person, like you, knows it's going to be	21	1001(a). Do you see where it says: " whoever, in any matter within
22	furnished to the administrator. Did you know	22	
23	that?	24	the jurisdiction of the executive, legislative,
24	A. That bit I don't understand,	25	or judicial branch of the Government of the
25	I'm sorry.	25	United States, knowingly and willfully -
	Page 921		Page 923
1	Q. Let's just put it this way.	1	falsifies, conceals, or covers up by any trick,
2	Let's say Montague Dixon signs the papers in	2	scheme, or device a material fact."
3	the United States with the disclosures, and	3	Do you see that?
4	let's say you know what those disclosures are	4	A. Yes.
5	as chair of the potential referable findings	5	Q. Or:
6	committee, or what did you call it, the	6	" makes any materially false,
7	specific	7	fictitious, or fraudulent statement or
8	A. It's the PRF Approach Committee.	8	representation"
9	Q. Approach committee. As head of that	9	Do you see that?
10	committee, if you know this is going to be	10	A. Yes.
11	submitted, did you understand that to the	11	Q. " or makes or uses any false
12	extent you know that this information being	12	writing or document knowing the same to contain
13	sent to Mr. Dixon is going to be filed in	13	any materially false, fictitious, or fraudulent
14	a form that you know is wrong, you understood	14	statement"
15	that was also improper and against the law in	15	Do you see that?
16	the United States?	16	A. Yes.
17	A. Yes, that's that makes sense.	17	Q. This is the false statement rule or
18	Q. Okay. And Syngenta also understands	18	statute. Did you have any understanding one
19	that FIFRA provides criminal penalties for	19	way or another whether that governed your
20	knowing violations of FIFRA, right?	20	behavior in terms of reporting or failing
21	A. Yes.	21	to report to the US EPA?
22	Q. And that's in prison and up to one	23	A. I'll take this opportunity to restate that the legal obligation as
23	year, correct?		I understood it was with the US PRF Committee
24	A. I can't remember that but I take	24 25	and not with the PRF Approach Committee.
25	your word for it.	143	and not with the Fixt Approach Committee.

We were informing the US PRF Committee but not actually accountable, if you like, for the final part and the important legally based part of the process. That was my understanding.  Q. Well, did Dr. Travis go to the United States and make a pitch about the monkey residue studies?  A. Tun ort -1 don't believe that he tid, no.  Q. Was Syngenta aware of this statute, whicher or not you personally were not?  A. Yes, I'm sure it was, yes.  Q. Okay. And swritten much more specific reporting requirements that implement of (a)(2), don't they?  A. Yes, I'm sure it was, yes.  Q. Okay.  A. Yes, I'm sure it was, yes.  Q. Okay.  MR. TILLERY: We can take that one down.  MR. TILLERY: We can take that one down.  MR. TILLERY:  Q. You've aware of that?  A. Yes, I'm sure it was, yes.  Q. You've mentioned you have, 24 at Syngenta, a policy or policies for  Page 925  1 compliance with section 6(a)(2). Are those written policies?  A. They are.  A. Mell, we have an overarching policy which basically says we will comply with legislation of this sort, and then below that we have guidance document, which are more technical and are guidance iterable foundance iterable foundance of coument, which are more technical and are guidance iterable foundance of coument, which are more technical and are guidance iterable foundance of coument, which are more technical and are guidance iterable foundance of coument, which are more technical and are guidance iterable foundance of coument, which are more technical and are guidance iterable foundance of coument, which are more technical and are guidance of this statute, and then below that we have guidance document, yeah.  Q. Okay. Oyou have it there with you identify a potentially refereable foundance of coument, yeah.  Q. Okay, Oyou have it there with you identify a potentially refereable foundance of coument, yeah.  Q. Okay, Oyou have it there with you identify a potentially refereable foundance of coument, yeah.  Q. Okay, Oyou have it there with you identify a potentially refereable foundance of co		Page 924		Page 926
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10   Re did, no.   10   20   Was Syngenta aware of this statute, whether or not you personally were not?   12   20   20   20   21   23   24   24   25   26   26   27   27   27   28   27   28   28   29   28   29   28   29   29				
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Q. Okay. Do you have it there with you?  18 you?  19 A. I do, actually. I actually brought 20 it out in the break to have a quick another 21 look at. 22 Q. Okay. And feel free, of course, 23 if you have the guidance document there with 21 specify the kinds of information the company does not report to the US EPA?  19 A. No, it's not explicit in that 20 sense, no. 21 Q. Okay. Are there various different 22 updates or iterations of that policy? 23 A. There are, yes. So I mean,		A. Guidance document, yeah.	16	
18 you? 19 A. I do, actually. I actually brought 20 it out in the break to have a quick another 21 look at. 22 Q. Okay. And feel free, of course, 23 if you have the guidance document there with 29 does not report to the US EPA? 20 sense, no. 21 Q. Okay. Are there various different 22 updates or iterations of that policy? 23 A. There are, yes. So I mean,			17	
19 A. I do, actually. I actually brought 20 it out in the break to have a quick another 21 look at. 22 Q. Okay. And feel free, of course, 23 if you have the guidance document there with 29 A. No, it's not explicit in that 20 sense, no. 21 Q. Okay. Are there various different 22 updates or iterations of that policy? 23 A. There are, yes. So I mean,	18		18	
20 it out in the break to have a quick another 21 look at. 22 Q. Okay. And feel free, of course, 23 if you have the guidance document there with 20 sense, no. 21 Q. Okay. Are there various different 22 updates or iterations of that policy? 23 A. There are, yes. So I mean,	19	A. I do, actually. I actually brought	19	
21 look at. 22 Q. Okay. And feel free, of course, 23 if you have the guidance document there with 21 Q. Okay. Are there various different 22 updates or iterations of that policy? 23 A. There are, yes. So I mean,	20			
Q. Okay. And feel free, of course, updates or iterations of that policy?  3 if you have the guidance document there with A. There are, yes. So I mean,	21			·
23 if you have the guidance document there with 23 A. There are, yes. So I mean,	22	Q. Okay. And feel free, of course,		
	23			
re - y - wy vo av as as y y sa avera so. Only;      4 T   1 MULL LIGYE HILE IV THIU EVELVILLING HILLIEU	24		24	I didn't have time to find everything during
	25			

	Page	928		Page 930
1	in 2015.		1	consultant would, again, carry added
2	Q. Okay.		2	significance because reportable information
3	MR. TILLERY: Let's pull up		3	would not be against the registrant's own
4	number 83, please. This will be		4	commercial interest? Do you understand that?
5	Plaintiff's Exhibit No. 83, sir.		5	MR. NARESH: Objection to form.
6	(Botham Exhibit 83 marked for		6	THE WITNESS: Yes, I understand,
7	identification.)		7	yes.
8	MR. TILLERY: For the record, this		8	BY MR. TILLERY:
9	is 40 C.F.R, Code of Federal Regulations,		9	Q. All right. Do you know how the EPA
10	section 159.158(a).		10	defines "a qualified expert"?
11	BY MR. TILLERY:		11	A. I can't give you a rendition of
12	Q. Is Syngenta familiar with this		12	that from memory, no.
13	document?		13	Q. All right.
14			14	MR. TILLERY: Let's pull up
	A. Yes, I'm sure Syngenta is familiar.		15	
15	Q. What's your understanding of the		16	Exhibit 84, please.
16	purpose for the EPA requirement that		17	(Botham Exhibit 84 marked for
17	a registrant report relevant inclusions or			identification.)
18	opinions of a person "employed or retained		18	BY MR. TILLERY:
19	(directly or indirectly) by the registrant"?		19	Q. Exhibit 84 is 40 C.F.R., that's Code
20	MR. NARESH: I'll object to the		20	of Federal Regulations, section 159.153(b).
21	form.		21	I'll just go through this with you but you can
22	THE WITNESS: Well, my		22	follow along with me if you see that.
23	interpretation of that would be to		23	"Qualified expert' means one who,
24	that this would include not just people		24	by virtue of his or her knowledge, skill,
25	on the payroll but also people who		25	experience, training, or education, could be
	Page	929		Page 931
1	might be retained as consultants.		1	qualified by a court as an expert to testify on
2	BY MR. TILLERY:		2	issues related to the subject matter on which
3	Q. Okay. So you understand that the		3	he or she renders a conclusion or opinion."
4	reason for that reporting requirement is that		4	Do you see that?
5	the conclusions or opinions of a registrant's		5	A. I do.
6	own employee would carry added significance		6	Q. And would you understand the reason
7	because reportable information would not be		7	for that reporting requirement is that the
8	against the registrant's own commercial		8	conclusions or opinions of a qualified expert
9	interest.		9	carry added significance because the expert's
10	Do you see that?		10	conclusions and opinions are intrinsically
11	A. Yes.		11	important? Would you agree?
12	Q. All right. And if you look at this		12	A. Yes, I agree.
13	further, what's your understanding of the		13	Q. Okay. Would you agree, and
14	purpose for the second requirement that		14	I'm referring to you as Syngenta now, with the
15	a registrant report relevant conclusions or		15	following statement: As a general matter,
16	opinions of a person "for whom the registrant		16	the EPA frequently relies on the weight of
17	requested the opinion or conclusion in		17	evidence in making pesticide regulatory
18	question."		18	decisions and it considers expert opinion that
19	Do you see that?		19	tends to confirm or validate otherwise
20	A. Yes.		20	reportable information. In this context,
21	A. 1 es. Q. And		21	expert opinions can play an important role in
22	Q. And A. That		22	agency decision-making?
23			23	MR. NARESH: Objection to form,
	Q. And likewise, do you understand the		24	foundation.
24	reason for that reporting requirement is that		25	
25	the conclusion or opinion of a registrant's		25	THE WITNESS: I and the question

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		1	-
1	was do I agree with that? Yes, I do.	1	BY MR. TILLERY:
2	BY MR. TILLERY:	2	Q. Where does that section, "Phil
3	Q. Do you agree with that statement?	3	Botham doesn't think it's relevant," where do
4	A. Yes. Mmm-hmm.	4	I find that in the code?
5	Q. There's a difference between	5	A. No, no, I if I may just
6	section 159.158's reporting requirement for a	6	elaborate on what I mean by that, the
7	registrant's employees and consultants on the	7	Q. No, I'm asking you no, excuse me.
8	one hand, and for qualified experts on the	8	I'm asking you to answer my question. Where is
9	other hand, isn't there?	9	that contained in the code? Where does it say,
10	A. Again, because I don't study the	10	"If Dr. Botham and the potential referable
11	have never studied the detail of these	11	committee thinks it is not relevant, we don't
12	documents, I take your word for that.	12	have to report it"? Where does it say that?
13	Q. Okay. And the difference is that	13	A. It doesn't say that, and I would
14	section 159.158's reporting requirement for	14	like an opportunity
15	qualified experts is that it is not limited	15	Q. All right.
16	to experts with a relationship to the	16	A if I may to explain what I mean
17	registrant.	17	by this.
18	Do you understand that?	18	Q. You'll get your chance because your
19	A. Okay. That makes sense, yes.	19	counsel has an opportunity. I want just direct
20	Q. So, in other words, if a registrant	20	questions, sir, to my I'm sorry, direct
21	comes into possession of reportable information	21	answers to my questions.
22	from a qualified expert, the registrant must	22	So when Dr. Louise Marks worked for
23	report that information to the EPA regardless	23	Syngenta, she was a qualified expert within
24	of who that expert is, correct?	24	the meaning of US EPA's definition, wasn't she?
25	A. Yes.	25	A. Yes.
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1	Q. All right.	1	MR. NARESH: Object to the form.
2	A. If we believe that the information	2	BY MR. TILLERY:
3	that's provided is indeed relevant to the	3	Q. And she was both a Syngenta employee
4	reporting requirements with	4	and an expert, wasn't she?
5	Q. Where	5	MR. NARESH: Same objection.
6	A under the legislation, yes,	6	THE WITNESS: Yes.
7	of course.	7	BY MR, TILLERY:
8	Q. Okay. Where do you see the words in	8	Q. And because Dr. Marks was a Syngenta
9	any of the FIFRA reporting obligations that	9	employee, Syngenta would have been required
10	puts in "if Dr. Botham believes the	10	to report any of Dr. Marks's conclusions and
11	information's relevant"? Do you know that	11	opinions if "the information was relevant
12	part'?	12	to the assessment of the risks or benefits"
13	MR. NARESH: Object to the form	13	of paraquat, correct?
14	MR. TILLERY: Can you direct me to	14	MR. NARESH: Objection to form.
15	that section?	15	THE WITNESS: Correct.
16	MR. NARESH: I'll object to the	16	BY MR. TILLERY:
17	form	17	Q. Okay. And the fact that Dr. Marks
18	THE WITNESS: I can't direct you	18	was an expert is another independent reason
19	to	19	Syngenta would have been required to report any
20	MR. NARESH: and I'll also	20	of Dr. Marks's conclusions and opinions if "the
21	object to the foundation. I also	21	information was relevant to the assessment of
22	think it's unfair to	22	
23	MR. TILLERY: You've done it twice.	23	the risks or benefits" of paraquat, right?
24			MR. NARESH: Objection to form.
	Let's start over.	24	THE WITNESS: Yes, and that is
25	Agree. I stipulate. You did it.	25	where we have internally done our own

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1	guidance as to what the word "relevant"	1	a Syngenta consultant and an expert, correct?
2	means.	2	MR. NARESH: Same objection.
3	BY MR. TILLERY:	3	THE WITNESS: Correct.
4	Q. Okay. And your strike that.	4	BY MR. TILLERY:
5	And 16 years after her studies were	5	Q. And because Dr. Di Monte was
6	done, you sent them to the US EPA, didn't you?	6	a Syngenta consultant, Syngenta would have been
7	A. That is correct. Yes, in 2019	7	required to report any of Dr. Di Monte's
8	information on those studies was sent to the	8	conclusions and opinions if the information was
9	EPA.	9	relevant to the assessment of the risks or
10	Q. And did you know that followed my	10	benefits of paraquat, correct?
11	letter to counsel saying that I was going	11	MR. NARESH: Same objections.
12	to send them myself if they weren't sent in?	12	THE WITNESS: Correct, and that
13	You knew that, too, right?	13	would have been the case even if
14	A. I was made aware of that.	14	he had not been a consultant. So if
15	Q. Yes. In that 16-year period, the	15	he was if he had not been engaged in
16	fact that she was an expert, the fact that	16	that way, even then there would have been
17	Dr. Marks was an employee didn't matter,	17	some potential relevancy.
18	did it? It wasn't sent in.	18	BY MR. TILLERY:
19	MR. NARESH: Objection to form.	19	Q. Okay. And the fact that
20	THE WITNESS: It wasn't sent in	20	Dr. Di Monte was an expert is another
21	because of the way in which we had	21	independent reason Syngenta would have been
22	defined "relevant" at the time the	22	required to report any of Dr. Di Monte's
23	studies were done.	23	conclusions and opinions if the information was
24	BY MR. TILLERY:	24	relevant to the assessment of the risks or
25	Q. Did you redefine "relevant" in	25	benefits of paraquat, right?
	Page 937		Page 939
1	December 2019?	1	MR. NARESH: Same objections.
2	A. I did not, no.	2	THE WITNESS: Correct.
3	Q. Okay. So somebody redefined the	3	MR. NARESH: Steve, I don't know if
4	word "relevant." Suddenly, Dr. Marks's reports	4	you saw, there are some comments in the
5	became relevant in December 2019, right?	5	chat about microphone feedback that
6	MR. NARESH: Objection to form,	6	others are hearing. I'm not hearing it
7	foundation.	7 8	but it sounds like
8	BY MR. TILLERY:	9	MR. TILLERY: I'm hearing a lot of
9	Q. Right?	10	THE VIDEOGRAPHER: Yes.
10 11	A. That was the opinion of some of my Syngenta colleagues, yes.	11	MR. TILLERY: I'm getting a lot of
12	Okay. Do you know if any word	12	feedback.
13	changed in the FIFRA obligations or any of	13	THE VIDEOGRAPHER: Yeah.
14	FIFRA rules about what the word "relevant"	14	MR. NARESH: And I'm
15	meant in that period of time?	15	MR. TILLERY: And I don't know
16	A. I don't believe that any	16	what's causing it. We don't get it when
17	fundamental change was made, no.	17	it's during the chat periods but we're
18	Q. Okay.	18	not hearing it now but everything's
19	And Dr. Dino Di Monte, he, too, was	19	turned off.
20	a qualified expert within the meaning of the	20	THE WITNESS: Yeah, I've been
21	EPA's definition, wasn't he?	21	getting it at this end as well.
22	MR. NARESH: Objection to form.	22	THE VIDEOGRAPHER: Yeah, I've been
23	THE WITNESS: He was.	23	getting it here as well and it's
24	BY MR. TILLERY:	24	obviously on the recording.
25	Q. So Dr. Di Monte would have been both	25	MR. TILLERY: Is that on the

	Page 940		Page	942
1	recording as well?	1	BY MR. TILLERY:	
2	THE VIDEOGRAPHER: It is,	2	Q. Does Syngenta have a policy or some	
3	unfortunately, yes. It's like a very	3	other safeguard to ensure compliance with	
4	high-pitched squeak. I don't know if	4	section 158 or section 159.158's requirement	
5	everybody else is hearing the same.	5	to report the opinions and conclusions of	
6	MR. TILLERY: Yeah. Well, we're	6	Syngenta's employees or consultants?	
7	going to if it continues, we'll have	7	MR. NARESH: Objection to form.	
8	to stop for a bit to see if we can ferret	8	THE WITNESS: Within our guidance	
و	out what's going on. There is	وا	it has both. Yes, it sets out very	
10	no electronic equipment anywhere near the	10	clearly the responsibilities of employees	
11	devices so it's certainly not here.	11	and also how we deal with opinion from	
12	I just	12	consultants and other external opinion,	
13	THE VIDEOGRAPHER: And every	13	even from those who are not consulting.	
14	MR. TILLERY: It could be the	14	BY MR. TILLERY:	
15	microphone itself in the device could be	15	Q. And does the policy or safeguard	
16	failing.	16	that you mentioned, does it take the same	
17	THE VIDEOGRAPHER: Yeah	17	position that we've discussed in this	
18	MR. TILLERY: I don't know what	18	deposition so far; that is that those employees	
19	it is.	19	or those experts or those consultants that	
20	THE VIDEOGRAPHER: Okay. I'll keep	20	you're working with are who are employed	
21	an eye on it. I'll listen in and let	21	at Syngenta, have to be disclosed, the	
22	you know.	22	information for them has to be disclosed to the	
23	MR. TILLERY: All right. Okay.	23	EPA if it otherwise meets the filing	
24	BY MR. TILLERY:	24	requirements?	
25	Q. Let's talk about Syngenta's policies	25	MR. NARESH: Objection to the form.	
	Page 941	23	Page	943
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1 2	for compliance with section 159.158.	1	THE WITNESS: Yes, and the guidance	
2	Has Syngenta ever had a company policy or	2	document, I think as I've said before,	
3	other	3	says how to interpret the information	
4	MR. TILLERY: Yeah, there it is	4	that may be given to us in those	
5	again. Yeah. Do you know if he can	5	situations, such that it complies with	
6	replace this?	6	the full definition of potentially	
7	We're going to go off right now,	7	referable findings in the legislation.	
8	if we can, to solve this technical	8	BY MR. TILLERY:	
9	problem to see what we can do, okay.	9	Q. Has there been any change, to your	
10	THE VIDEOGRAPHER: Okay.	10	knowledge, in the last 20 years in the	
11	MR. TILLERY: We'll go off the	11	reporting obligations set out in that policy	
12	record.	12	or safeguard that you mentioned with respect	
13	THE VIDEOGRAPHER: Yeah, that's	13	to employees, experts or consultants?	
14	great.	14	A. I think, as I, again, mentioned	
15	THE WITNESS: I'll take a	15	earlier, our internal guidance documents are	
16	five-minute break if that's the case just	16	modified at a regular on a regular basis,	
17	to go to the bathroom.	17	and some of that comes from feedback from our	
18	MR. TILLERY: That's fine, thank	18	US experts in PRF legislation, but these are	
19	you. Thanks.	19	relatively small changes, if you like,	
20	THE VIDEOGRAPHER: We are going off	20	in quite in the detailed technical criteria	
21	the record. The time is 1:40.	21	that are used.	
22	(Off the record.)	22	Q. All right. So in the absence of	
23	THE VIDEOGRAPHER: We are back on	23	a formal statement of a policy that covers	
24	the record. The time is 1:45.	24	exactly what we said, whether it exists or	
25	///	25	doesn't exist, Syngenta knows that it must	

1	Page 944		Page 946
1	report the conclusions and opinions of	1	and legal people based in the USA.
2	employees or consultants of Syngenta if the	2	Q. Okay. Do you know any names of
3	information is relevant to the assessment of	3	them?
4	the risks or benefits of a pesticide like	4	A. One of the main people that we
5	paraquat, correct?	5	relied on has been Dennis Hackett, who is the
6	A. It does, yes. With the definition	6	technical secretary of the United States
7	of how we with the guidance on how	7	PRF Committee.
8	we define "relevant," yes.	8	Q. Okay. And he has given you
9	Q. Has Syngenta ever made a report	9	a definition of relevancy to follow, right?
10	to the EPA specifically to comply with	10	A. He has given us an input in order
11	section 159.158?	11	for us to generate the kind of detailed
12	MR. NARESH: Objection; foundation.	12	guidance that I was holding up to you earlier
13	THE WITNESS: I wouldn't know how	13	on.
14	to answer that question.	14	Q. How does his definition of relevance
15	BY MR. TILLERY:	15	compare to the definition that the US EPA uses?
16	Q. You don't know the answer?	16	A. I think I'm not really able to make
17	A. No.	17	that comparison.
18	Q. Has Syngenta ever made a report	18	Q. So when in doubt you follow
19	to the EPA because the reportable information	1.9	Mr. Hackett's definition of relevance, not the
20	was the conclusion or opinion of a Syngenta	20	one that the FIFRA statutes and regulations
21	consultant?	21	apply, right?
22	A. I'm sure we have, yes.	22	MR. NARESH: I'll object to the
23	Q. About paraquat?	23	form and the foundation.
24	A. I can't recall immediately an	24	THE WITNESS: I wouldn't put it
25	example for paraquat.	25	that way. I'll restate that our internal
	Page 945		Page 947
1	Q. Okay. Has Syngenta ever failed	1	guidance has been put together on the
2	to make a report to the US EPA when Syngenta	2	basis of our best understanding of those
3	possessed reportable information that was	3	FIFRA requirements.
4	a conclusion or opinion of a Syngenta employee	4	BY MR. TILLERY:
5	or consultant?	5	Q. So then it then can you tell
6	MR. NARESH: Objection to form.	6	me that you have followed FIFRA in your
7	THE WITNESS: I don't believe that	7	reporting obligations, without qualifying it
8	we have, when we have used, as I've said	8	that you used your own internal definition of
9	several times, our own criteria about how	9	relevancy?
10	to determine the relevance of effects or	10	A. Well, I think every organization
11	opinion.	11	has to do what I've said, which is to take
12		12	a complex set of legislation and translate it
13		13	for a large number of people, whether they're
14		14	employees or consultants, so that, in their
15		15	day-to-day work, they can and we can,
16		16	in supporting them, comply, to our best
17	the state fraction	17	endeavors, with the legislation.
18		18	MR. TILLERY: What's the next
19		19	exhibit number?
20		20	MS. BRUMITT: 85.
21		21	MR. TILLERY: 85?
22	F	22	MS. BRUMITT: Yeah.
23	C	23	MR. TILLERY: Let's put up
24		24	number 85, Plaintiff's Deposition
25	A. Largely, these will be regulatory	25	Exhibit 85 on the screen.

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1 2	(Botham Exhibit 85 marked for	1 2	be of relevance to human safety and may have
3	identification.)	3	implications for the current registration of
4	MR. TILLERY: We'll adjust this a little bit.	4	a pesticide. They could mean that a different
5	BY MR, TILLERY:	5	risk assessment or risk management would be
6		6	required.
7	Q. Okay. Do you see this, sir? A. I do.	6   7	Q. And would you agree they also mean
8	Q. Okay. This is 40 Code of Federal	8	that the more species or the more strains, both sexes, or generation of test organism adversely
9	Regulations, section 159.165(a), and this is	9	affected, the more generally toxic the chemical
10	Exhibit 85. Do you see that?	10	is, right?
11	A. I do.	11	A. No, that's I wouldn't agree with
12	Q. All right. Are you familiar with	12	that statement. It doesn't mean it's more
13	this regulation? Syngenta familiar.	13	toxic. It might mean that we understand more
14	A. Very familiar.	14	about the nature of the toxicity and
15	Q. Okay.	15	potentially the relevance to man.
16	A. Very familiar.	16	Q. Well, what I'm pointing out is
17	Q. And you understand the purpose of	17	simply this: that if one mammalian species has
18	this regulation is to make sure the EPA knows	18	a problem with this and many, many other test
19	about the toxicity studies that reveal new	19	animals or species do not, that's different
20	adverse information about the toxicity of the	20	than having a homogenous reaction to a chemical
21	chemical; is that right?	21	that impacts all of them, isn't it, sir?
22	A. That is correct.	22	A. It could be, but
23	Q. To make sure the EPA knows about	23	Q. And it and it's more predictive
24	toxicity studies that reveal new adverse	24	in terms of its impact on other mammalian
25	effects in a different organ, right?	25	species, isn't it?
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1	A. That is one of the criteria, yes.	1	A. No, I think that's too general
2	Q. Or a different tissue, right?	2	a statement. There's much more judgment
3	A. That is correct.	3	involved in assessing relevance to humans than
4	Q. Or a new adverse effect at a higher	4	the way in which you describe it.
5	incidence, right?	5	Q. Okay.
6	A. Yes.	6	Would you agree that a poison that
7	Q. Or a frequency, right?	7	adversely affects more species is likely
8	A. Yes.	8	to be have an effect on humans?
9	Q. Or in a different species of test	9	MR. NARESH: Objection to the form.
10	organism, right?	10	THE WITNESS: Not necessarily, for
11	A. Yes.	11	the reasons I said before.
12	Q. Or in a different strain of test	12	BY MR. TILLERY:
13	organism, right?	13	Q. So you wouldn't accept that premise
14	A. Yes.	14	as a fair interpretation of this regulation,
15	Q. Or in a different sex of test	15	right?
16	organism, correct?	16	A. That's not necessarily what is
17	A. Correct.	17	behind this regulation. It is, to restate,
18	Q. Or in a different generation of test	18	that toxicology where different species are
19	organism, correct?	19	used is a way of building up an overall weight
20	A. Correct.	20	of the evidence, to allow you to understand
21	Q. What is your understanding of why	21	relevance to humans.
22	new adverse effects in different specie,	22	Q. So the fact that it impacts frogs or
23	strain, sex or generation of test organism	23	mammals, or different kinds of mammals and
24	is important for the US EPA to know about?	24	all other kinds of animals, you think is not
25	A. Because it those effects could	25	predictive in any way and that's not what

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1	underlies the importance of reporting for the	1	in the brains of nonhuman primates, and
2	US EPA? Is that your understanding?	2	I think that's one of the reasons why
3	A. No	3	different decisions are sometimes made on
4	Q. Is that what Syngenta's	4	reportability.
5	understanding is?	5	Certainly when you see adverse
6	A. No. No, no, you're putting it in	6	effects, which is what this is talking
7	a different way again, which is not what	7	about, as you see in line 2 here,
8	I'm trying to say. I'm saying that what	8	"adverse effects," that's very clear.
9	I'm disagreeing with is what I understand	9	Presence of chemical is not necessarily
10	you to be saying is that the more species you	10	an adverse effect.
11	see an effect in, the more of a likelihood	11	BY MR. TILLERY:
12	is that that toxicity, or whatever it is that	12	Q. So that fell into the to the
13	you're talking about, will happen in human	13	Syngenta relevancy definition, right
14	beings.	14	A. Exactly.
15	I'm saying that's not necessarily	15	Q it wasn't relevant?
16	the case. It may be the case but it isn't	16	A. Exactly, so
17	necessarily the case. But what I'm saying	17	Q. You made it you determined they
18	is that testing in different species, strain,	18	didn't need to know about this. When in doubt,
19	sex, generations, is a way in which you can	19	if it's not relevant don't give them the
20	build up a much greater overall understanding	20	information, right?
21	of the likely effects or potential effects	21	A. Let me expand on that.
22	a chemical might have on human health.	22	Q. Can you answer can you answer
23		23	that question?
	Q. Irrespective of whether you and	24	A. We will not report if we believe
24 25	I could ever agree on the real reason for that,	25	that the effects are not considered to be
25	the fact is is that Syngenta knew that if it  Page 953	23	Page 955
1	did affect any of these different species or	1	adverse, in the sense that that is one
2	frequency or different tissues or different	2	critical criterion to determine relevancy.
3	strains of a test organism, you had to report	3	Q. As you define it at Syngenta, right?
4	it, correct?	4	A. That's the way in which we
5	A. We do, and we don't report the	5	have been advised to interpret it, yes.
6	weight of evidence. So, you know, we	6	Q. Okay.
7	certainly do report individual effects in	7	A. A finding should be new and
8	different specie, strain, sex and generation.	8	adverse.
9	So we don't wait until we have that overall	9	Q. Has Syngenta ever had a company
10	weight of evidence before we report.	10	policy, other safeguards to ensure compliance
11	Q. Right. So the difference between	11	with section 159.165(a)'s requirement for
12	a squirrel monkey and a mouse, right?	12	reporting toxicological studies?
13	A. Right.	13	A. Yes, we do have a policy that
14	Q. Those would be majorly different	14	we would apply.
15	species, wouldn't they?	15	Q. What is the policy? What is the
16	A. They are, yes.	16	policy?
17	Q. Yes. So if you did studies showing	17	A. There is an overarching policy
18	damage to dopaminergic neurons in mice and then	18	which talks about our require the need for
19	found that paraquat got into the brain of	19	us to comply with legislation such as the
20	squirrel monkeys, that would be certainly	20	FIFRA 6(a)(2).
21	a different species, wouldn't it?	21	Q. Do you have a policy at Syngenta for
22	MR. NARESH: Objection to form.	22	all of the member companies under the Syngenta
23	THE WITNESS: There's a difference	23	umbrella that says when in doubt if there's
24	between seeing effects' damage to	24	any question about whether this should be
25	neurones in a mouse and finding paraquat	25	reported, we'll report it to the US EPA?

	Page 956		Page 958
1	A. We had a policy we have a policy	1	how much paraquat we give them.
2	that if there is any doubt in the minds of our	2	We understand how much of that paraquat
3	employees, particularly about any findings	3	gets to the brain, and at what point the
4	that they become aware of in our own	4	levels of paraquat that get into the
5	toxicological studies for example, they should	5	brain don't do any damage. So there is
6	bring them to our PRF Approach Committee, and	6	a threshold of effect.
7	then that approach committee, as we have	7	We then say, using good
8	described before, will, in many cases, then	8	toxicological practice, that you can
9	submit them to the US PRF Committee who would	9	you apply what's called a margin of
10	then determine whether they meet the criteria	10	safety. You say that as long as a level
11	of $6(a)(2)$ .	11	of paraquat doesn't exceed that margin of
12	Q. Let me ask you this: Just from a	12	safety, then that is not deemed to be
13	lay perspective we've used a lot of fancy	13	a problem for human health.
14	scientific language in our days of depositions	14	The whole of regulatory risk
15	in this. I just want to take this to a level	15	assessment is built on that premise.
16	of understanding where everybody here	16	
17	understanding where everybody here understands it.		So the EPA and other regulatory agencies
18		17	would use that premise. BY MR. TILLERY:
19	Is getting paraquat in the brain of	18	
	a primate a good thing or a bad thing?	19	Q. Okay. So what is the threshold
20	MR. NARESH: Objection to form.	20	limit for how much a human can have of paraquat
21	THE WITNESS: The answer to that	21	in their brain before they have a problem?
22	question, in simple terms, is it will	22	What's that threshold?
23	depend how much paraquat gets in there	23	A. I can't give you a I can't give
24	and for how long it stays.	24	you a number off the top of my head.
25		25	Q. Well, does Syngenta not know?
	Page 957		Page 959
1	BY MR. TILLERY:	1	You're selling paraquat all over the world.
2	Q. So getting in there itself, you	2	Syngenta doesn't know how much paraquat you
3	don't have any problem with; is that right?	3	get in a human brain before you have a problem?
4	A. No, I	4	A. We
5	Q. As long as as long as it's not at	5	MR. NARESH: Objection to form.
6	a certain level, right?	6	THE WITNESS: Yes, we have been
7	A. This is one of the fundamental	7	doing those calculations and we looked at
8	principles of risk assessment. The dose	8	a document, I think, in my last
9	Q. Okay, so	9	deposition which was our internal
10	A. The dose makes the poison so you	10	document that provided some of those
11	have to understand	11	calculations, and we've continued to do
12	Q. Okay, so so just a little bit	12	studies to help us to refine those
13	isn't a problem, right?	13	numbers.
14	A. It might not be, but that is	14	So the reason for not giving it
15	a judgment that is made which is very specific	15	to you now is I haven't got that number
16	to the chemical that you're looking at.	16	to hand.
17	Q. When does it become a problem?	17	BY MR. TILLERY:
18	How much do you have to get in your brain of	18	Q. So you, today, can't tell me how
19	paraquat before it's a problem for Syngenta?	19	much Syngenta believes that a human being could
20	MR. NARESH: Objection to form.	20	get into the brain we're talking about
21	THE WITNESS: Well, this is really	21	paraquat before they have a medical issue,
22	at the heart of a lot of the work that	22	right?
23	we've been doing. So we understand	23	· ·
24	the let's take the animal model	24	MR. NARESH: Objection to form. BY MR. TILLERY:
25	studies that we've done. We understand	25	
رعا	studies that we ve dolle. We understand	45	Q. A hazardous condition. Can you tell

A. I can't give you that number right now and, as I say, this is a number which is a calculation based on mathematical modeling built on real data in animal models.  Q. Okay. So there is some amount that can get in the brain. You can't tell me the amount, but there is some amount that can get in the brain that is, in your view, acceptable. Right?  A. And that is absolutely normal toxicological practice accepted by regulatory authorities all over the world. Not just for paraquat.  Q. Okay.  MR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: I move to strike your answer as unresponsive.  BYMR. TILLERY: Q. Would you please listen to my question, sir. So there is some amount of paraquat that can get into the human brain that is is an acceptable level for Syngenta; is that correct?  A. I think - I wouldn't use the term acceptable level for Syngenta; is that correct yet an acceptable level for Syngenta; is that correct?  A. I think - I wouldn't use the term acceptable level for Syngenta; is that correct yet and the many in the some acceptable level for Syngenta; is that you can't tell me? Okay. You know it's there within the is some level which is offered yet yet in the wown what that is. You're asking me to try - Q. What is it?  A. We do know what that is. You're			1	
A I can't give you that number right now and, as I say, this is a number which is a calculation based on mathematical modeling built on real data in animal models.  Q. Okay, So there is some amount that can get in the brain. You can't tell me the amount, but there is some amount that can get into the brain that is, in your view, acceptable. Right?  A. And that is absolutely normal toxicological practice accepted by regulatory authorities all over the world. Not just for paraquat.  Q. Okay.  MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your question, sir. So there is some amount of paraquat that can get into the human brain that is an acceptable level for Syngenta, is that correct?  A. I don't have — I don't have it within the is acceptable level for Syngenta, is that correct?  Toxicologist, I'm talking about a level which is some level of paraquat that can get into the human brain that is unlikely to do harm.  Q. Okay.  A. In — Q.		Page 960		Page 962
a now and, as I say, this is a number which is a calculation based on mathematical modeling built on real data in animal models.  Q. Okay, So there is some amount that can get into be brain. You can't tell me the amount, but there is some amount that can get into be brain. You can't tell me the amount, but there is some amount that can get into be brain. You can't tell me the amount, but there is some amount that can get into the brain that is, in your view, acceptable. Right?  A. And that is absolutely normal toxicological practice accepted by regulatory authorities all over the world. Not just for paraquat.  Q. Okay.  MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  Page 961  toxicologist, I'm talking about a level which is an acceptable to Syngenta. I'm - as a so good to something anywhere close to that.  A. I don't have I don't have it with me right now, I'm sorry.  Q. But whatever it is, it's more than they'd ever get in their brains, right?  A. That's - yes.  Q. What to the number, which is called the human brain that is unlikely to cause harm, according to Syngenta. Is that a correct statemen?  Q. Okay.  A. I m - Q. What is it?  A. We do know what that is. You're asking me to try - Q. What is it?  A. Had that amount falls within the so-called margin	1	me?	1	into my brain, how much of it can I get in my
a calculation based on mathematical modeling built on real data in animal models.  Q. Okay. So there is some amount that can get into the brain that is, in, you rview, acceptable. Right?  A. And that is absolutely normal considerable level for Syngenta. It is an acceptable to Syngenta. I'm reals are acceptable to Syngenta. I'm reals are acceptable to Syngenta. I'm talking about a level which is unlikely to do harm.  Page 961  toxicologist, I'm talking about a level which is unlikely to do harm.  Q. Okay.  A. I think I wouldn't use the term acceptable to Syngenta. Is that a correct statement?  A. I har acceptable to Syngenta. Is that a correct statement?  A. I har acceptable to Syngenta. Is that a correct statement?  A. Yes, exactly.  Q. Okay.  A. I m - Q. Okay	2	A. I can't give you that number right	2	brain where I'm just fine, no health problem,
built on real data in animal models.  Q. Okay. So there is some amount that can get in the brain. You can't tell me the amount, but there is some amount that can get in the brain. You can't tell me the into the brain that is, in your view, acceptable. Right?  A. And that is absolutely normal toxicological practice accepted by regulatory authorities all over the world. Not just for paraquat.  Q. Okay.  MR. TILLERY: I move to strike your anatory authorities all over the world. Not just for paraquat.  MR. TILLERY: I move to strike your anatomic same as unresponsive.  BY MR. TILLERY: I move to strike your question, sir. So there is some amount of paraquat that can get into the human brain that is acceptable level for Syngenta; is that can exceptable to Syngenta. Is that a correct?  A. I think — I wouldn't use the term "acceptable to Syngenta. Is that a correct statement?  A. Yes, exactly.  Q. Okay.  A. In — Q. Okay.  A. In — Q. And that falls below, within, let's say strike the question.  And that amount falls within the so-called margin of safety that — you know, we have come to a number of that can be derived in that way, and that that can be derived in that way, and that that that that any unmber is halt be devived in that way, and that that hand that any unmber is in the you know, we have come to a number of that can be derived in that way, and that that the concile is highly unlikely to that.  Q. Well, what is the number? I keep saying in nebulous ways there's a number or there's a threshold. What is it? Give it to us.  A. I don't have — I don't have it with me right now, I'm sorry.  Q. But whatever it is, it's more than they'd ever get in their brains, right?  What's the mergin of safety; you just don't know what that is.  You're a caceptable to Syngenta. Is that a correct statement?  A. Yes, exactly.  Q. Okay.  A. In — Q. Okay.  A. In — Q. And that falls below, within, let's say - strike the question.  And that amount falls within the see called margin of safety that you referenced, correct?  A. I would rath			3	
built on real data in animal models Q. Okay. So there is some amount that can get in the brain. You can't tell me the amount, but there is some amount that can get into the brain that is, is, in your view, acceptable. Right? A. And that is absolutely normal toxicological practice accepted by regulatory authorities all over the world. Not just for paraquat. Q. Okay. MR. TILLERY: I move to strike your answer as unresponsive. By MR. TILLERY: By MR. TILLERY: By MR. TILLERY: Q. Would you please listen to my question, sir. So there is some amount of paraquat that can get into the human brain that is unlikely to do harm. Q. Okay. So let's change this. There as correct? A. I thinkI wouldn't use the term acceptable to Syngenta. Is that a correct statement? A. In — Q. Okay. A. In — Q. And that falls below, within, let's say — strike the question. And that amount falls within the so-called margin of safety that you referenced, correct? A. Yes, we have a margin of safety which say we believe that if a human being is exposed to a level which is is exposed to a number that can be derived in that way, and that that mumber is — if is highly unlikely that people using paraquat would ever be exposed to something anywhere close to that. Q. What what is the number? I keep asking you what the number? I keep asking you what the number is and you keep saking you what the number is and you keep saking you what the number is that you distributed in the with meright now, I'm sorre there's a threshold. What is it? Give it to us. A. I don't have — I don't have it with meright now, I'm sorre there's a threshold. What is it? O. But what ever it is, it's more than they'd ever get in their brains, right? A. That's — yes. Q. What its it? A. Tatink — I'm — as a  Page 961  D. Wall Issir? A. We do know what that is. You're asking now that that is. You're get in the road in the proper thought — with the irreapin of safety that you referenced, correct? A. Yes, w		a calculation based on mathematical modeling	4	A. Well, that's we have done a
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amount, but there is some amount that can get into the brain that is, in your view, acceptable. Right?  A. And that is absolutely normal to toxicological practice accepted by regulatory authorities all over the world. Not just for paraquat.  Q. Okay.  MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: I move to strike your answer as unresponsive.  BY MR. TILLERY: 1 move to strike your answer as unresponsive.  BY MR. TILLERY: 1 move to strike your answer as unresponsive.  BY MR. TILLERY: 1 move to strike your answer as unresponsive.  BY MR. TILLERY: 1 move to strike your answer as unresponsive.  A. I don't have — I don't have it with me right now, I'm sorry.  Q. But whatever it is, it's more than they'd ever get in their brains, right?  A. I think — I wouldn't use the term acceptable level for Syngenta, is that a care expected to some level of paraquat that can get into the human brain that is unlikely to do harm.  Q. Okay. So let's change this. There is some level of paraquat that can get into the human brain that is unlikely to cause harm, according to Syngenta. Is that a correct statement?  A. Yes, exacty.  Q. Okay.  A. In —  Q. And that falls below, within, let's say — strike the question.  And that amount falls within the so-called margin of safety that you referenced, correct?  A. And that amount falls within the so-called margin of safety that you referenced, which says we believe that if a human being is exposed to a level which is below that mumber, which is derive — which is called the margin-of-safety number, would be expected to cause no harm.  20. Okay.  Q. Okay.  A. Thorities a likely by the proper thought is with me right now. In the with me right now, I'm sorry.  Q. What is it?  A. And that is	7		7	
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cause no harm.  21 A. Yes. You might remember we looked 22 Q. Okay. And what is that 21 at a document in my last deposition where	20		1	~ .
Q. Okay. And what is that 22 at a document in my last deposition where	21			
	22			
TO THE CITED TO THE PARTY IN THE COURT OF CO. 124 THE WOLLD WIND THE WARREN OF AMENDICALS.	23	margin-of-safety number? If I'm going to go	23	we were doing those kind of calculations.
	24			
	25			

	Page 964		Page 966
1	paraquat that can get in the brain within	1	Q. Okay. But if we pull that document
2	a margin of safety for the human being, right?	2	out at the next break and start that section of
3	A. Yes.	3	the deposition, you'll be able to reference
4	Q. That's what you remember?	4	that particular document and tell the court and
5	A. Yes.	5	the ladies and gentlemen of the jury how much
6	Q. Okay. And you think that that's in	6	paraquat can enter the human brain within
7	the prior deposition, correct?	7	a margin of safety so that the person doesn't
8	A. It is, yes.	8	develop any adverse health effect, correct?
9	Q. And that is already set out there,	9	A. This is the you know, the number
10	right?	10	which you calculate from the information you
11	A. It was in the it was in one of	11	have available, which is giving you the best
12	the documents that was part of that previous	12	possible prediction of that, yes.
13	deposition.	13	Q. And do you know if redox cycling was
14	Q. And just so we can, at the next	14	contemplated when you did that analysis?
15	break, look at that, any of the documents,	15	A. Well, redox cycling is behind the
16	which document was it set out in?	16	way in which paraquat can damage cells. So,
17	A. It was a document which was	17	yes, let me say that that document was making
18	entitled the reference I think it had	18	the assumption because it was a very
19	"reference dose for paraquat" in the title.	19	conservative document in that sense. It was
20	Q. A reference dose for paraquat?	20	making the assumption that the effects that
21	A. Yes.	21	had been seen by some, and by us as well if
22	Q. And that reference dose was based	22	you include the Marks studies and the early
23	upon your own studies at Syngenta?	23	Breckenridge studies, the effects seen in the
24	A. That's right, yes.	24	mouse in the brain really were, if you like,
25	Q. And when did you do those studies?	25	real effects, this is an effect of paraquat.
	Page 965		Page 967
1	A. Those were studies that we've been	1	So it was making that assumption and then
2	doing since 2007 and have been doing right up	2	calculating these margins of exposure, these
3	to this day.	3	reference doses with that in mind.
4	Q. Okay. So you knew that information,	4	So it was not built on the basis of
5	then. Did you know that information in 2011?	5	a denial of that possibility.
6	A. It was still a work in progress at	6	Q. So you were factoring in just so
7	that time. We were still in the middle of our	7	we're clear, you were factoring in redox
8	research program.	8	cycling characteristics of the chemical
9	Q. Well, when did it become fixed in	9	paraquat when you created this document and
10	your corporate knowledge that you could get	10	calculated the margin of safety and the
11	paraquat in the human brain within a margin of	11	threshold of paraquat that's safe within the
12	safety that didn't exceed a certain threshold,	12	human brain, correct?
13	and the person would not have adverse health	13	A. We were factoring in that paraquat,
14	outcomes? When did that happen?	14	potentially through redox cycling, was capable
15	A. Well, we began to write those	15	of damaging neurones in the brain,
16	documents about the reference dose	16	as a conservative assumption.
17	documents in I can't remember when the	17	Q. Did you calculate how many neurons
18	first one was. It was, say, around 2010,	18	in the human brain it was safe to kill or
19	thereabouts, and we revised that document	19	damage?
20	several times as new information became	20	A. No.
21	available.	21	Q. Did you ever calculate how many
22	Q. Okay. And can you tell me the range	22	neurons, dopaminergic neurons, in the
23	of how much you can get in the brain today	23	substantia nigra you could kill with paraquat
24	without looking at the document?	24	before the onset of Parkinson's symptoms?
25	A. No.	25	A. In the human being?
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	Page 968		Page 970
1	Q. Yes.	1	Q. Well, you have in front of you on
2	A. No.	2	the screen 40 C.F.R. 159.165. Do you see that?
3	Q. Okay. Did you calculate it with	3	A. Yeah, sorry. I need to go back
4	respect to any nonhuman primate?	4	to that, yeah. Mmm-hmm.
5	A. No.	5	Q. Okay. And it talks about the fact
6	Q. So you calculated	6	that a registrant, like Syngenta, must report
7	A. Other people	7	the results of a study of the toxicity of
8	Q it with other animals?	8	a pesticide to humans
9	A. No. We yes well, yes, sorry.	9	A. Mmm.
10	Obviously we calculated we measured the	10	Q if, relative to all previously
11	number of neurones that were damaged in the	11	submitted studies, they show an adverse effect
12	mouse model.	12	in a different species.
13	Q. Okay. And you assume that if	13	Do you see that?
14	certain number of neurons in the human brain	14	A. Yes.
15	were killed, are rendered incapable of	15	Q. Okay.
16	producing dopamine and it didn't reach	16	A. And we do that all the time.
17	a certain level, it was within the margin of	17	Q. All right. And you've made a report
18	safety to use?	18 19	to comply with that with respect to paraquat?
19	A. No. In making our extrapolations		A. We have certainly submitted
20	to humans, we didn't say you have to have	20	a number of toxicological and environmental
21	a certain number of neurones dying before that	21 22	studies on paraquat, yes, we have certainly done that.
22	could lead to Parkinson's disease. We were	23	Q. On that section?
23	saying what levels are you unlikely to get any	24	A. On that section, yes.
24	damaged cells.	25	Q. Okay. And what was the different
25	Q. So your margin of safety or  Page 969	23	Page 971
			-
1	threshold was a certain amount, which we're	1	species that you reported?
2	going to you're going to tell us later today	2	A. Well, I'd have to go back and look
3	what that amount is when you look at this	3	at the detail. I was answering that in terms
4	document; that you reached a certain amount and	4 5	in general terms. We have certainly
5	that amount would not give rise to either any	6	submitted reports of adverse findings
6	damage to, or death of, a dopaminergic neurone	7	associated with paraquat that meets some of these criteria.
7	in the substantia nigra portion of the human	8	Q. Has Syngenta ever made a report
8	brain, correct?	9	to the EPA because the results of a study
9	A. Correct, yes. Q. All right.	10	of the toxicity of a pesticide to humans,
10 11	Q. All right. Syngenta knows that it must report	11	if relative to all previously submitted
12	the results of the toxicity of a pesticide	12	studies, shows an adverse effect in a different
13	to humans if, relative to all previously	13	species?
14	submitted studies, they show an adverse effect	14	MR. NARESH: Objection; form.
15	in different species, correct?	15	THE WITNESS: Yes. Again, in
16	A. Correct.	16	general terms, we do that. We have done
17	Q. Has Syngenta ever made a report	17	that.
18	to the US EPA to comply with section 159.165(a)	18	BY MR. TILLERY:
19	that deals with that exact point	19	Q. With respect you've done that
20	MR. NARESH: Objection to form,	20	with respect to paraquat?
21	foundation.	21	A. Again, I would have to go back
22	BY MR. TILLERY:	22	through all the files that we've done to be
23	Q and knowledge?	23	very specific about that.
24	A. I'm sorry, I don't really	24	Q. You don't remember ever doing it
25	understand what that means in practice.	25	specifically with respect to paraquat; is that

	Page 972		Page 974
1	what you're saying?	1	registration, the registrant is required by
2	A. Well, you asked this was about	2	section 6(a)(2) to submit the information
3	a different specie, so	3	to the US EPA, correct?
4	Q. Yes, it was.	4	A. Correct.
5	A. That's the bit that I would need to	5	Q. And as of August 23, 1978, in the
6	check.	6	Federal Register this quote was printed:
7	MR. TILLERY: Now let's pull up the	7	"If the information would be
8	next exhibit, please. Which number is	8	relevant to an Agency decision on the continued
9	that?	9	registration of the pesticide, or to the proper
10	MS. BRUMITT: It will be 86.	10	terms and conditions of the pesticide's
11	MR. TILLERY: Dr. Botham, we're	11	registrations and the other requirements for
12	going to look at Plaintiff's Deposition	12	section 6(a)(2) are satisfied, the registrant
13	Exhibit 86 at this time.	13	is required by section 6(a)(2) to commit the
14	(Botham Exhibit 86 marked for	14	information to the Agency."
15	identification.)	15	Were you aware of that?
16	MR. TILLERY: If we can go off the	16	MR. NARESH: I'll object to the
17	record for just one second. Everybody	17	form.
18	stay put.	18	THE WITNESS: Well, I don't recall
19	THE VIDEOGRAPHER: We are going off	19	having read those precise words myself,
20	the record. The time is 2:20.	20	but that's fine, it sounds reasonable.
21	(Off the record.)	21	BY MR, TILLERY:
22	THE VIDEOGRAPHER: We are back on	22	Q. And you understand from the written
23	the record. The time is 2:21.	23	regulations within Syngenta that that
24	BY MR. TILLERY:	24	compliance is required?
25	Q. Can you see plaintiff's	25	A. Yes. Again, as a general principle
	Page 973		Page 975
1	I'm sorry.	1	I do.
2	This is Plaintiff's Deposition	2	Q. Okay. And that doesn't strike
3	Exhibit 86, Dr. Botham. It's section 40 C.F.R.	3	that.
4	section 159.195. Okay?	4	Has Syngenta ever had a company
5	A. Yes, I can see that.	5	policy/other safeguards to specifically comply
6	Q. Are you familiar with this?	6	with that section?
7	A. I'm less familiar with this because	7	A. I'm not aware of that.
8	it's outside of my normal technical oversight.	8	Q. Have you ever had any kind of
9	Q. Why don't you take a minute and	9	training session or discussion with, as you
10	refresh yourself of it.	10	said, the people who are trained about this
11	A. Okay.	11	particular compliance requirement to learn what
12	Q. Do you understand the purpose of	12	that section means?
13	this section, it's a catch-all to make sure	13	A. I don't immediately recall a
14	that the EPA knows anything about a pesticide	14	training which has been focused on that.
15	not covered by the agency's regulations that	15	Q. Okay. Has Syngenta ever made
16	might materially bear on its continued	16	a report to the EPA specifically to comply with
17	registration or the terms of its registration.	17	that section that's up there right now,
18	Do you understand that?	18	Plaintiff's Deposition Exhibit 86, 159,195?
19	MR. NARESH: Object to the form.	19	A. Again, I anticipate it may have
20	THE WITNESS: Yes.	20	done but I couldn't give you categorical
21	BY MR. TILLERY:	21	evidence for that today.
22	Q. So, in other words, if the	22	Q. Well now let's refer back to the
	information would be relevant to an agency	23	Louise Marks's studies that we have discussed
23	IIIOIIIIauoii would de leievani io an apency	23	
23 24	decision or the continued registration of the	24	earlier in this deposition; not today but

	Page 976		Page 978
1	The first one of those I want to	1	A. That's correct, and I believe
2	talk about, and for counsel on the deposition	2	that's because this is a study where she had
3	I'm referring to SYNG-PQ-00116782. That's	3	modified the methodology.
4	referenced as pages 1 through 57.	4	Q. She had an upgraded stereology
5	This is in reference to the Louise	5	device, correct?
6	Marks's research report dated June 21, 2007,	6	A. That's correct.
7	regarding the report of paraquat neurotoxicity	7	Q. And as we discussed earlier,
8	in the Charles River C57 black mouse, study	8	Dr. Marks reported in the second study that the
9	number is XM7258.	9	researchers "used one of the most widely used
10	Do you remember that we went over	10	and accurate stereology systems currently
11	that in great length?	11	available and the methodology was refined
12	A. Mmm.	12	to further improve the accuracy of the cell
13	Q. Do you remember that, Dr. Botham	13	count," not the automated older stereology
14	A. I do.	14	software used in the first study, right?
15	Q in the earlier days of this	15	A. That's correct.
16	deposition?	16	Q. Dr. Marks's finding of a
17	A. I do.	17	statistically significant reduction in
18	Q. Do you remember? All right.	18	dopaminergic neurons in the substantia nigra of
19	Just to recap, the purpose of the	19	the Charles River black mouse is "information
20	study was to determine whether the results of	20	regarding unreasonable adverse effects on the
21	Dr. Marks's first study, the one that it found	21	environment of the pesticide," isn't it?
22	paraquat had no effect on dopaminergic neurons	22	MR. NARESH: Objection to form.
23	in the black mouse, whether those results could	23	THE WITNESS: If it is a new
24	be reproduced let's start over and stop	24	finding, yes.
25	right now.	25	///
	Page 977		Page 979
1	MR. TILLERY: Don't answer the	1	BY MR. TILLERY:
2	question.	2	Q. So you okay. If it's a new
3	We have a return of our problems	3	finding, you agree with that statement, don't
4	and that's because our IT guy walked	4	you?
5	towards the door.	5	A. Yes.
6	(Off-the-record discussion.)	6	Q. Okay. And that finding is
7	MR. TILLERY: Let's go off the	7	information about an unreasonable risk to man
8	record, please.	8	or the environment posed by paraquat, isn't it?
9	THE VIDEOGRAPHER: Okay. We are	9	A. Yes. Such a finding could be,
10	going off the record. The time is 2:27.	10	indeed, captured by that definition.
11	(Off the record.)	11	Q. And therefore FIFRA 6(a)(2)
12	THE VIDEOGRAPHER: We are back on	12	obligated Syngenta to report that finding
13	the record. The time is 2:30.	13	to the US EPA, didn't it?
14	BY MR. TILLERY:	14	MR. NARESH: Objection to form.
15	Q. And just to recap, Dr. Botham,	15	THE WITNESS: It did not because
16	the purpose of Dr. Marks's study was to	16	it would it also requires it to be
17	determine whether the results of her first	17	a new finding, i.e. it would allow the
18	study, the one that had found paraquat to have	18	EPA to be able to make a different
19	no effect on dopaminergic neurons of a black	19	judgment about the safety of paraquat.
20	mouse, whether those results could be	20	This was not new; it was replicating what
21	reproduced. Is that correct?	21	other researchers had found.
22	A. That's correct.	22	BY MR. TILLERY:
23	Q. But in the second study, Dr. Marks	23	Q. And that's why you say you didn't
24	reported a statistically significant reduction	24	report it in 2003 or '04 when the study was
25	in dopaminergic neurones, didn't she?	25	done?

	Page 980		Page 98	82
1	A. That's the reason why we didn't	1	BY MR. TILLERY:	- 1
2	report it at that time, yes.	2	Q. Okay. And earlier we established	- 1
3	Q. Then tell me why it suddenly became	3	that 40 C.F.R. 159.158 required Syngenta	
4	relevant in December 2019	4	to report any of Dr. Marks's conclusions and	- 1
5	A. Well, this was a decision that was	5	opinions if the information was relevant to the	- 1
6	taken by my	6	assessment of the risks or benefits of paraquat	
7	Q when you sent it in.	7	because she was an employee, correct? Didn't	
8	A. Yeah. This was a decision that was	8	we conclude that?	- 1
9	taken by my colleagues in Syngenta.	9	A. That is one of the stipulations,	- 1
10	I honestly cannot speak on their behalf as	10	yes.	- 1
11	to exactly why it was the right course of	11	Q. But we did conclude that earlier in	- 1
12	action to report it at that time.	12	the deposition?	- 1
13	Q. But you can see that Syngenta did,	13	A. Yes. We did, yes. Mmm.	- 1
14	16 years later, report it, right?	14	Q. And we also established that that	- 1
15	A. Yes. That did occur, yes.	15	same section required Syngenta to report any of	- 1
16	Q. After I demanded they do it, right?	16	Dr. Marks's conclusions or opinions if the	- 1
17	MR. NARESH: Objection to form.	17	information was relevant to the assessment of	- 1
18	THE WITNESS: That was undoubtedly	18	the risks or benefits of paraquat because she's	- 1
19	one of the reasons why they took that	19		- 1
20	action, yes.	20	a qualified expert. Do you remember that?  A. Yes.	- 1
21	BY MR. TILLERY:	21		- 1
22	Q. Right, exactly.	22	Q. Okay. So because Dr. Marks was	- 1
23	Dr. Marks's finding was also	23	a qualified expert required Syngenta to report	- 1
24	relevant to the assessment of the risks or	24	Dr. Marks's finding of a statistically significant reduction in dopaminergic neurons	- 1
25	benefits strike this. Hold on. Let's see	25	in the substantia nigra of the Charles River	- 1
-	Page 981	23		
	_		Page 98	53
1	what we can do here. We're having more	1	black mouse, correct?	- 1
2	trouble.	2	MR. NARESH: Objection to form.	- 1
3	(Off-the-record discussion.)	3	THE WITNESS: We believed, and with	- 1
4	MR. TILLERY: Go back on.	4	the advice that we have taken on 6(a)(2),	- 1
5	It's very bad now. We don't need the	5	that because this was not a new finding,	- 1
6	video on at this point because we've got	6	it was replicating what other	- 1
7	to deal with this problem, it's	7	laboratories had found, that this	- 1
8	distorting everything.	8	was not we did not need to	
9	So we can go off the record at this	9	specifically report Dr. Marks's study at	- 1
10	point.	10	this time.	
11		11	BY MR. TILLERY:	- 1
12		12	Q. So the fact that it had been done	
13	` '	13	somewhere else where else had it been done,	
14		14	by the way?	
15		15	<ul> <li>A. Well, we're talking about the work</li> </ul>	- 1
16		16	that's been done in Dr. Di Monte's and	- 1
17		17	Dr. Cory-Slechta's labs, for example.	
18		18	Q. Okay. Because it had been done by	1
19		19	Dr. Deborah Cory-Slechta, that's the same lady	
20		20	that we talked about who was nominated for	
21		21	membership on the Scientific Advisory Panel,	
22		22	correct?	
23		23	A. That's the same person, yes.	- 1
24	THE WITNESS: It's relevant, yes.	24	Q. Okay. Because it had been done by	
25	///	25	her, the fact that Dr. Marks was a qualified	

	Page 984		Page 986
1	expert and an employee but got what you deemed	1	investigate whether the loss of dopaminergic
2	to be the same kind of results meant that she	2	neurons in the substantia nigra observed in her
3	did not her results did not have to be	3	second study could be further enhanced by
4	reported to the US EPA, correct?	4	increasing the frequency of dosing
5	A. Yes, the explanation that we are	5	A. Yes.
6	provided for that is because the work in this	6	Q correct?
7	case of Dr. Cory-Slechta has already been made	7	A. Yes.
8	available to the EPA by virtue of it being in	8	Q. And, again, Dr. Marks found that
9	the public domain and through a peer-reviewed	9	increased dosing frequency did not result in
10	publication, that we do not need to further	10	greater magnitude of cell loss, confirming the
11	submit our studies.	11	findings of her second study, right?
12	Q. So you thought Dr. Cory-Slechta's	12	A. Correct.
13	work was reliable, was consistent with	13	Q. Dr. Marks's finding, confirming her
14	Dr. Marks's work, and was information of a	14	earlier study and demonstrating that paraquat
15	scientific type that should and was reported	15	induces nigral but not striatal toxicity, is
16	to the US EPA and known to them, and that's why	16	information regarding unreasonable adverse
17	you didn't report it, right?	17	effects from the environment of a pesticide,
18	MR. NARESH: Objection to form.	18	isn't it?
19	THE WITNESS: We did not report it	19	A. Yes. We've agreed that that is,
20	because we believed that that finding,	20	in principle, true, yes.
21	the nature of it, in that strain of	21	Q. And that finding is information
22	mouse, was already known to the EPA	22	about an unreasonable risk to man or the
23	because of the work of Dr. Cory-Slechta	23	environment posed by paraquat, isn't it?
24	and others.	24	A. Yes.
25	///	25	Q. And the reason Syngenta did not
	Page 985		Page 987
1	BY MR. TILLERY:	1	report it, even though it met those criteria,
2	Q. You didn't report it in any of the	2	is because you say it had already been done?
3	years when she was doing the study strike	3	A. Yes. If I've got the chronology
4	the question.	4	right, this wasn't the study that we did
5	Now, unlike the second study, did	5	report, I think that was the next one, unless
6	Syngenta submit Dr. Marks's first study?	6	I not having them in front of me again, so
7	A. No.	7	obviously, one study we did report to the
8	Q. Okay.	8	EPA. I can't remember if it's what we call
9	Let's talk about Dr. Marks's next	9	study 3 or study 4.
10	study, XM73731. Do you remember that one as	10	Q. Well, this is study 3. This is
11	well?	11	study number 3. So this wasn't reported.
12	A. If this was the third study, yes.	12	Do you remember your reason why you didn't
13	Q. Yeah, this is number 3, and we had	13	report it?
14	marked this in the deposition as Exhibit 29,	14	A. If this one was not reported, it's
15	okay. And the title of that study was	15	because, again, the conditions of the study,
16	"Investigating reported paraquat-induced	16	the numbers of exposures given and the time
17	dopaminergic neurotoxicity in the Charles River	17	at which the observations were made were
18	C57 black mouse: The neurochemical,	18	identical to information that was already in
19	neuropathological and neurobehavioral effects	19	the literature, which was available to the
20	of increasing the dosing frequency of	20	EPA.
21	paraquat."	21	Q. Dr. Marks's finding was relevant
22	Do you remember that?	22	to the assessment of the risks or benefits of
23	A. Yes, I do.	23	paraquat, too, wasn't it, sir?
24	Q. And as you've previously testified,	24	A. Yes.
25	the purpose of the third study was to	25	Q. In that study?

	Page 988		Page 990
1	A. Yes, yes.	1	BY MR. TILLERY:
2	Q. And because she was a qualified	2	
3	expert, the study under section 159.158	3	Q. Even if it was a new even if Dr. Cory-Slechta had already done the work,
4	required reporting of Dr. Marks's third study		
5	as well, didn't it?	4	as you say, and had already been reported
6	· ·	5	to the US EPA, the fact that your employee,
7	MR. NARESH: Objection to form.	6	who was an expert, reached the results she
8	THE WITNESS: It did not require	7	reached in her second and third studies made
9	reporting if it was not a new finding. BY MR. TILLERY:	8	it reportable?
10		9	A. Well, that's your interpretation of
11	Q. Okay. And would you mind giving me	10	6(a)(2). I'm giving you my interpretation as
12	your interpretation that you relied upon on the	11	it was provided to me.
13	newness requirement in 159.158? Is there a	12	Q. Okay. And if your interpretation is
14	newness requirement there?	13	wrong and that there is no newness requirement
15	A. I don't know the answer to that	14	and you're incorrect, then there was a
16	question. The new finding comes from the	15	reporting obligation, wasn't there?
	education, the guidance that we received from	16	MR. NARESH: Objection to form.
17	our US-based experts in 6(a)(2).	17	THE WITNESS: If the advice
18	Q. So if the interpretation Syngenta	18	I received was incorrect, then that is
19	relied upon is incorrect and there is no	19	potentially the case, but this is advice
20	newness requirement in 159.158, as you keep	20	that has been consistently given to
21	saying, then Dr. Marks's finding was reportable	21	myself, my predecessors and people who
22	simply because it was the finding of	22	have followed me, over a 20-year period.
23	a qualified expert or by a Syngenta employee,	23	BY MR. TILLERY:
24	correct?	24	Q. Would it change the EPA's view if
25	MR. NARESH: Objection to form.	25	the registrant, that is Syngenta, found adverse
	Page 989		Page 991
1	THE WITNESS: Well, again, I'm not	1	information that previously had been reported
2	an expert in how that translation was	2	only from independent researchers with
3	done but I would imagine that what was	3	no interest in the product?
4	done here was to say if information of	4	MR. NARESH: Objection; foundation.
5	this sort we're now talking about	5	THE WITNESS: Would it change the
6	Dr. Marks's studies was not providing	6	view of the EPA? I don't real if it
7	the agency, EPA, with information that	7	was from somebody
8	change could change their view on the	8	BY MR. TILLERY:
9	hazard of the substance, in this case	9	Q. Do you understand the difference?
10	paraquat, that it is not referable.	10	Do you understand the difference?
11	And that's where I think the "new" came	11	A. Please restate that question so
12	from.	12	I fully understand it, if you could.
13	BY MR. TILLERY:	13	Q. Well, let's go back over this.
14	Q. But you wrote into that section	14	We talked about why it was significant, for
15	159.158 a newness requirement, didn't you?	15	reporting purposes, that the person was an
16	A. Well, I didn't personally. That	16	employee of a company that made large amounts
17	was the advice that we received.	17	of a chemical that was sold all over the world.
18	Q. Okay. And what I'm trying to get	18	If that chemical company had an employee or
19	from you is that if that newness requirement	19	employed an expert who made these findings,
20	that you've built in is not actually in	20	we talked about the significance of that and
21	159.158, then the fact that she was an expert	21	you agreed with me as to why that was so
22	and the fact she was an employee made it	22	important to report to the United States EPA.
23	reportable to the US EPA, correct?	23	Do you remember?
24	MR. NARESH: Objection to form.	24	A. Yes.
25	///	25	Q. All right. You think that based

	Page 992		Page 994
1	upon that reason alone, the fact that if this	1	Q. All right. We'll go through that.
2	person, Dr. Marks, was both an expert and	2	MR. TILLERY: Before we go through
3	an employee of Syngenta, would add the kind of	3	this next section, which can we take
4	credibility to this study that they would want	4	about a five-minute break, please.
5	to know about, that the reporting obligation	5	And can you put us plaintiffs in a chat,
6	was required. That's the point.	6	please.
7	A. Well, all I can restate is that we	7	THE VIDEOGRAPHER: Of course.
8	were under the advice that a finding of this	8	We are going off the record.
9	sort, which was not new, it was entirely	9	The time is 3:00 p.m.
10	replicating what other people had found,	10	(Off the record.)
11	was not reportable.	11	THE VIDEOGRAPHER: We are back on
12	Q. So as long as somebody else had done	12	the record. The time is 3:24.
13	something close to it and, by the way, would	13	MR. TILLERY: Before we go on with
14	it be fair to say that Syngenta took great	14	our questioning, we're going to pull up
15	objection to the results of Dr. Cory-Slechta?	15	one exhibit that we've looked at before
16	A. No, we	16	and that's Plaintiff's Deposition
17	Q. It	17	Exhibit No. 83.
18	A. No, we never took exception to	18	BY MR. TILLERY:
19	Dr. Cory-Slechta's results. We had views on	19	Q. Do you remember this one?
20	the way in which Dr. Slechta chose to use	20	A. Yes, I do. Mmm-hmm.
21	those results in some of her public	21	Q. All right. Now, let's go over this
22	communications.	22	more carefully. It says:
23	Q. Do you agree with her results?	23	"General. Information which is
24	A. At that time we agreed with her	24	reportable under this part must be
25	results because we had replicated them.	25	submitted"
	Page 993		Page 995
1	Q. Wouldn't Dr. Marks's results also go	1	Must. What do you understand that
2	to the weight of the evidence that paraquat is	2	to mean?
3	neurotoxic in mice?	3	A. It's obligatory.
4	A. Well, look, the study that	4	Q. Okay. You have no discretion;
5	followed, I think it was the fourth study	5	do you understand that? Right?
6	which you've not come onto yet, we did report	6	A. Yes.
7	those findings to the EPA.	7	Q. Must. Okay, no discretion.
8	Q. Okay.	8	" must be submitted if the
9	A. And we reported them even though	9	registrant possesses or receives the
10	there was a relatively small difference	10 11	information, and the information is relevant to the assessment of the risks or benefits of one
11 12	Q. Okay.	12	
13	A in the conditions of the study.  But because that small difference meant that	13	or more specific registrations currently or formerly held by the registrant."
14		14	Would you agree so far, the Marks
15	they were different from, different to Dr. Cory-Slechta's and others' work, we did	15	studies meet all of those definitions, right?
16	report them.	16	So far?
17	So I believe that we were	17	A. They do but the key bit is the
18	absolutely keeping within the spirit of the	18	"relevant to the assessment of the risk."
19	law of 6(a)(2).	19	Q. Okay. We're going to talk about
20	Q. And when did you report them?	20	that but let's make sure we get my questions
21	A. The study that I just referred	21	answered.
22	to was reported in I think we went through	22	MR. TILLERY: Let's go back after
23	this in my last deposition. So was it	23	I move to strike your answer. Okay.
24	2006? Shortly after the study was finished	24	BY MR. TILLERY:
25	anyway.	25	Q. Would you agree that up to that
	may rimf.	CHICOTELL PROPERTY.	The state of the s

	Page 996		Page 998
1	point, that is to where I ended up in	1	Dr. Botham,
2	159.158 at the word "registrant" on the third	2	THE STENOGRAPHER: Thank you.
3	line, that the Louise Marks meets those	3	Sorry, Dr. Botham.
4	studies that we talked about meet that	4	THE WITNESS: That's fine.
5	requirement, right?	5	I can't point to the word "new,"
6	A. They meet that requirement, yes.	6	I agree. I can say again, however, that
7	Yes.	7	the definition of "relevant to the
8	Q. Okay. And "information relevant	8	assessment of risks" has been provided
9	to the assessment of the risks or benefits"	9	to us in terms of our experts in this
10	also includes conclusions or opinions of	10	legislation, which says relevance means
11	a person who meets any of the following.	11	you are adding to the knowledge of the
12	So they have defined the word	12	agency regarding risks.
13	"relevant," haven't they?	13	BY MR. TILLERY:
14	MR. NARESH: Objection to form.	14	Q. Okay. Well
15	BY MR. TILLERY:	15	A. And Louise Marks's studies
16	Q. "Information," look at the word.	16	initially did not add to.
17	Look at it, "information relevant to the	17	Q. Okay. Let's do it this way.
18	assessment of the risks or benefits also	18	You and I have a different interpretation of
19	includes conclusion(s) or opinion(s) rendered	19	this regulation, don't we? Would you agree
20	by a person who meets any of the following"	20	with that?
21	A. Yeah, but I don't think that	21	A. We do, yes.
22	Q. And that's the person a person	22	Q. Okay. And you understand how I read
23	A. I would disagree that they have	23	it to mean, that the word "relevant" is defined
24	defined "relevant to the assessment of risks."	24	very clearly in this as to include the
25	Q. Actually, they say very clearly:	25	information from any of those three categories.
	Page 997	23	Page 999
1	"Information relevant to the	1	Okay?
2	assessment of the risks or benefits also	2	A. Yes, I understand that.
3	includes conclusion(s) or opinion(s) rendered	3	Q. You understand that?
4	by a person who meets the following."	4	A. I understand your point, yes.
5	And it says (1), (2) or (3) and we	5	Q. Now, I yeah. And now I want you
6	talked about who they are. One is an employee,	6	to assume that my interpretation of the word
7	one is a person from whom the registrant	7	"relevant" is correct. Just assume it, okay.
8	requested an opinion, like Dr. Di Monte, and	8	If "relevant" does not include a newness
9	the other is a qualified expert, and we talked	9	component that you interpreted, then
10	about Dr. Marks meeting the definitions of (1)	10	Dr. Marks's second and third studies were
11	and (3).	11	reportable under this regulation, weren't they?
12	Now, where is the newness	12	MR. NARESH: Objection to form.
13	requirement in that statute? Where is it?	13	THE WITNESS: Yes. Without any
14	Point to it.	14	fuller definition of that, I would agree.
15	MR. NARESH: I'll object to the	15	MR. TILLERY: All right. Okay.
16	form and attorney	16	Now, let's go back I promised that
17	THE WITNESS: I can't point to it.	17	we would have our chat about the
18	I would reiterate that it is	18	documents that were marked earlier in the
19	7 7	19	deposition when we started it some weeks
20	I didn't get the objection. Sorry.	20	ago. Let's go to Exhibit No. 38.
21	I'll object to the form	21	(Botham Exhibit 38 previously
22	MR. NARESH: Sure. I'm objecting	22	marked for identification.)
23		23	THE WITNESS: I'm not seeing
24	4 2 4	24	yes, okay, it's just come through.
25	But please go ahead and answer,	25	Sorry for the delay.

	Page 1000		Page 1002
1	MR. TILLERY: Actually, we're	1	paraquat that gets into the brain.
2	experimenting here with something on our	2	It does some calculations and
3	system.	3	let's not try and point at a particular point
4	Is there a way you can hand that	4	in the document at this time. It does some
5	document over to Dr. Botham?	5	calculations which became more sophisticated
6	MS. BRUMITT: Yes.	6	with time so this is an early version,
7	BY MR. TILLERY:	7	so that's why it doesn't contain all the
8	Q. Do you have the document,	8	data which calculates which
9	Dr. Botham?	9	extrapolates, I should say, from how much
10	A. Yes, I now have the document.	10	paraquat got into the brain in the mouse and
11	Q. All right. Here's what I would like	11	damaged neurones in the brain of the mouse,
12	you to do, is to look at that document.	12	in our early studies and in other people's
13	This is Plaintiff's Deposition Exhibit 38.	13	studies, and it calculates what the equivalent
14	MR. TILLERY: Mr. Naresh, do you	14	concentration could be in the brain in humans.
15	have the number, the exhibit that you can	15	But then, most importantly, and the
16	pull up?	16	number that is described in these documents
17	MR. NARESH: I do.	17	is so how much does that what how
18	MR. TILLERY: All right.	18	much paraquat can a person be safely exposed
19	BY MR. TILLERY:	19	to as a spray operator, as a farmer, or in
20	Q. So Dr. Botham, here's what I want	20	their food, be safely within that margin of
21	you to do. You told me earlier that there were	21	safety that I was describing. So that's why
22	exhibits in this deposition that explained how	22	it's not as straightforward. There is not a
23	much paraquat could enter the human brain	23	number which says this level in the brain is
24	safely, below a I think you said a threshold	24	safe and this level in the brain is not.
25	or a margin of safety.	25	A much more helpful number that comes from
	Page 1001		Page 1003
1	I want you to go to this document	1	these documents is to say when paraquat is
2	and there were two of them, I think 38 and 39,	2	being used, if it's being used to whereby
3	but I think this may be the one you're	3	people are exposed below a certain level of
4	referring to and show me the section of the	4	paraquat, then there can be an expectation
5	document, and we'll put it on the screen as	5	that the amount of paraquat that reaches their
6	we go through it, but show me the page number	6	brain and potentially causes damage will not
7	and then we'll take it back and put it on the	7	happen.
8	screen for everyone to see.	8	That's what this document
9	A. So let me this is why I didn't	9	described.
10	want to just give you a number last time	10	MR. TILLERY: I move to strike your
11	because it's not it's not as	11	answer as unresponsive.
12	straightforward as that.	12	BY MR. TILLERÝ:
13	What this document describes, and	13	Q. Now, answer my question. Show me in
14	this is perhaps I should also say that this	14	the document where you referred when you said
15	is a document that has been modified a number	15	that there was a margin of safety or
16	of times as we've been generating more data;	16	a threshold number for the amount of paraquat
17	so the version we have in front of us right	17	that could safely enter the human brain.
18	now was written in 2009. Another exhibit that	18	Show me it and we'll go to that page.
19	you saw was written in 2011, and the most	19	A. Right. Well, I apologize
20	the latest one we have is sometime after that,	20	obviously you were pressing me on this point.
21	in 2018.	21	The one reason for my hesitancy is that I was
22	These documents have been built on	22	trying to recall exactly how we were
23	during that time as more information is	23	expressing those numbers, so I can't point
24	available about the effects of paraquat on the	24	to that number. That's not how this and my
25	brain in the mouse model and the amount of	25	long explanation which was nonresponsive was

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	Page 1004		Page 1006
1	trying to explain what this document actually	1	it is presumed that a single i.p. dose
2	did.	2	would result in a maximum brain concentration
3	Q. All right. So why don't you point	3	of 0.0165 [micrograms per gram]."
4	to me to anything in this document that might	4	So that is why it's not
5	even be related to the calculation of the	5	straightforward. I'm just pointing out
6	amount of paraquat that can enter the human	6	a particular part of this document which
7	brain safely?	7	illustrates how we go about doing the kind of
8	A. Sure. Well, I mean, for example,	8	calculations that I was trying to say in
9	if you look at page 6 of this document	9	perhaps too simplified a way previously, that
10	Q. Why don't you do this first and just	10	you then have to extrapolate it to humans and
11	tell us which pages you're going to reference	11	then back-calculate to what, if you like,
12	because we're going to take it back and show it	12	the equivalent dose to a human being might be.
13	on the screen.	13	Q. Okay. So what I'm trying to figure
14	It's number 6?	14	out is where I go in this document to start the
15	A. So this is yeah, page 6.	15	process of calculating what Syngenta thinks is
16	Q. Number 6?	16	a safe dose of paraquat in the human brain
17	A. Number 6, yes.	17	that's within the margin of safety and below
18	Q. Is there another page?	18	a threshold where brain damage won't occur.
19	A. Well, not at the moment, no,	19	That's what I'm looking for.
20	because I'm still working through this.	20	Can you tell the ladies and
21	This is just to identify	21	gentlemen of the jury and the judge how you
22	Q. Why don't you take the go ahead,	22	would calculate how much is a safe dose in the
23	sir, and I do not mean to rush you here. So	23	human brain?
24	you take your time through it, please.	24	A. Yeah, we've calculated that in the
25	A. Yeah.	25	way in which I explained a moment ago,
	Page 1005		Page 1007
1	Q. And let me know when you're ready	1	by extrapolating from the data we've got in
2	to speak about it.	2	the mouse and where we've done two things:
3	A. Right. So if you turn to page 6	3	one where I've just shown you how much
4	I'm looking at a live version of this rather	4	paraquat gets into the brain; and, secondly,
5	than the one that's on eDepoze so I'm trying	5	relating that to doses of paraquat given
6	to do two things at once here.	6	to those mice which we, with the Marks studies
7	Q. All right. So hold on just	7	and others like Cory-Slechta, showed caused
8	a second, please, and we'll tell you if this is	8	neuronal cell loss, assumed that that effect
9	it or you'll tell us if it's it.	9	is real, and then we've said, well, in the
10	A. Yeah, that's exactly right.	10	mouse it looks like this level of paraquat in
11	So, for example, you can see here that there	11	the brain is the threshold which results in
12	are words in the bottom of that large	12	that neuronal cell loss.
13	paragraph at the top where it says the maximum	13	We've done some calculations, which
14	concentration of paraquat in the brains of	14	is not in this document because this is an
15	mice following three weekly doses of 1 and	15	early version, okay. So in later versions
16	10 mgs per kg are 0.05 and 0.5 micrograms per	16	we've extrapolated that to humans, but the
17	gram respectively.	17	output is actually not a safe level in the
18	And it then says in the next	18	brain; it's a safe level for exposure because
19	paragraph:	19	the thing that matters, the thing that's
20	"The next step is to estimate the	20	critical to protect human beings and this
21	single ip dose that would result in this	21	
22	concentration of paraquat in the brain.	22	was our own document to provide ourselves with
23		23	a risk assessment, to tell us whether people
24	A single 10 mg/kg ip dose resulted in a		who are using paraquat are can use it
25	maximum paraquat concentration in [the] brain	24	safely. So the number that we eventually used
20	of 0.22 [micrograms per gram], therefore	25	was the exposure to paraquat, from whether

	Page 1008		Page 1010
1	it's from spraying it in a field or being	1	period of time is to further refine that as
2	exposed to it in residues in food, what	2	more data have been generated. Throughout
3	is there a level above which we would have	3	that refinement we have never reached
4	concern.	4	a different conclusion, other than the one
5	And when we looked at that,	5	that I have indicated, that small amounts that
6	the margin of safety was such that it was	6	may get into the brain are well below the
7	highly improbable that people exposed to	7	threshold that would be expected to cause any
8	paraquat under normal circumstances, except	8	neuronal cell loss, even if we assume that
9	when people deliberately ingest paraquat	9	that is a real possibility, which we are doing
10	for example, it would be highly unlikely that	10	as a conservative assumption.
11	people would be exposed to sufficient paraquat	11	Q. And would you also assume that
12	to generate enough paraquat in the brain	12	consuming food that's been exposed to paraquat
13	to cause the toxicity.	13	could likewise end up getting some small amount
14	Q. But that analysis contemplates that	14	into the human brain?
15	there is some amount that can get in the brain	15	A. Indeed, and the document also
16	that is below the threshold to cause damage,	16	includes that scenario.
17	correct?	17	Q. All right. So the real question
18	A. Yes, of course. We're not	18	from Syngenta's perspective, then, comes down
19	saying absolutely. We're not saying in any	19	to how do you determine how much can get into
20	circumstances you never get some paraquat in	20	the brain before damage occurs to dopaminergic
21	the brain, and that's true of everything that	21	neurons sufficient to give rise to the onset of
22	we're exposed to in our world.	22	Parkinson's disease, right?
23	Q. Okay.	23	A. Indeed, a principle of risk
24	A. We go outside, we stay in our	24	assessment which we always apply, correct.
25	offices, and we're there's tons of stuff in	25	Q. Now, when you do that risk
-	Page 1009	-	Page 1011
1	our brain at low levels.	1	assessment and the focus here, of course,
2	Q. So you would contemplate that a user	2	has been primarily Parkinson's disease
3	who is using it as contemplated by Syngenta and	3	you're doing it focused upon oxidative stress
4	who is out spraying this in his farm fields is	4	that's applied to the dopaminergic neurons,
5	going to get some amount of this in their	5	right? That's really what you're looking at?
6	brain. It's hard to avoid that, correct?	6	A. Yes, we're assuming that paraquat
7	A. Yes, absolutely. We would not deny	7	may have that effect.
8	that some chemical gets into the body, yes,	8	Q. And also, we could go through
9	include and therefore into the brain.	9	you and I could walk through the steps,
10	Q. Yes. And into the brain.	10	the inflammatory process, the glial cells and
11	So the issue is how much gets in the	11	all this. We could get through all of it and
12	brain before sufficient damage to the brain	12	walk it, but the bottom line is it comes down
13	occurs to be, let's say, problematic for that	13	to one central theme, and that's oxidative
14	person, correct?	14	stress that either weakens and sickens the
15	A. That's correct, yes.	15	dopaminergic neurons or kills them, and where
16	Q. Am I saying that right?	16	they quit producing dopamine.
17	A. You're saying it perfectly, sir,	17	Would you agree with me?
18	yes.	18	A. Yes.
19	Q. And that how long has that been	19	Q. All right. And that determination
20	known by Syngenta?	20	would then lead to the loss of dopamine to
21	A. Well, we started those calculations	21	a certain level where a person would develop
22	in 2009 actually, as that exhibit indicates,	22	some symptoms, right?
23	as we were starting to generate the data.	23	A. Yes.
	Q. All right.	24	Q. All right. But there's yet another
24	O. All light.		

	Page 1012		Page 1014
1	disease?	1	taken into account the effect in the substantia
2	MR. NARESH: Objection to form.	2	nigra of alpha-synuclein as one of the hallmark
3	THE WITNESS: Which is what,	3	characteristics of Parkinson's disease?
4	please?	4	MR. NARESH: I'll object to the
5	BY MR. TILLERY:	5	form.
6	Q. That's the part of the	6	THE WITNESS: In terms of doing
7 .	alpha-synuclein in the brain causing damage	7	a risk assessment, we do not we feel
8	to those same cells by leaving clumps of	8	we do not need to specifically look at
9	protein in the alpha in the substantia	وا	alpha-synuclein. It's just one of the
10	nigra, isn't it?	10	component parts that might add up with
11	MR. NARESH: Objection to form.	11	others to result in the pathology.
12	THE WITNESS: That certainly is	12	BY MR. TILLERY:
13	a view that alpha-synuclein plays some	13	Q. So you would the answer be you
14	kind of role. But, as we've said in	14	have not looked at that at all, right?
15	previous discussions, we don't believe	15	A. Now you're asking a different
16	that that is yet fully clear.	16	question, which is whether we have actually
17	BY MR. TILLERY:	17	looked at alpha-synuclein rather than assuming
18	Q. All right. Well, let's assume that	18	that it may have a role to play in the
19	the rest of the medical science group that	19	pathology, and the answer to have we looked at
20	deals with this every day disagrees with you.	20	it is, as I said yesterday, no, we have not
21	We won't need to argue about this but	21	looked at that ourselves.
22	I'll start my question and say this: Just	22	Q. All right. And so would you agree
23	assume that it does, that alpha-synuclein plays	23	with me that in your analysis you've not taken
24	a significant role in the development of	24	into account any aspect of the effects of
25	Parkinson's disease.	25	alpha-synuclein, right?
	Page 1013		Page 1015
1	Now, if that assumption is correct,	1	A. No, I wouldn't agree with that
2	let me ask you, what part of this risk	2	because, as I've said twice now, we
3	assessment that you've done here includes the	3	if alpha-synuclein is part of the pathology,
4	calculus for alpha-synuclein playing a role?	4	part of the reason why paraquat may kill
5	MR. NARESH: I'll object to the	5	dopaminergic neurones, we've included that in
6	form.	6	our conservative risk assessment assumptions.
7	THE WITNESS: It doesn't, and	7	Q. Because you assume that if they're
8	I would ascertain that it doesn't need	8	impacted from this, it includes all sources of
9	to, because we have been looking at the	وا	impact, right, that's what you're
10	ultimate endpoint, which is loss of	10	A. That's right, yes.
11	dopaminergic neurons, which, as you	11	Q. Okay.
12	rightly say, could result in loss of	12	A. That's exactly right, yes.
13	dopamine.	13	Q. All right. That's what you were
14	Although we don't believe that that	14	saying, right?
15	actually is a reproducible finding,	15	A. Yes, that's right.
16	we have taken the assumption that it	16	Q. But if I look at Exhibit No. 38,
17	could occur, so we've factored in things	17	your risk assessment, are any of the iterations
18	like alpha-synuclein and the impact that	18	of it in 2011 or anything else, I'm not going
19	could have because we've been looking at	19	to find any references to alpha-synuclein,
20	the final effect, which is death of	20	am I?
21	neurones.	21	A. No, you're not.
22	MR. TILLERY: Well, let me move	22	Q. You've never done a study on
23	to strike your answer as unresponsive.	23	alpha-synuclein, have you?
	BY MR. TILLERY:	24	A. We have not, no.
24	DI WIK. IILLEKI.	144	

46 (Pages 1012 to 1015)

			Page 1018
a DVAD WILLEDY	-		
1 BY MR. TILLERY		1	A. Yes
	tand that paraquat causes	2	Q. Yes.
3 the up-regulation of		3	A. It's part of the hypothesis of what
	ou at a meeting that you	4	may happen in Parkinson's disease, yes.
5 attended; do you rer		5	Q. All right.
	SH: Objection to form.	6	And as you testified, 40 C.F.R.
7 THE WITNE		7	159.165 requires a registrant like
8 BY MR. TILLERY		8	(Stenographer interruption.)
1	wn that for two decades,	9	BY MR. TILLERY:
10 haven't you?		10	Q. And as you've previously testified,
	vn that for certainly,	11	40 C.F.R. 159.165 requires a registrant like
12 yes, 15 years.	37 1	12	Syngenta to report to the EPA the results of
13 Q. Two decade		13	toxicological studies if they show an adverse
	back to the April 2009	14	effect in a different species, correct?
	Monte gave to Syngenta's	15	A. Correct.
16 health, science and l		16	MR. NARESH: Objection to form.
Do you reme	mber that?	17	BY MR. TILLERY:
18 A. Yes.		18	Q. And you also testified that
	e meeting in Marlow,	19	reporting results in a different species is
	Di Monte gave a presentation	20	important because the more species a chemical
1 -	ts with paraquat in the	21	adversely affects, the more likely it is
22 squirrel monkeys, ri	ight?	22	to affect humans, right?
A. Correct.		23	MR. NARESH: Objection to form.
	stified earlier, at that	24	THE WITNESS: Well, I did qualify
25 meeting Dr. Di Mor	nte reported among his	25	that to say not necessarily always the
	Page 1017		Page 1019
	from squirrel monkeys that	1	case but sometimes.
2 he observed the loss	s of striatal dopamine,	2	BY MR. TILLERY:
3 right?	•	3	Q. But in general you would agree with
4 A. Correct.		4	the statement?
	ry be associated with	5	A. I think that is part of the
6 Parkinson's disease,	right?	6	judgment that one makes in toxicology and risk
7 A. Correct.		7	assessment.
8 Q. The up-regu		8	Q. I don't have any idea what that
9 alpha-synuclein, rig	ht?	9	meant. You just said that
10 A. Correct.		10	A. It basically means that you look at
	we discussed, is a	11	the totality of the evidence across species,
12 major constituent of		12	as we discussed this morning, in making
	rk of Parkinson's disease,	13	a judgment about relevance to human health.
14 isn't it?		14	Q. But the EPA has to have some
15 A. That is corre		15	uniformity for people complying; you understand
16 Q. He also note		16	with as many chemical companies as there are in
17 neuromelanin, and a		17	the world, as many toxicologists as there are
	paminergic neurons is	18	in the world, they have to have some uniformity
	role in the development	19	so that they know that there aren't
20 of Parkinson's disea		20	10,000 different people around the country
	been speculated.	21	interpreting their rules and regulations
	than speculated, hasn't	22	differently.
23 it. You use		23	You understand that?
24 A. That is		24	A. Yes, indeed. That's very clear.
25 Q the word ·		25	Q. You agree with that, right?

	Page 1020		Page 1022
1	A. Yes.	1	because the expert, the external expert, told
2	Q. Okay. Now, you also testified that	2	us that this was still something that he
3	for purposes of evaluating a chemical's	3	didn't fully understand himself.
4	toxicity to humans, nonhuman primate toxicity	4	MR. TILLERY: Let's, at this point
5	studies are gold standard in animal research.	5	in time, pull up 563 KT. Whatever number
6	MR. NARESH: Objection to form.	6	that is. That's 89 or
7	THE WITNESS: They can be but not	7	MS. BRUMITT: 87.
8	always. Sometimes the nonhuman primate	8	MR. TILLERY: 87.
9	is the gold standard because it's the	9	Dr. Botham, this is going to be
10	closest to human beings.	10	Plaintiff's Deposition Exhibit 87.
11	BY MR. TILLERY:	11	(Botham Exhibit 87 marked for
12	Q. And when you say closest, you mean	12	identification.)
13	closest genetically to us?	13	MR. TILLERY: Keep that up.
14	A. Closest genetically, correct.	14	Could you raise that for him just a
15	Q. Squirrel monkeys are nonhuman	15	little on the screen, towards the top,
16	primates, aren't they?	16	so he can see the whole thing.
17	A. They are.	17	MS. BRUMITT: You're not
18	Q. After learning about these adverse	18	MR. TILLERY: Oh yeah, you have
19	effects Dr. Di Monte observed in squirrel	19	THE WITNESS: I've got control,
20	monkeys, Syngenta did not report that	20	Mr. Tillery, so
21	information to the EPA, did it?	21	BY MR. TILLERY:
22	A. It did not, for the reasons that	22	Q. Dr. Botham, I'm one of those people
23	I indicated yesterday, which is that we took	23	that you'd call a dinosaur when it comes
24	the evidence presented by Dr. Di Monte and his	24	to newfangled electronics.
25	expert opinion, which is critical. As we've	25	A. I'm not far behind you.
	Page 1021		Page 1023
1	been discussing today, his expert opinion was	1	Okay, I can see this.
2	that those data were not yet fully	2	Q. All right. Let's make sure we're
3	interpretable in terms of whether they were	3	clear on the record what we're all looking at.
4	adverse.	4	This is a document which is section 159.165,
5	MR. TILLERY: I move to strike your	5	"Toxicological and ecological studies: Adverse
6	answer as unresponsive.	6	effects information must be submitted as
7	BY MR. TILLERY:	7	follows."
8	Q. But after learning about these	8	And this is 40 C.F.R. 159.165,
9	adverse effects that Dr. Di Monte observed in	9	section (d), okay?
10	squirrel monkeys, Syngenta did not report that	10	A. Yes.
11	information to the EPA, did it?	11	Q. All right. And you see the part
12	A. We did not.	12	that says "Incomplete studies"?
13	Q. Okay. But Syngenta should have	13	A. Yes.
14	reported that information, shouldn't it?	14	Q. Okay. Now, earlier you testified
15	MR. NARESH: Objection to form.	15	that Syngenta's familiar with this regulation,
16	THE WITNESS: We believe that	16	I believe, right?
17	we did not need to report because the	17	A. Yes.
18	findings were still not possible to	18	Q. And the fact that a study is
19	interpret fully, which is an important	19	incomplete or aborted is not necessarily
20	part of the requirements.	20	a justification for withholding preliminary
21	BY MR. TILLERY:	21	results from the EPA, is it?
22	Q. And was that because they weren't	22	A. That's correct.
23	complete, they were just a part?	23	Q. Dr. Di Monte did not complete the
24	A. In part because they weren't	24	study; is that what you're saying?
25	complete but I think much more importantly	25	A. No. Dr. Di Monte, when we saw the
-	Complete out 1 minut more importantly	27	11, 110, DI, DI MORIO, WHOII WE SAW LIE

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	Page 1024		Page 1026
1	study, had (a) not necessarily completed the	1	conclusions that he reported to you, which
2	study, and (b), even in the bit that he had	2	we've talked about in this deposition, those
3	completed, was not in a position to fully	3	results would clearly be reportable to the EPA,
4	understand the implications of the findings.	4	wouldn't they?
5	MR. TILLERY: I move to strike your	5	MR. NARESH: Objection to form.
6	answer as unresponsive.	6	THE WITNESS: That's why I said
7	BY MR. TILLERY:	7	previously that it wasn't just about the
8	Q. I said asked you, Dr. Di Monte	8	study being complete or incomplete,
9	hadn't completed the study, right?	9	or preliminary or fully finished; it was
10	MR. NARESH: I'll object	10	that in the form that he told us about
11	THE WITNESS: It was our belief	11	the study, his expert opinion was that
12	that he had still more work to do.	12	he did not fully understand what the
13	THE STENOGRAPHER: Sorry, I	13	implication of his findings were, and
14	MR. TILLERY: Okay, you thought	14	that's the reason why we did not report
15	THE STENOGRAPHER: Sorry, I didn't	15	the findings.
16	get Mr. Naresh, I'm really struggling	16	BY MR. TILLERY:
17	to hear your objection.	17	Q. So you're relying upon Dr. Di Monte
18	MR. NARESH: Yes, I'm sorry.	18	and what he said as a basis for not sending the
19	Dr. Botham, if you wouldn't mind,	19	nonhuman primate data to the US EPA, right?
20	pause just a minute some of the time so	20	A. And, indeed, as we said this
21	that I can get objections in. I'm talking	21	morning, the views of an independent expert
22	over you a few times.	22	whose study it was are really important in
23	THE WITNESS: Yeah, sorry. I think	23	this situation.
24	it's because I'm you're quite	24	Q. Right. And the findings, scientific
25	indistinct at the moment, Ragan. I do	25	findings, are more important than the views,
	Page 1025	-	Page 1027
		1	aren't they?
1	apologize.	2	A. Well, scientific findings have
2	MR. NARESH: Maybe it's the switch	3	to be properly understood and interpreted.
3	to the telephone here, but	4	There are lots of findings which may be of
4	I'm objecting to the question on	5	absolutely no relevance to human health, and
5	form grounds.	6	this is normal practice to interpret.
6	But please go ahead and answer if	7	
7	you remember the question.	1	Q. Did you tell Dr. Di Monte that you were relying upon him and what he said as
8	MR. TILLERY: I'll restate it so	8 9	a reason for not sending the nonhuman primate
9	we're clear.	10	data to the US EPA?
10	BY MR. TILLERY:	11	A. I don't know if that kind of
11	Q. You had told us earlier that		
12	Dr. Di Monte had conducted a preliminary data	12 13	conversation was had. It certainly isn't something that I said to him.
13	analysis or gross pathological analysis but	14	Q. You didn't say it, did you?
14	that the exam was not finished. I think that's	15	A. No, I didn't say that to him.
15	what you said. Correct?	16	Q. Do you know if Dr. Travis said it?
16	A. Sorry. I was just pausing in case	17	A. I don't know if Dr. Travis said it?
17	Ragan was trying to get in. Yes.		
18	So, yes, we believed that he may	18  19	Q. Or do you know if Dr. Sturgess told
19	have more work to do and but whether it	20	Q. Or do you know if Dr. Sturgess told him?
20	would be on that particular study or whether		
21	he intended to do another study wasn't	21	A. I don't know if Dr. Sturgess told
22	entirely clear.	22	him.
23	Q. Okay. But if Dr. Di Monte's study	23	Q. Okay. Do you think if you were
24	were completed and if the results were	24	relying upon a comment he made at a science
25	comparable to Dr. Di Monte's preliminary	25	meeting about his work as a basis for not

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,			7	
1 2	reporting these sorts of scientific findings to the United States Environmental Protection		1	subject to (d)(2)?
3	Agency, that it would have been appropriate		2	A. I would have described it as more
4	to tell the scientist?		3 4	a short-term study.
5	MR. NARESH: Objection to form.		≄ 5	Q. Okay. A short-term study.
6	THE WITNESS: I don't know that		6	A study let's look at (d)(1):
7	it's necessarily appropriate not to tell		7	"A study using a test regimen lasting 90 calendar days or less, and all of
8	him. It is incumbent, as I understand	- 1	8	the following conditions are met: All testing
9	FIFRA 6(a)(2), and you may want to tell	- 1	9	has been completed; A preliminary data analysis
10	me I'm wrong, that it's the registrants,	- 1-	10	or gross [exam] has been conducted; Final
11	the people who receive that information		11	analysis has not been completed"
12	who have the accountability to refer to		12	Would that be accurate; no final
13	the EPA.		L3	analysis?
14	BY MR. TILLERY:		L4	A. Yes, correct.
15	Q. Who have the responsibility and		15	Q. All right. Only preliminary data
16	legal obligation, correct?		L6	analysis had been done and gross pathological
17	A. Indeed, if they meet the criteria,		L7	analysis had been conducted, so we're okay
18	yes.		L8	there, right?
19	Q. And if they don't do it, it's		L9	A. Yes.
20	a violation of the law and there's a criminal		20	Q. And a reasonable period for
21	sanction for not doing it, right?		21	completion of the final analysis, not longer
22	MR. NARESH: Object to the form.		22	than 90 calendar days has lapsed. It has
23	BY MR. TILLERY:		23	certainly, right?
24	Q. Right?		24	A. Mmm-hmm. Yes.
25	A. Yes. If we deliberately withheld,		25	Q. Comparable information concerning
	Page 10	29		Page 1031
1	knowing that they met the criteria but		1	the results of a completed study would be
2	we didn't that was not the case here.	i	2	reportable, right?
3	Q. Did you ever see the word		3	A. Yes.
4	"deliberately" in any of these documents		4	Q. So looks like we hit every single
5	we looked at this morning? Did you see the		5	one of those, doesn't it?
6	word "deliberate"?	- 1	6	MR. NARESH: Objection to form.
7	A. No, I'm this is part of the		7	THE WITNESS: Well, yes, it does,
8	interpretation piece that we're talking about		8	but you can't the advice that we have
9	here.	- 1	9	received from our experts in 6(a)(2) is
10	Q. Well, so look at the section (d)(2).	1	LO	that you can't take these words in total
11	Do you see this?		1	isolation. You have to add to that a
12	Can we put this up on the screen so	1	L2	the definition of relevance, as we were
13	that people can see it. Is that it?		L3	discussing earlier, relevance to
14	All right.		.4	understanding the risk of a product
15	Do you see (d)(2)?		.5	and
16	A. Yes, I do.	1	-6	BY MR. TILLERY:
17	Q. Okay. Let's walk through that.	1	7	Q. Where does it say that? Where does
18	Long-term studies. Was his a long-term study?	1	.8	it say that? Show me that.
19	A. I would have classed this as not		.9	A. Well, we looked at that earlier,
20	being a long-term study.		20	didn't we, when we were looking at relevance
21	Q. Okay. So it wouldn't go for		21	in the previous screenshot you gave me,
22	90 days?		22	relevance to risk as to I can't remember
23	A. No, it certainly didn't go for		23	exactly the words. Relevance to risk
24	a 90-day dosing period.		4	assessment.
25	Q. So do you think his study was not	2	25	Q. So you're saying all the way back

		1	
1	to the same point, the word "relevance" gives	1	people at Syngenta, this data is not relevant,
2	Syngenta sort of a key because if Syngenta	2	correct?
3	decides it's not relevant, then none of these	3	A. That's what I'm telling you, yes.
4	regs, it doesn't matter how many of things we	4	Q. All right. Okay. Let's move on.
5	go through, does it, because none of them are	5	MR. TILLERY: Now, I think we're
6	going to be applicable to Syngenta's reporting	6	going to go to Exhibit 36 in the
7	requirements because if you decide it's not	7	deposition I'm going to show you
8	relevant, none of them apply, right?	8	an exhibit, sir, that we had marked
9	MR. NARESH: Objection to form.	9	previously in the deposition, just
10	THE WITNESS: No, I really wouldn't	10	to orient you to the line of questions,
11	put it that way. We have chosen,	11 12	simply for that reason, okay.
12	in order to do I think as you said,		This is Plaintiff's Deposition
13	to make sure that we are providing	13	Exhibit 36. Counsel, it's
14	consistency in the way in which	14 15	SYNG-PQ-00105713.  Rothom Exhibit 36 proviously
15 16	we interpret FIFRA 6(a)(2), for the many	16	(Botham Exhibit 36 previously
16 17	hundreds of people who are involved in	17	marked for identification.) MR. TILLERY: Actually, it's
	generating studies and data, a basis on which to make those judgments, one of	18	we'll have to we have a little
18 19	which is that the data have to be	19	technical issue with the way it's loaded,
20		20	Dr. Botham
21	properly understood as being adverse.  MR. TILLERY: I move to strike your	21	THE WITNESS: Yes.
22	answer as unresponsive.	22	MR, TILLERY: so I think we'll
23	BY MR. TILLERY:	23	come back to this. We'll come back
24	Q. Can you answer the question or do	24	to this after a break, okay.
25	you want me to restate it?	25	Can you go to number 15 at this
	Page 1033		Page 1035
1	A. Please restate it.	1	point? What number would that be? What
2	Q. I'm looking for just answers to my	2	exhibit number?
3	questions, not some other statements that you	3	(Off-the-record discussion.)
4	want to make. In a trial you get the chance	4	MR. TILLERY: 88, okay. This will
5	to do that but I'm just answering looking	5	be Plaintiff's Deposition Exhibit 88.
6	for questions to be answered that I asked.	6	This is KT15, number 15. And just that
7	Now, my point is this: You've read	7	front page.
8	into a relevancy component to 159.165(d) on	8	I don't know that we even need the
9	incomplete studies, haven't you?	9	exhibit, I think. You'll remember it
10	A. Yes.	10	because we spoke of it at great length
11	MR. NARESH: Objection to form.	11	today, and that is the residue study.
12	BY MR. TILLERY:	12	Do you remember that? We started our
13	Q. Okay. And you agree with me that	13	deposition today talking about those
14	the Di Monte presentation in 2009 meets all	14	exhibits, remember? The Di Monte residue
15	of the requirements of 159.165(d), doesn't it?	15	studies.
16	MR. NARESH: Objection to form.	16	MR. NARESH: I don't remember.
17	THE WITNESS: Yes.	17	Could you give me do you have a Bates
18	BY MR. TILLERY:	18	number if it's not
19	Q. And if we go to (2), and if it's	19	MR. TILLERY: Yes, and this
20	a long-term study, you want to look at that,	20	would be SYNG-PQ-00044965, and this is
21	it meets all those as well, doesn't it?	21	the Bates reference for "Paraquat -
22	A. Yes.	22	Analysis of brain samples from
23	Q. All right. So what you're saying is	23	paraquat-exposed squirrel monkeys for
24	it doesn't matter because, as you view this and	24	residues of paraquat."
25	as you've been educated and instructed by	25	THE WITNESS: Yes. So you're

	Page 1036		Page 1038
١,		١.	
1 2	referring to the report by Dr. Ray?	1	A. Yes, correct.
2	MR. TILLERY: That is exactly	2	Q. And he did that in compliance with
3	right. These are the January 21, 2011	3	Syngenta's internal corporate policy of having
4	report by Dr. Ray on the residue studies.	4	potentially referable information or reportable
5	BY MR. TILLERY:	5	information reviewed by the PRF Committee,
6	Q. This is the brain specimens from the	6	correct?
7	squirrel monkeys by Dr. Di Monte, remember?	7	A. That's correct, yes.
8	A. Yes, indeed.	8	Q. So it would appear that Dr. Travis
9 10	MR. NARESH: Just to help the	9	thought the finding was at least potentially
11	witness, I think that's Exhibit 78,	10	reportable or referable, correct?
12	I believe.	11	A. Correct, and he also did that in
13	MR. TILLERY: I referred to it as	12	discussions with myself, as that record shows.
14	88 but I don't know I think we've also	13	Q. Okay. We also looked at Exhibit 79,
15	previously referred to it as an exhibit	14	which was the report that we went over line and
16	this morning and we marked it so I don't	15	verse, which was the form that the potentially
17	know that we let me see if I have it.	16	referable approach committee filled out.
18	MR. NARESH: I have it up as	17	This was the one that Dr. Travis filed.
19	Exhibit 78. I don't have an 88 on	18	Do you remember that?
20	eDepoze.	19	A. Yes. Yes, I do.
21	MR. TILLERY: Okay, hold on.	20	Q. Oh, yes, okay.
22	It's 78, and you are absolutely correct.	21	The people who worked on this study,
23	MR. NARESH: Dr. Botham, can you navigate to 78?	22	including Dr. Travis, were all Syngenta
24		23	employees, weren't they?
25	(Stenographer clarification.) MR. NARESH: I'm just asking if	24 25	A. I believe they were, yes.
	Page 1037	25	Q. And you would also agree that they  Page 1039
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1	the witness can navigate to Exhibit 78,	1	were probably qualified experts within the
2	if he knows how to do that.	2	meaning of EPA's definition, right?
3	THE WITNESS: Yeah, I'm doing that,	3	A. I would agree.
4	and I've done so. Thank you, Ragan.	4	Q. And certainly, Dr. Travis was
5	I'm there. I can see 78. The Dr. Ray	5	a qualified expert within the meaning of the
6	report is in front of me now on eDepoze.	6	EPA regulation, wasn't he?
7	BY MR. TILLERY:	7	THE WITNESS: Could I just point
8	Q. Yeah, all I'm asking is just	8	out, Ragan, I can't hear you at all now.
9	an orientation question. I'm just trying to	9	I think I heard you saying mouthing
10 11	orient you for these questions and that's all there is, okay?	10 11	something then, but
12	A. Okay.	12	MR. NARESH: Can you hear me now?
13	Q. It's just simply referencing that	13	THE WITNESS: Yeah, I can hear you
14	which you and I discussed at greater length	14	now. MR. NARESH: Okay. I'm just
15	this morning, okay?	15	objecting on form.
16	A. Yes.	16	MR. TILLERY: Did you object to the
17	Q. You testified that in this study	17	question did you
18	Syngenta confirmed that paraquat was present	18	THE STENOGRAPHER: Mr. Naresh, can
19	in the brains of Dr. Di Monte's squirrel	19	I just say, if I can't hear it but I can
20	monkeys, right?	20	see it, the video won't be even hearing
21	A. Yes.	21	it or seeing it.
22	Q. And Dr. Travis referred the finding	22	MR. NARESH: Okay. I think my
23	of this study to Syngenta Potentially Referable	23	THE STENOGRAPHER: So just to point
24	Findings Approach Committee, which you were the	24	that out.
25	chairman of, right?	25	MR. NARESH: I think my audio cut
District of		-	MAN. IN MEMORIA, I MINIK INT MUNIC OUL

52 (Pages 1036 to 1039)

	Page 1040		Page 1042
1	out. My audio might have cut out.	1	in the brain are not, in and of themselves,
2	THE WITNESS: Yeah, Ragan, your	2	necessarily adverse.
3	audio is cutting in and out, I think that	3	Q. Okay. And also because the
4	might be the problem, so I may be missing	4	scientists were qualified experts, their
5	entirely some of your objections.	5	adverse findings, if they were, were reportable
6	MR. NARESH: I'm watching it on	6	to the US EPA under section 159.158(a),
7	realtime and I think that they are coming	7	correct?
8	in, though my objections to the last two	8	MR. NARESH: Objection to form.
9	questions did not show up on the	9	THE WITNESS: Yes. Again, if they
10	transcript.	10	were adverse.
11	THE WITNESS: Yeah, that's what	11	BY MR. TILLERY:
12	I thought.	12	Q. Okay. But as we've already
13	MR, TILLERY: I'm stipulating that	13	discussed, Syngenta's Potentially Referable
14	you're free to make sure that those are	14	Findings Approach Committee decided to withhold
15	included in the transcript now on behalf	15	these findings of paraquat residue in the
16	of plaintiffs, okay.	16	squirrel monkey brains and not report them,
17	MR. NARESH: Thank you. Please	17	right?
18	proceed.	18	A. Well, I've double-checked that
19	MR. TILLERY: You're welcome.	19	during the break and my understanding, from
20	All right.	20	what I can see, is that it wasn't the approach
21	BY MR. TILLERY:	21	committee that made that judgment; they were
22	Q. The people, including Dr. Travis,	22	indeed sent, using the appropriate process, to
23	were scientists. We talked about that, right?	23	the US PRF Committee.
24	They're scientists?	24	Q. Well, but the report itself we went
25	A. Yes.	25	over. You're not did you change the report
	Page 104:	-	Page 1043
1	Q. They were qualified experts within	1	after we looked at it?
2	the EPA's definition, right?	2	A. No. I'm pretty sure that what
3	A. Yes.	3	happened here, which is what I thought
4	MR. NARESH: Objection to form.	4	happened, is where it says, under 4d on that
5	BY MR. TILLERY:	5	report, "No new information in the studies -
6	Q. And I think we talked about	6	Not reportable," I'm pretty sure, from looking
7	Dr. Travis was a qualified expert within the	7	this up, that that was put in after there had
8	meaning of the EPA definition, right?	8	been a discussion in the US PRF Committee,
9	MR. NARESH: Same objection.	9	so that was not applied by the approach
10	THE WITNESS: Yes.	10	committee.
11	BY MR. TILLERY:	11	Now, we would need to double-check
12	Q. And because the scientists were	12	that. That's what my record shows in the
13	Syngenta employees, their adverse findings were	13	short time, short time I had to check that
14	reportable to the EPA under section 159.158(a),	14	today.
15	weren't they?	15	Q. So it was the US guys who did this,
16	MR. NARESH: Objection to form.	16	not the British guys who did it, right?
17	THE WITNESS: If	17	A. That's what my record suggests.
18	BY MR. TILLERY:	18	I think it would be helpful
19	Q. For that purpose at least?	19	Q. All right.
20	A. If the findings were adverse.	20	A to double-check that, yes.
21	Q. Okay. Well, you don't dispute that	21	Q. Well then, let's see what else the
22	they were adverse, do you?	22	British guys did under paragraph 2a. Look at
23	A. Well, we're talking about levels of	23	that one. Because there is no question that's
24	paraquat in the brain, and I think, as	24	on your watch, right?
25	I explained this morning, levels of paraguat	25	A. Yes.

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	Page 1044		Page 1046
1	Q. Take a look at that.	1	Q. And the reason Syngenta did not
2	A. Yes. Yes.	2	report the findings of paraquat in the monkey
3	Q. That one's yours, right?	3	brains was because "the findings do not
4	A. Yes.	4	represent an adverse effect or a precursor of
5	Q. You're not going to say the	5	an adverse event."
6	Americans did that, right?	6	A. Yes.
7	A. No, no, absolutely. No, it's	7	Q. That's what you said, right?
8	yes.	8	A. That's what we said.
9	Q. Okay. All right. Okay. So let's	9	Q. Okay.
10	take a look at this:	10	Now, could you tell me where studies
11	"Studies of the kinetics of paraquat	11	had previously been done demonstrating that
12	in the brain across a range of species were	12	paraquat gets into monkey brains, before
13	considered. The committee considered that the	13	Dr. Di Monte's study?
14	findings do not represent an adverse effect or	14	A. Right now, I can't remember what
15	a pre-cursor [as] an adverse effect. Therefore	15	the literature is on that subject. So I think
16	the findings do not meet the technical criteria	16	there are studies but I can't immediately
17	for referral as described in the Product Safety	17	bring them to mind.
18	PRF Criteria for Referral Guidance	18	Q. Can you remember one for the ladies
19	Document"	19	and gentlemen of the jury, one study?
20	Right?	20	A. Not at the moment, no. I would
21	A. Yes, that's what we wrote.	21	need to check my files on that.
22	That was our belief. Mmm.	22	Q. Okay.
23	Q. That is what you told the US group	23	MR. TILLERY: I'm not leaving but
24	who made the final decision, right?	24	I just need to take about one minute
25	A. Right. And let me explain. If	25	to look for something here, okay.
-		2.5	
	Page 1045		Page 1047
1	Q. Excuse me	1	THE VIDEOGRAPHER: We are going
2	A. No, it's important.	2	off the record. The time is 4:25.
3	Q. Excuse me	3	(Off the record.)
4	A. It really is important. We did	4	THE VIDEOGRAPHER: We are back on
5	nevertheless let the US people know because	5	the record. The time is 4:26.
6	whenever there's any element of doubt about	6	BY MR. TILLERY:
7	whether our judgment is correct, because they	7	Q. Dr. Botham, you've acknowledged
8	are the experts in FIFRA 6(a)(2), we did let	8	that FIFRA defines an adverse effect as:
9	them know about this, even though we believed	9	"Any unreasonable risk to man or the
10	that our judgment was probably correct.	10	environment, taking into account the economic,
11	Q. So you let them know not to report	11	social, and environmental costs and benefits of
12	it?	12	the use of any pesticide."
13	A. We let them know about the findings	13	Right?
14	and then they made their judgment. It was	14	MR. NARESH: Objection to form.
15	they that actually used the phrase "no new	15	BY MR. TILLERY:
16	information" sorry	16	Q. Isn't that correct?
17	Q. You didn't write in there you	17	MR. NARESH: Dr. Botham, you're on
18	didn't write in that conclusion paragraph,	18	mute.
19	"We're uncertain about this. We're going to	19	THE WITNESS: Yeah, I'm sorry about
20	send you all the information."	20	that. I went on mute during that break.
21		21	
22	A. No, I agree.		Apologies.
	Q. Okay.	22	And again, Ragan, we couldn't hear
23	A. Yeah, I agree, we didn't do that	23	your objection then.
24	but the record suggests that that was	24	MR. NARESH: I'm objecting to the
25	actually what actually did go on.	25	form.

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1	THE WITNESS: And I replied yes.	1	THE WITNESS: Correct, and
2	BY MR. TILLERY:	2	correct, and the key bit there was the
3	Q. Your answer is yes.	3	verification. He needed verification.
4	MR. TILLERY: For the stenographer,	4	That's what I was mentioning earlier.
5	should we do that all over again?	5	BY MR. TILLERY:
6	Let's do this over, okay. Let's do	6	Q. But two years later, when Syngenta
7	this	7	scientists completed their study of those same
8	THE STENOGRAPHER: I did it	8	monkey brains and they found paraquat in that
9	yeah, okay.	9	brain tissue, the committee no longer justified
10	MR. TILLERY: The record is very	10	withholding that information due to the
11	convoluted and we should do this where	11	incompleteness of the study, did it?
12	it makes sense.	12	A. No, it was for a different reason.
13	BY MR. TILLERY:	13	Q. Instead, the very same committee
14	Q. Dr. Botham, you have acknowledged	14	that had already concluded, in 2009, that
15	that FIFRA defines an adverse effect as:	15	Dr. Di Monte's brain findings in nonhuman
16	"Any unreasonable risk to man or the	16	primate were unanimously agreed as constituting
17	environment, taking into account the economic,	17	new data stated two years later, in 2011, that
18	social, and environmental costs and benefits of	18	Syngenta's own findings of paraquat in the
19	the use of any pesticide."	19	monkey brains was because "the finding do not
20	Correct'?	20	represent an adverse effect or a precursor to
21	MR. NARESH: Object to form.	21	an adverse event."
22	THE WITNESS: Yes.	22	Correct?
23	BY MR. TILLERY:	23	A. That's correct.
24	Q. And in May 2009, before Syngenta	24	Q. In fact, Syngenta's 2011 findings of
25	conducted its monkey brain residue study,	25	paraquat residue in the brains was reportable
	Page 1049		Page 1051
1	the same Syngenta committee, the Syngenta Human	1	then, wasn't it?
2	Safety Potentially Referable Findings Approach	2	MR. NARESH: Object to the form.
3	Committee, that same committee had already	3	THE WITNESS: We said that they
4	concluded that Dr. Di Monte's brain findings in	4	were not reportable because presence of
5	the nonhuman primate were unanimously agreed	5	chemical in the brain is not the same as
6	as constituting new data, hadn't they?	6	adversity.
7	A. They were new data, yes.	7	BY MR. TILLERY:
8	Q. Okay. And the quote, the brain	8	Q. Okay. And that's because you
9	findings in the nonhuman primate were	9	believe that just having paraquat in your
10	unanimously agreed as constituting new data.	10	brain, that doesn't reach a certain threshold
11	You don't dispute that. That was	11	and is within the term I think you used was
12	a committee you chaired. That's correct?	12	"margin of safety," doesn't create an adverse
13	A. I agree they were new, yes.	13	event reportable to the US EPA; is that
14	Q. All right. And the reason the	14	correct?
15	committee gave for not reporting Dr. Di Monte's	15	A. We were not saying that it was
16	monkey brain findings was that "that the study	16	because about the it was not to do with
17	had not been completed, peer-reviewed or	17	the levels of paraquat. We were not making
18	published and that the data, by Dr. Di Monte's	18	a risk assessment judgment. We were saying
19	own admission, required further verification."	19	that, as a matter of principle and it
20	Correct?	20	wasn't just the nonhuman primate studies,
21	A. That's correct.	21	it was also, if you look at the report,
22	Q. Even though the EPA regulations on	22	the 2011 PRF Approach Committee talked about
23	the incomplete studies required that adverse	23	the kinetic studies we did in rodents as well.
24	effects information be reported, correct?	24	It said that kinetic studies kinetic
25	MR. NARESH: Objection to form.	25	studies, as a whole are not reportable
Parties and the last of the la	THE TARREST. COLOURS TO TOM.	C93 HE 25	Disease, and a marker and not reportative

	Page 1052		Page 1054
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1	because they are simply measuring presence and	1	assessment.
2	not adversity.	2	The same applies here as in
3	BY MR. TILLERY:	3	with paraquat and Parkinson's.
4	Q. Let me ask you this: How long have	4	Q. Would you think that a loss of
5	you known, at Syngenta, that in the normal and	5	dopaminergic neurons under 10 percent, that all
6	ordinary use of paraquat by a farmer spraying	6	of us would agree would not give rise to
7	it on his crops that some amount was going	7	Parkinson's symptoms, would be an acceptable
8	to wind up in his brain? How long have you	8	amount of paraquat in the brain?
9	known that?	9	MR. NARESH: Object to the form.
10	A. Well, we've probably assumed that	10	THE WITNESS: Is your can I just
11	that's the case, that that is the case for	11	make sure I understood your question?
12	quite a long time, because even back in the	12	Are you saying under 10 percent of loss
13	1990s when studies were being done in animal	13	of cells is acceptable?
14	models and it was possible to see some	14	BY MR, TILLERY:
15	paraquat in the brain, it was not an	15	Q. Yeah. I'm saying you and
16	unreasonable assumption that some may also	16	I agreed at some point in the past that
17	appear in the human brain.	17	probably somewhere between 50 and 75 percent,
18	Q. And that's just from breathing it	18	I don't know what number you used, of loss of
19	or getting it somehow on their skin or	19	dopaminergic neurons is necessary before you
20	something in normal use, correct?	20	have the onset of physical components of
21	A. Correct.	21	Parkinson's disease, right? More than
22	Q. All right. And likewise, if you	22	50 percent, less than 100 percent?
23	consumed some kind of vegetable or some kind of	23	A. That's correct, yes.
24	fruit or something else that had been sprayed	24	Q. Yes. What I'm saying is is that
25	by this, you could get incremental amounts of	25	if paraquat in the brain causes, say, less than
	Page 1053		Page 1055
1	it that would enter into, ultimately,	1	10 percent, which we know won't give rise
2	the bloodstream and then into the brain,	2	to these symptoms, would that be an amount that
3	correct?	3	would be an acceptable level below the
4	A. That is conceivable, yes.	4	threshold?
5	Q. So the issue as you see is not	5	A. No, no
6	whether or not it gets into the brain but how	6	MR. NARESH: Objection to form.
7	much of it that gets there is problematic,	7	THE WITNESS: Thank you, Ragan,
8	correct?	8	sorry.
9	A. Yes.	9	No. Our margins of exposure are
10	Q. And problematic means causing an	10	based on an assumption that there
11	illness or condition that is what? Where does	11	should be no damage, not 10 percent
12	the line get drawn to where the scientists at	12	damage.
13	Syngenta become alarmed, concerned, worried	13	BY MR. TILLERY:
14	you pick the term about the damage to the	14	Q. When you say no when you say
15	human brain?	15	no damage, you mean no loss of TH+ cells?
16	A. Well, it's I'll answer that with	16	A. Yes, indeed. I mean, we believe,
17	a general response. This is what risk	17	as with all risk assessments, we should be
18	assessment is about, you and that's why	18	doing no harm, and not making an assumption
19	when we were talking about that reference dose	19	that it's okay to damage yourself a little
20	document, the key is how do you relate	20	bit.
21	external exposure, as we call it, what you're	21	Q. Okay. So what you're saying is that
22	exposed to in your diet or what you're exposed	22	the amount of paraquat in the brain at this
23	to if you're a farmer, we say at what point do	23	threshold level causes no cellular death;
24	those levels exceed that margin of exposure	24	is that what you're saying?
25	which we've calculated from our risk	25	A. Indeed, because it was based on the

	Page 1056		Page 105	58
1	extrapolation from the animal studies where	1	I'm saying it's paraquat, to be 10 to 20 years	
2	people like Deborah Cory-Slechta had not only	2	from exposure before the onset. Right?	
3	seen the effect but had actually determined	3	MR. NARESH: Object to the form.	
4	that there was a dose in the mouse, which is	4	THE WITNESS: Well, yes, first of	
5	called the "no effect level," where no cell	5	all, you have to assume that paraquat is	
6	loss was seen. So our calculations were based	6	causative. You also have to assume that	
7	on that no effect level with no	7	it's only paraquat and not a combination	
8	Q. Let me ask	8	of paraquat and other factors, including	
9	A signs.	9	genetics.	
10	Q. Let me ask you something, and	10	I think that what you're	
11	I think this is something you and I have not	11	representing it too simplistically and	
12	talked about.	12	I don't think you can say if paraquat is	
13	Have you, at Syngenta, factored in	13	causative, that it takes 10 or 20 years	
14	time in the calculus regarding how long it	14	to develop the disease. We don't know	
15	takes if you follow an animal or test subject	15	the answer to that question. Science	
16	for a long period of exposure, chronic	16	doesn't know the answer to that question.	
17	exposure, in small amounts? Have you done	17	BY MR. TILLERY:	
18	that?	18	Q. Well, let's just let's do it this	
19	MR. NARESH: Object to the form.	19	way, if we can. Let's assume, just for	
20	THE WITNESS: Well, we've done	20	purposes of the discussion, that paraquat is	
21	a 90-day study and this was a 90-day	21	the cause. You're not admitting it, I'm not	
22	study done in the diet of mice. So,	22	asking you to admit it. I'm asking you	
23	unlike the studies we have been talking	23	to accept that assumption for purposes of my	
24		24	question. Okay?	- 1
25	about mostly today, which have been intraperitoneal or subcutaneous injection	25	A. Fine.	
23	Page 1057	2.5	Page 105	-
			<del>_</del>	, ,
1	with a few doses over a few weeks, we	1	Q. And that there's a latency period	
2	dosed for a longer period of time, 90	2	from exposure to the onset of Parkinson's	
3	days, which is, again, by good	3	symptoms where a diagnosis of the condition	
4	toxicological practice, a length of	4	would be made.	
5	dosing which is meant to give you	5	Do you understand what I'm saying	
6	information to protect from longer-term	6	so far?	
7	exposure.	7	A. Yes, yes.	
8	BY MR. TILLERY:	8	Q. All right. And let's assume that	
9	Q. Okay. So do you understand that	9	latency period is, as you suggest, between	
10	paraquat strike that.	10	10 and 20 years. Okay?	
11	What do you understand, sir,	11	A. Okay.	
12	in terms of this scientific analysis, that the	12	Q. Have you done any studies at	
13	length of time from paraquat exposure to the	13	Syngenta to replicate that real-life situation	
14	onset of Parkinson's disease is?	14	just to test whether or not that could occur?	
15	A. Well, in the human situation, again	15	MR. NARESH: I'll object to the	
16	not talking about paraquat but in human	16	form.	
17	Parkinson's disease, the onset of the disease	17	THE WITNESS: No, we've not done	
18	can take 10 or 20 years from whatever it is	18	what you might call a chronic study or	
19	that may be the initial cause.	19	a delayed-dosing study. We have gone	
20	Q. Okay. So this is sometimes referred	20	to a 90-day duration in the work that	
21	by doctors as the latency period?	21	we've done. That's as long as we've	
22	A. That's correct, yes.	22	gone.	
23	Q. All right. And do you understand	23	But, again, 90 continuous days of	
24	the latency period, then, to be from as you	24	dosing is, again, exaggerating the	
25	say, whatever it appears to be the cause, and	25	exposure. So it's, in part, trying	

	Page 1060		Page 1062
1	to overcome the fact that you can't	1	A. That's correct.
2	always fully replicate how human beings	2	Q. Were you present at this?
3	might be exposed.	3	A. I don't remember whether I was
4	MR. TILLERY: I move to strike your	4	present.
5	answer as unresponsive.	5	Q. You may have been or you may not
6	BY MR. TILLERÝ:	6	have been, right?
7	Q. Here's my question: Have you done	7	A. That's correct, yes.
8	any studies at Syngenta to replicate that	8	Q. All right. And it's entitled
9	real-life situation that I just described?	9	"Parkinson's disease - What can Syngenta say
10	MR. NARESH: I'll object to the	10	about the issue?"
11	form.	11	Right?
12	THE WITNESS: No.	12	A. That's right.
13	MR. TILLERY: Okay.	13	Q. All right. If we go to page 3 of
14	Let's take a break here at this	14	that document we're going to do that for
15	point in time because I'm about to move	15	you this is what the report says. Can you
16	into a new area. Okay.	16	tell who wrote this?
17	THE VIDEOGRAPHER: We are going off	17	A. I don't know who wrote this.
18	the record. The time is 4:41.	18	Q. Okay. This is what's reported as
19	(Off the record.)	19	what Syngenta cannot say. And I presume what
20	THE VIDEOGRAPHER: We are back on	20	you cannot say means what you cannot say
21	record. The time is 5:01.	21	publicly, correct?
22	BY MR. TILLERY:	22	A. I don't know if that was the
23	Q. Dr. Botham, are you ready to	23	implication here. It may be that it's saying,
24	proceed?	24	from a science perspective, we're not able
25	A. I am ready.	25	to say, rather than
	Page 1061		Page 1063
1	MR. TILLERY: I want to show you	1	Q. Right.
2	what we'll call Plaintiff's Deposition	2	A gagging ourselves from saying
3	Exhibit No. 88, and this is for the	3	what we can't say to the public.
4	record, this is SYNG-PQ-00481037.	4	Q. Okay. So, in other words, it may
5	It's page 1 of an 18-page document.	5	mean that based upon what we know of the
6	Give us a second, please, to pull that	6	science, it is not good, honest science to say
7	up.	7	other than these things. Would that be a fair
8	(Botham Exhibit 88 marked for	8	assessment? Whether that's public
9	identification.)	9	A. That would be my yes, that
10	BY MR. TILLERY:	10	Q. Yeah.
11	Q. Would you care to look at this	11	A would be my assessment, as you
12	document to refresh yourself.	12	put it, yes.
13	A. Yes, I'll do that. I can see it.	13	Q. And we'll talk about the rest of
14	Q. The questions I'm going to be	14	this as we go through these points. But
15 16	referring to, I think, exclusively are on	15	number 1, the first one says:
17	page 3 but take your time with the document.	16 17	"Paraquat does not enter the brain."
18	Just tell me when you're finished and ready to talk.	18	So, in other words, Syngenta knew,
19	A. Okay. Yeah, I've refamiliarized	19	at the time of this point, that paraquat does
20		20	enter the brain, correct?  A. That's correct, we did.
	my self with this slide set, so please go ahead.	21	
	ancau.		Q. And you couldn't say that paraquat
21	O All right We're going to take it	22	does not cause any changes in the broin because
22	Q. All right. We're going to take it	22	does not cause any changes in the brain because
	Q. All right. We're going to take it back and show it on the screen.  So this document, Exhibit 88, is	22 23 24	does not cause any changes in the brain because you knew that paraquat does cause changes in the brain, right?

	Page 1064		Page 1066
1	that was available at that time, yes.	1	A. Certainly not, no.
2	Q. Paraquat only, it says, causes	2	Q. Because you knew by then, and you'd
3	effects in the mouse, right?	3	known for some period of time back, as you
4	A. Yes.	4	said, in the '90s, I think in your earlier part
5	Q. So, in other words, if you use the	5	of the deposition you'd indicated maybe even
6	active agreement of paraquat by itself, it will	6	earlier, that people using this, mixing it,
7	cause effects in the mouse. That's what that	7	loading it, applying it, were certainly exposed
8	means, correct?	8	to paraquat, correct?
9	A. I think this might mean that	9	A. Yes, that's correct.
10	paraguat we're talking here about	10	Q. All right.
11	Parkinson's-like pathology, isn't the	11	"There are no data reporting that
12	effects are not just seen in the mouse.	12	paraquat may be associated with PD in humans."
13	I think it may have been referring to the fact	13	You can't say that either, right?
14	that there were studies in the rat.	14	A. Yes, we can't say that because
15	for example, in the literature.	15	there were some epidemiology studies with
16	Q. Oh, okay. That's correct, and	16	association.
17	I appreciate you pointing that out because	17	Q. And that you can't say that the data
18	it demonstrated you have already	18	showed that paraquat does not cause PD in
19	demonstrated that paraquat with rats doesn't	19	humans either, can you?
20	seem to cause any effect, correct?	20	A. In 2007, with the evidence in front
21	A. Yeah, in our hands we didn't see	21	of us, that was certainly something that is
22	an effect with the rats but	22	clear; we could not say definitively that
23	Q. So you	23	paraquat does not cause Parkinson's disease.
24	A obviously other people did.	24	Q. All right.
25	Q. Okay. But your study showed that	25	MR. TILLERY: Now, can we go to
	Page 1065		Page 1067
,		,	
1	you could do this. So what you, in 2007,	1 2	KT566, and this is we're going to pull
2	concluded, that paraquat only causes effects		up now MS. BRUMITT: 89.
3	in the mouse in your test animals, not in the	3	
4	rats, correct?	4	MR. TILLERY: Exhibit No. 89.
5	A. Well, this is what we cannot say.	5	(Botham Exhibit 89 marked for
6	So we can't say that paraquat only causes	6	identification.)
7	effects in the mouse because other	7	BY MR. TILLERY:
8	researchers, although we didn't find anything	8	Q. Okay. Do you see that? Do you want
9	in the rat, had found effects in the rat.	9	to
10	That would be my interpretation here.	10	A. Yeah.
11	Q. All right. And the next one says:	11	Q. Would you mind taking that
12	"The mouse data on paraquat are not	12	document, sir, and looking refreshing
13	relevant to humans."	13	yourself. This is SYNG-PQ-13131087.
14	You can't say that either, right?	14	A. Okay. I can see that and I'm just
15	A. At that time, that was absolutely	15	looking through it, if that's okay?
16	right, yes.	16	Q. Yeah. Focus on page 8, if you
17	Q. Because mouse data was relevant	17	wouldn't mind. Look at the whole document as
18	to humans, correct?	18	you wish but focus on 8.
19	A. The mouse data could be relevant	19	A. Okay, thank you. I've read the
20	to humans, yes.	20	up until slide or up until page 10.
21	<ul><li>Q. And it wouldn't be appropriate</li></ul>	21	Is that sufficient for me for now?
22	to say that it wasn't. That's what this says?	22	Q. It is. I think that's plenty.
23	A. That's right.	23	And if you'd go to the Conclusion page.
24	Q. Okay. And you couldn't say people	24	A. Okay. That's page 8.
25	aren't exposed to paraquat either, could you?	25	Q. All right. The first conclusion is:

The conclusions again, it says:		Page 1068		Page 1070
2 understanding of Parkinsonism and Parkinson's 3 Disease." 4 Do you see that? 5 A. Yes. 6 Q. And I got ahead of myself. 7 Let's identify the document. It's called a "Paraquat Update." And this is Jonathan 9 Sullivan, Lewis Smith, and Gerardo Ramos. 10 Who is Gerardo Ramos. 11 A. He's pronounced Gerardo Ramos. 11 and Gerardo was the head of crop protection 12 and Gerardo was the head of crop protection 13 research. 14 Q. Worldwide? 15 A. Yes, global head. Yes. 16 Q. Global head. And what's the 17 Syngenta Executive Committee? 18 A. That was the senior leadership team 19 chaired by the chief executive officer at 19 chaired by the chief executive officer at 19 chaired by the chief executive officer at 10 Q. All right. Getting back to the 11 conclusions again, it says: 12 "We have developed a deeper 12 conclusions again, it says: 13 understanding of Parkinsonism and Parkinson's 24 Disease; We have demonstrated that [paraquat] will cross the blood brain barrier." 25 Correct? 26 A. Yeah, I can now see it, thank you. 27 Q. Day ou see page 8? 28 Thank you. Thank you. 29 Q. Day ou see page 8? 20 Q. Day ou see page 8? 21 A. Yeah, I can now see it, thank you. 22 Q. Day ou see page 8? 23 A. Yeah, I can now see it, thank you. 24 Q. Do you see page 8? 25 A. Yeah, I can now see it, thank you. 26 Q. If you look at the fourth bullet point "We have demonstrated that [paraquat] will cross the blood brain barrier." 28 A. Yeah, I can now see it, thank you. 29 Q. Day ou see page 8? 20 A. Yeah, I can now see it, thank you. 21 Q. Do you see page 8? 22 A. Yeah, I can now see it, thank you. 23 G. Way I could refer you to page 21 of that document, right? 24 A. Yeah, I can now see it, thank you. 25 A. Yeah, I can now see it, thank you. 26 A. That's fine. No, that's fine. 27 O. Okay. To whom would this document have been distributed? 28 A. Thank you. Thank you. Thank you. 39 Thank you weren't telling the phage, becard a trailly reporting it? 39 Thank you weren't telling the chemical, correct? You weren't actually reporting it? 39 Thank yo	1	"We have developed a deeper	1	internally what I've shown you in the last two
Disease."  Disease."  A Yes.  Q. And I got ahead of myself. Let's identify the document. It's called a "Paraquat Update." And this is Jonathan Sullivan, Lewis Smith, and Gerardo Ramos. Who is Gerardo Ramos? A He's pronounced Gerardo Ramos, and Gerardo was the head of crop protection research. Q. Worldwide? A Cye, global head. Yes. Q. Global head. And what's the Syngenta Executive Committee? A. That was the senior leadership team chaired by the chief executive officer at Syngenta. A That was the senior leadership team chaired by the chief executive officer at Syngenta. Q. So this was a presentation to the highest-ranking - really, highest-ranking 20 people below the board? A. That is correct. Q. All right. Getting back to the  Page 1069  Page 1069  Page 1069  Page 1071  BY MR. TILLERY: Q. Do you sco page 8: Thankyou. The first work was a contended propole and this page, please? I can only see page 1 at the moment. Q. Page 1. Okay. Q. Okay To whom would this document have been distributed? A. That's fine. Power the fine the process from the okas of the page please? I can only see page 1 at the moment. Q. Page 1. Okay. Q. Okay To whom would this document have been distributed? A. That's fine. Power the fine the page please? I can only see page 1 a			1	
was that paraquat voold not readily cross the blood-brain barrier, correct?  A. Yes. Q. And I got ahead of myself. Let's identify the document. It's called a "Paraquat Update." And this is Jonathan Sullivan, Lewis Smith, and Gerardo Ramos. Who is Gerardo Ramos? A. He's pronounced Gerardo Ramos. A. Yes, global head. Yes.  12 A. Yes, global head. Yes. 13 A. Yes, global head. Yes. 14 A. That was the senior leadership team be chamical, correct? You weren't telling the people on the website what you knew scientifically about the chemical, correct? You weren't elling the people on the website what you knew scientifically about the chemical, correct? You weren't elling the people on the website what you knew scientifically about the chemical, correct? You weren't elling the people on the website what you knew scientifically about the chemical, correct? You weren't elling the people on the website what you weren't elli				
5 A. Yes. 6 Q. And I got ahead of myself. 7 Let's identify the document. It's called a "Paraquat Update." And this is Ionathan Sulltvan, Levis Smith, and Gerardo Ramos. 10 Who is Gerardo Ramos? 11 A. He's pronounced Gerardo Ramos. 12 and Gerardo was the head of crop protection research. 13 research. 14 Q. Worldwide? 15 A. Yes, global head. Yes. 16 Q. Global head. And what's the Syngenta Executive Committee? 17 A. That was the senior leadership team chaired by the chief'e executive officer at properties of the protection of the website what you knew scientifically about the chemical, correct? You weren't actually reporting it? 18 A. That was the senior leadership team chaired by the chief'e executive officer at protection of the protection o	4	Do you see that?	4	
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research.  Q. Worldwide? A. Yes, global head. Yes. Q. Global head. And what's the Syngenta Executive Committee? A. That was the senior leadership team chaired by the chief executive officer at yespenta. Q. So this was a presentation to the highest-ranking really, highest-ranking people below the board? Q. So this was a presentation to the highest-ranking really, highest-ranking people below the board? A. That is correct. Q. All right. Getting back to the  Page 1069  conclusions again, it says: We have developed a deeper understanding of Parkinsonism and Parkinson's bisease; We have demonstrated that [paraquat] will cross the blood brain barrier." Correct? A. Could you just go to the right page, please? I can only see page 1 at the moment. Q. Page 1. Okay. 10 Q. Page 1. Okay. 11 A. Yeah, Jou've taken control so 12 J just need to be able to go to page 8. 13 Thank you. Thank you. 14 Q. Do you see page 8? 15 A. Yeah, I can now see it, thank you. 16 Q. Dryon see page 8? 17 A. Yeah, I can now see it, thank you. 18 Discase: We have demonstrated that [paraquat] will cross the blood brain barrier." 19 In other works, paraquat gets into the board? 19 In other work in as an intent we weren't telling them. I think the process for updating that was not necessarily at that time working as quickly as perhaps it should have done.  MR. TILLERY: Let's go to the next exhibit. This would be number 90. That's 667. (Botham Exhibit 90 marked for identification.)  Page 1071  A. Okay. So this is a technical position document on the subject of paraquat and Parkinson's disease.  A. Could you just go to the right assessment function of Syngenta, which I was a part of. Q. Do you see page 8? A. That's fine. No, hat's fine. Q. Okay. I could refer you to page 21 of that document where it has the date. We can look at it if you want to, and A. That's fine. No, hat's fine. Q. Okay. To whom would this document have been distributed? A. I don't have that date in front of ha	12		12	
Q. Worldwide?				
A. Yes, global head. Yes. Q. Global head. And what's the 17 Syngenta Executive Committee? 18 A. That was the senior leadership team 19 chaired by the chief executive officer at 20 Syngenta. 21 Q. So this was a presentation to the 22 highest-ranking — really, highest-ranking 23 people below the board? 24 A. That is correct. 25 Q. All right. Getting back to the 25 "We have developed a deeper 26 understanding of Parkinsonism and Parkinson's 27 understanding of Parkinsonism and Parkinson's 28 Disease; We have demonstrated that [paraquat] will cross the blood brain barrier." 29 "We have demonstrated that [paraquat] will cross the blood brain barrier." 30 Q. Page 1. Okay. 31 Could you just go to the right page, please? I can only see page 1 at the moment. 32 Q. Do you see page 8? 33 Thank you. Thank you. 34 Q. Do you see page 8? 35 Thank you. Thank you. 40 Q. Do you see page 8? 41 Q. Do you see page 8? 42 A. Yeah, I can now see it, thank you. 43 Q. If you look at the fourth bullet popint: 44 We have demonstrated that [paraquat] will cross the blood brain barrier." 45 Q. If you look at the fourth bullet popint: 46 We have demonstrated that [paraquat] will cross the blood brain barrier." 47 A. Yeah, I can now see it, thank you. 48 Yesh. I can now see it, thank you. 49 If you look at the fourth bullet popint: 40 If you look at the fourth bullet popint: 41 In other words, paraquat gets into the can't say. 42 In the taked about, the "We can't say." 43 A. Yesh. I can now see it, thank you. 44 C. Discovered that [paraquat] will cross the blood brain barrier." 45 In other words, paraquat gets into the chain, consistent with the very last exhibit we talked about, the "We can't say." 46 Could you agree this was designed, from the looks of it, to be distributed outside for the fourth outside. 47 A. Yesh. I can now see it, thank you. 48 Yesh. I can now see it, thank you. 49 If you look at the fourth bullet popint: 40 If you look at the f				
Q. Global head. And what's the Syngenta Executive Committee? A. That was the senior leadership team chaired by the chief executive officer at Syngentia.  Q. So this was a presentation to the highest-ranking — really, highest-ranking people below the board?  A. That is correct.  Q. All right. Getting back to the  Page 1069  Conclusions again, it says:  "We have developed a deeper understanding of Parkinsonism and Parkinson's Disease; We have demonstrated that [paraquat] will cross the blood brain barrier."  A. Could you just go to the right page, please? I can only see page 1 at the moment.  Q. Page 1. Okay. A. Yeah, you've taken control so I just need to be able to go to page 8. Thank you. Thank you. Q. If you look at the fourth bullet point:  "We have demonstrated that [paraquat] will cross the blood brain barrier."  Q. Do you see page 8? A. Yeah, lean now see it, thank you. Q. If you look at the fourth bullet point:  "We have demonstrated that [paraquat] will cross the blood brain barrier."  Q. Do you see page 8? A. Yeah, lean now see it, thank you. Q. If you look at the fourth bullet point:  "We have demonstrated that [paraquat] will cross the blood brain barrier."  In other working as quickly as perhaps it should have done.  MR. THLERY: Let's go to the next exhibit. This would be number 90.  That's 567.  A. That is correct.  By MR. TILLERY: Q. Do you know what this document is?  By MR. TILLERY: Q. Do you know what this document is?  And this, just for the record, is SYNG-PQ-00477567. A. Okay. So this is a technical position document on the subject of paraquat and Parkinson's disease, written by the health assessment function of Syngenta, which I was a part of. Q. Page I. Okay.  A. Yeah, you've taken control so I just need to be able to go to page 8.  Thank you. Thank you.  Q. Do you see page 8?  A. Yeah, I can now see it, thank you.  Q. Do you see page 8?  A. Yeah, I can now see it, thank you.  Q. Do you see page 8?  A. Yeah, I can now see it, thank you.  Q. Do you see page 8?  A. Yeah, I can now see it, th				
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Thank you. Thank you.  Q. Do you see page 8?  A. Yeah, I can now see it, thank you.  Q. If you look at the fourth bullet  "We have demonstrated that  [paraquat] will cross the blood brain barrier."  In other words, paraquat gets into  the brain, consistent with the very last  exhibit we talked about, the "We can't say"  A. Yes.  13  Q. Okay. I could refer you to page 21  14  of that document where it has the date. We can look at it if you want to, and  A. That's fine. No, that's fine.  Q. Okay. To whom would this document have been distributed?  A. I don't know to whom this might have been distributed. This was quite a long time ago so I'm not sure what list of people was included.  Q. Would you agree this was designed, from the looks of it, to be distributed outside				
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In other words, paraquat gets into  In other words, paraquat gets into a long				
the brain, consistent with the very last exhibit we talked about, the "We can't say" document. Remember?  A. Yes.  21 time ago so I'm not sure what list of people was included.  22 was included.  23 Q. Would you agree this was designed, from the looks of it, to be distributed outside				
22 exhibit we talked about, the "We can't say" 23 document. Remember? 24 A. Yes. 22 was included. 23 Q. Would you agree this was designed, 24 from the looks of it, to be distributed outside				
23 document. Remember? 23 Q. Would you agree this was designed, 24 A. Yes. 24 from the looks of it, to be distributed outside				
24 A. Yes. 24 from the looks of it, to be distributed outside				
,				
	25	Q. All right. Now, despite recognizing	25	of Syngenta?

60 (Pages 1068 to 1071)

	Page 1072		Page 1074
1	A. Normally, these position documents	1	(Botham Exhibit 91 marked for
2	would not be for external use.	2	identification.)
3	O. So this would be an internal-use	3	MR, NARESH; We don't have a Bates
4	document only?	4	number in our production but or a
5	A. Yes, that would normally be their	5	document starting with that Bates
6	purpose.	6	number
7	Q. Well then, we'll move on, okay,	7	MR. TILLERY: Are they all that
8	if that's the testimony.	8	number?
9	Would you agree that as of 2008,	9	MR. NARESH: No, I just I can
10	after these exhibits we've marked and shown	10	search our database by production/Bates
11	as 88 and 89, Syngenta was telling the public	11	beginning number and I don't have a
12	on its Paraquat Information Center,	12	document starting with 1586601.
13	paraquat.com, that paraquat does not cross the	13	MR. TILLERY: It was 495 pages.
14	blood-brain barrier easily, meaning that	14	It was a compilation of a number of
15	it does not reach the specific location in the	15	documents. That's what the front page
16	brain necessary to produce Parkinson's	16	looks like but we can show you on the
17	symptoms?	17	screen in a second.
18	MR. NARESH: I'll object to the	18	MR. NARESH: Okay.
19	form.	19	MR. TILLERY: Well, 490 pages.
20	Stephen, I'm not sure if you	20	This is on page 485, and we'll pull it up
21	misspoke with the year or the exhibit	21	for you. That's the one right there.
22	number. I think it got confused.	22	BY MR. TILLERY:
23	BY MR. TILLERY:	23	Q. Dr. Botham, this will be
24	Q. Let me refer you to SYNG-PQ-1586601,	24 25	Exhibit No. 91.
25	and for you, if you're looking, this is a	25	A. Okay. I can see page 485 on my
	Page 1073		Page 1075
1	massive document and it was delivered to us in	1	screen.
2	a paged document that was 490 pages long and	2	Q. Okay, you can. On page 485,
3	we're just referencing one. It's from the	3	all right. And do you see this says at the
4	Paraquat Information Center, Paraquat	4	very top, it says:
5	Frequently Asked Questions: Answers to Your	5	"Paraquat FAQs: Answers to Your
6	Frequently Asked Questions About the Human	6	Frequently Asked Questions About the Human
7	Safety of Paraquat from the Paraquat	7	Safety"
8	Information Center.	8	And then it goes off.
9	MR. TILLERY: We've lost Dr. Botham	9	And at the top, the heading,
10	from our end, on the	10	it says, "Answers to Your Questions About
11	THE WITNESS: I'm still here.	11	the Human Safety of Paraquat from Paraquat
12 13	Can you hear me?	12 13	Information Center."
	MR. TILLERY: Yes, we sure can.		Okay?
14 15	We can hear you.  I presume that we're getting	14 15	A. Yes. Q. Do you see that?
16	a recording, at least a video recording.	16	A. Yes, I do.
17	MR. NARESH: I'm sorry, I'm not	17	Q. Okay. All right. I think this was
18	trying to interrupt, but could you give	18	2008 is what our record yes, it is,
19	me the Bates number again, and	19	January 18, 2008, in the lower right-hand
20	MR. TILLERY: Absolutely.	20	corner.
21	I'm going to give you the Bates number	21	Do you see that?
22	for this specific document. It's	22	A. I can't see that. Now I can, yes.
23	SYNG-PQ-1586601.	23	Q. Yes. All right. Then let's look
24	Give us a second here, Dr. Botham,	24	here. It says, "Does paraquat cause"
25	so you can see it.	25	One of the questions is. Is paraquat

	Page 1076		Page 1078
1	safe to farmers and their families? What is	1	BY MR. TILLERY:
2	the safety of paraquat to farmers from use long	2	Q. Go ahead and answer, sir.
3	term? And one of them is, Does paraquat cause	3	A. Okay, thank you. Yeah. So, no,
4	Parkinson's disease?	4	I can't I don't know why that was appearing
5	Doesn't it? Right?	5	here.
6	A. Yes.	6	Q. Do you understand that Syngenta
7	Q. And the answer that was given was,	7	still claims on its website that:
8	and I'm quoting now:	8	"Paraquat, even at the maximum
9	"There is no scientific or reliable	9	tolerated dose, does not cause dopaminergic
10	epidemiological evidence so far to link	10	neuronal cell loss in the area of the brain
11	paraquat with Parkinson's Disease. Previous	11	associated with Parkinson's disease"?
12	studies have demonstrated that paraquat	12	Were you aware of that?
13	does not cross the blood-brain barrier easily,	13	A. So to clarify, that is what we're
14	meaning that it does not reach the specific	14	saying today?
15	location in the brain necessary to produce	15	Q. Yes.
16	Parkinson's symptoms. Epidemiology studies in	16	A. Right. And that is, overall, still
17	areas of high and long-term paraquat usage have	17	our view because of the extensive work that
18	shown no increase of neurotoxic incidents."	18	we have done in the animal model up to the
19	Do you see that?	19	maximum tolerated dose, where we've been
20	A. Yes, I see that.	20	unable to replicate the earlier findings that
21	Q. Was that correct on January 18,	21	we've been discussing extensively over the
22	2018 2008, sorry?	22	last few days.
23	A. I think in 2008 that certainly had	23	Q. In other words, the Marks findings,
24	some inaccuracies, I would agree. So, as	24	right?
25	I said earlier, it appears that this	25	A. What I'm describing now are the
- Inches	Page 1077		Page 1079
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1	communication had not had a chance, for	1	is all the work that was done in the
2	reasons which I can't fully explain, to catch	2	Breckenridge, et al. publication, in the
3	up with the science that was still emerging.	3	Minnema, et al. publication and in the Smeyne,
4	Q. Why was Syngenta telling the public	4	et al. publication, which is when the
5	that paraquat does not cross the blood-brain	5	Q. Right.
6	barrier, while acknowledging internally that	6	A the research work that's been
7	paraquat does cross the blood-brain barrier?	7	done since 2008.
8	MR. NARESH: Object to the form.	8	Q. Well, let's look at it this way.
9	THE WITNESS: I'm afraid I can't	9	If you look at the Marks studies 2, 3, 4 that
10	answer that. I don't I honestly don't	10	she did, is that statement correct?
11	know why that was still on paraquat.com	11	A. In isolation, no.
12	at that time.	12	Q. Okay. Do you mention anywhere that
13	BY MR. TILLERY:	13	we have also done three studies to show that
14	Q. Why was Syngenta telling the public	14	this statement is just absolutely flat wrong?
15	that paraquat does not reach the place in the	15	Do you say that anywhere on paraquat.com?
16	brain related to Parkinson's symptoms?	16	MR. NARESH: Objection to form.
17	A. Again, I can't answer that.	17	THE WITNESS: We don't say that
18	I don't know how that	18	because that statement is not flat wrong.
19	THE STENOGRAPHER: Sorry,	19	It is based on the weight of evidence
20	Mr. Naresh, I saw your lips move but	20	which we have spoken about quite a lot.
21	I didn't hear you. Sorry.	21	We have done many more studies in much
22	THE WITNESS: Yeah, I didn't hear	22	greater detail since Marks did her
23	you either, Ragan, sorry.	23	studies and we have been unable
24	MR. NARESH: I'm objecting to the	24	to replicate the finding of damage
25	form.	25	to dopaminergic neurones.

	Page 1080		Page 1082
1	MR. TILLERY: I move to strike your	1	agree with me that that would have been
2	answer as unresponsive.	2	a bald-faced lie, right?
3	BY MR. TILLERY:	3	MR. NARESH: Objection to form.
4	Q. If you apply just the Marks studies,	4	THE WITNESS: No. No, because by
5	you agree with me, sir, don't you, that that	5	2012 we'd generated the data. It took
6	statement is simply not correct, right?	6	quite some time to get the data
7	MR. NARESH: Object to the form.	7	published, so by 2012 we had done the
8	THE WITNESS: Yes, it's correct,	8	studies that were reported in
9	but I don't know why you would apply it	9	Breckenridge, et al.
10	to just a small part of the literature.	10	BY MR. TILLERY:
11	That's not how science works. That's not	11	Q. So, well, then what year? 2011?
12	how science is communicated.	12	Is that when you did it?
13	MR. TILLERY: Move to strike your	13	A. Again, off the top of my head,
14	answer as unresponsive.	14	I can't give you exact dates but, certainly,
15	BY MR. TILLERÝ:	15	it would be, yes, in the preceding two to
16	Q. Would you agree with me, sir, that	16	three years. It was quite a long-term program
17	if you look just at the Marks studies 2, 3 and	17	of research.
18	4, that that statement is not correct?	18	Q. Okay. Before the Breckenridge
19	MR. NARESH: Objection to the form.	19	study, let's put it that way, and relying upon
20	THE WITNESS: If you look at those	20	Dr. Marks, we both agree that that statement
21	studies only, that is correct.	21	was clearly not correct, right?
22	It isn't	22	A. Before we did our work which
23	BY MR. TILLERY:	23	culminated in Breckenridge and the subsequent
24	Q. Okay.	24	papers, yes, the weight of evidence was
25	A. Yes, that's not a correct	25	different.
	Page 1081		Page 1083
1	statement.	1	Q. Okay.
2	Q. All right. And when you look at	2	When I took your testimony back in
3	that statement, is it important to tell the	3	February, you testified it would be
4	public that you, at a minimum, have had mixed	4	inappropriate for lawyers to be telling
5	results with respect to the findings?	5	Syngenta scientists which experiments they
6	A. No. In my judgment, it's important	6	should or should not be conducting. Correct?
7	to tell the public what we believe the	7	A. Correct.
8	totality of the evidence is showing and where	8	Q. You testified:
9	the weight of the evidence is taking us, and	9	"We would not expect them to be
10	the weight of the evidence is now taking us	10	saying you do this experiment and not that
11	to the statement that now appears on the	11	experiment."
12	website.	12	Do you remember saying that?
13	Q. Well, let's make sure we're clear on	13	A. I do.
14	what you're basing that statement on the	14	Q. And you stand by that today, don't
15	website on. You're basing that on, you said,	15	you?
16	the Smeyne study, the Breckenridge study, the	16	A. I would certainly stand by that,
17	Minnema study. And what else? Anything else?	17	ves.
18	A. No. Those are the three main	18	Q. It would be highly inappropriate for
19	studies, yes.	19	lawyers to be dictating what scientific studies
20	Q. Those are the studies you're basing	20	are undertaken at Syngenta, correct? That's
21	your conclusions on, correct?	21	what you said?
22	A. That is correct.	22	A. That's my view. That is my view,
23	Q. Okay. So if this same statement	23	yes.
24	went out in 2012, a year before the	24	Q. And it was then and it is now,
2 <del>5</del> 25	Breckenridge study was published, you would	25	right?
ب ن	Dicerentiage stady was published, you would	بدن	rigin;

	Page 1084		Page 1086
1	A. That is correct.	1	teachers told you exactly that, didn't they?
2	Q. It hasn't changed over the last	2	A. Yes, indeed.
3	couple of months, has it?	3	Q. All right.
4	A. Nothing has changed as far as	4	Now, who is Jeff Wolff?
5	I'm concerned.	5	A. Well, there are actually two Jeff
6	Q. All right.	6	Wolffs. So there's a Jeff Wolff
1 7	In other words, it would be	7	Q. Not the scientist, the other one.
8	inappropriate for lawyers to be advising	8	A. Yeah, okay. Jeff Wolff was an
9	Syngenta scientists on matters of science,	9	external legal counsel.
10	right?	10	Q. Okay. And he's an American lawyer
11	A. On matters of science and what	11	from Texas, isn't he?
12	we how we conduct the science, that is	12	A. I don't recall exactly which state
13	true, yes.	13	he was from, so certainly from the US.
14	Q. And changing scientific reports,	14	Q. And he's with the law firm called
15	right?	15	Fulbright & Jaworski, right?
16	A. I would certainly not expect	16	A. Yes, that's correct.
17	lawyers to be giving us any advice which	17	Q. And when did his association begin
18	changed the way in which the science was being	18	with Syngenta?
19	interpreted. Certainly not.	19	A. I can't give you an accurate date.
20	Q. Right. And because the scientists,	20	It was somewhere around the time that the
21	to the extent that they can possibly prevail in	21	Health Science Team was formed.
22	it, wished to maintain autonomy from any	22	Q. Now, when you and I met in February,
23	influence of any kind from performing and	23	you testified that in 2008 Syngenta was
24	conveying accurate empirical information from	24	being the words you used were "very
25	the study. That's the pursuit, isn't it?	25	transparent" about Dr. Marks's paraquat Charles
	Page 1085		Page 1087
1	A. That's you described that well,	1	River mouse research.
2	yes.	2	Do you remember that?
3	Q. And actually replicable science that	3	A. Yes.
4	everybody else can get the same result; a good,	4	Q. And you said that Syngenta was being
5	solid, honest laboratory that gets the same	5	very transparent at a Syngenta meeting in
6	results as another good, solid, honest	6	Atlanta, Georgia, in February 2008.
7	laboratory, correct?	7	Do you remember that?
8	A. Yes. And science sometimes just	8	A. Yes.
9	to clarify that a little more. Sometimes	9	Q. And I think this is Botham
10	a good, solid, reliable laboratory will get	10	Exhibit 36 that we've referenced. Let me see
11	a different result from an equally good, solid	11	here. Actually, I don't think we need to call
12	one because sometimes for reasons we don't	12	that up.
13	understand. But that's science for you;	13	That meeting I think we discussed
14	you can get different results.	14	was February 13 and 14, 2008.
15	Q. But eventually what happens, after	15	Where was that meeting conducted
16	enough science is undertaken, is that the	16	in Atlanta?
17	results start becoming homogenous and they	17	A. Sorry, it's too long ago for me to
18	become accepted scientific facts, don't they?	18	remember exactly where it was.
19	A. Yes. Usually you'll get a degree	19	Q. Was that at the Fulbright & Jaworski
20	of convergence and a consensus emerges.	20	law firm?
21	Q. And that's really what you call the	21	A. I don't remember it being there,
22	scientific method, isn't it?	22	but, as I say, it's 12 years ago.
23	A. It is.	23	Q. All right. And as late as
24	Q. And that's what you learned in	24	January 25, 2008, the organizers of that
25	graduate school, I presume. I'll bet your	25	Atlanta meeting intended it to be a meeting of
	production bottoon, I produite. I il bet your		A MARINE INCOMES INCOMES OF A MOCKING OF

	Page 1	088		Page 1090
1	scientists to discuss science, didn't it?		1	Q. All right. And it says Lewis Smith
2	Do you know?		2	was there, right?
3	A. Yes, that was my understanding of		3	A. Correct.
4	what that meeting was being set up to do.		4	Q. Janis McFarland. What was her job?
5	Q. You were there, weren't you?		5	A. Head of regulatory affairs in North
6	You went there?		6	America.
7	A. I was. I was there.		7	Q. And that included Canada, United
8	Q. You flew to America and went to		8	States and Mexico, right?
9	Atlanta and went to that meeting. Okay.		9	A. Correct.
10	MR. TILLERY: If we can, please,		10	Q. Okay. Then you have Martin Wilks.
11	pull up the next exhibit, and that's 572.		11	What was his job?
12	MS. BRUMITT: Number 92.		12	A. He was what was called product
13	MR. TILLERY: This will be		13	medical advisor, so he was medically qualified
14	Plaintiff's Exhibit 92.		14	to deal with medical aspects of potential
15	(Botham Exhibit 92 marked for		15	toxicity to our products.
16	identification.)		16	Q. And Lewis Smith's job or
17	MR. TILLERY: Why don't you give		17	responsibility at that time was what?
18	the witness that document so he can		18	A. 2008, he was probably he was
19	familiarize himself with that document.		19	either still head of central toxicological
20	BY MR. TILLERY:		20	laboratory or he was he had moved on to be
21	Q. Do you have it, sir?		21	head of development in Basel. I can't
22	A. I can see page 1 but it's under		22	remember which of the two.
23	your control, I think, at the moment.		23	Q. And Dave Berry, what did he do?
24	MR. NARESH: Is this supposed to be		24	A. He was a product toxicology
25	a one-page document or is there more than		25	a junior product toxicologist supporting
	Page 1	089		Page 1091
1	one page'?		1	paraquat at that time.
2	MR. TILLERY: It's a one-page		2	Q. And Phil Botham is you.
3	document.		3	A. That was me.
4	MR. NARESH: Thank you.		4	Q. And then Nick Sturgess. We've
5	THE WITNESS: Okay, thank you.		5	talked about him in this deposition several
6	I can see the whole document now.		6	times. Kim Travis we have, too, and Charles
7	MR. TILLERY: I don't remember		7	Breckenridge, right?
8	reading the Syngenta number in the		8	A. Yes.
9	record. Did I do that?		9	Q. That's from the R&D department,
10	MS. BRUMITT: No.		10	right?
11	MR. TILLERY: I think this is		11	A. Yes.
12	SYNG-PQT-ATR-16995053, Exhibit 92.		12	Q. And then the legal department's
13	BY MR. TILLERY:		13	there at a scientific meeting. So it says
14	Q. Can you see it?		14	"Agenda for the PQ Scientific Review Meeting."
15	A. I can see the document, yes.		15	But you've got a bunch of lawyers, and that's
16	Q. Yeah, it says "Agenda for PQ		16	Jonathan Sullivan, Beth Quarles, Alan Nadel.
17	Scientific Review Meeting."		17	Are they all Syngenta lawyers?
18	Actually, it does say it was not		18	A. They are. Or were.
19	at their office, it was at the Westin Peachtree		19	Q. Then you have Syngenta public
20	Plaza Hotel, Tower Room, Atlanta, Georgia.		20	relations, Sherry Ford, Basel representative,
21	Right?		21	okay, "to be determined." Was there a Basel
22	A. Yes. And that now meets my memory		22	Switzerland representative there, too?
23	of it. I thought it was in a hotel but I		23	A. I don't know if there eventually
24	wasn't sure when you asked me the previous		24	was one. We'd have to look at the minutes of
25	question.		25	the meeting.

	Page 1092		Page 1094
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1	Q. And then we have a reference to	1	which he made his input.
2	outside counsel. That means a lawyer who	2	Q. Had he attended any other paraquat
4	is not employed by Syngenta, who is privately	3	Health Science Team meetings before February
5	retained, right, as far as you know?  A. Yes.	4	2008?
6		5 6	A. I don't recall whether he did or
7	Q. And that person was Jeff Wolff, Fulbright & Jaworski, correct?	7	not, I'm afraid. We would need to check the
8	A. Correct.	8	record.
9	Q. And then you had outside experts,	9	Q. And within the first 15 minutes of this mostly scientific meeting, Mr. Wolff and
10	Jim Simpkins, Jack Mandel, Phil Cole. Who are	10	another lawyer, Jonathan Sullivan, presented
11	those gentlemen?	11	for 45 minutes, didn't they?
12	A. They were academic experts.	12	A. That was the intention, yes.
13	Jim Simpkins is from a university in north	13	Q. And if you look on the agenda,
14	Q. I think we had some feedback	14	that's what it shows, doesn't it?
15	A. Sorry about that, yeah, could we	15	A. Yes. An agenda is an intent,
16	Q. If you wouldn't mind answering that	16	of course. How long they spoke for, I don't
17	again, please, for the reporter.	17	know.
18	A. Yes. Jim Simpkins, an academic	18	Q. And the agenda item for Mr. Sullivan
19	toxicologist from the United States.	19	says "Discussion of overall government's
20	Jack Mandel, again, an external expert	20	framework." What does that mean? What did
21	I think, at that time, from a consultancy	21	he talk about?
22	company. And Phil Cole, another academic	22	A. So this would have been to describe
23	expert.	23	how what this group, which soon after this
24	Q. So this was dated January 25,	24	became known as the Paraquat Health Science
25	a draft, and then at the meeting, February 13,	25	Team, so it was not called that at this point
	Page 1093		Page 1095
1	this became not just a PQ scientific review	1	in time, how that Health Science Team and its
2	committee meeting but a PQ scientific and legal	2	work should report, within the internal
3	claims review meeting, right?	3	structure of R&D and the company more broadly,
4	A. It was a science meeting with legal	4	to people that we would need to keep informed
5	people there to give advice on aspects of how	5	and to seek counsel from as our work
6	to conduct our business.	6	progressed.
7	Q. And that was because you were going	7	Q. And then Mr. Wolff talked for half
8	to talk about paraquat and Parkinson's disease,	8	an hour about attorney-client privilege and
9	right? That's what this was about?	9	communications management, right?
10	A. That was certainly one reason given	10	A. Yes.
11	as the explanation for their presence, yes.	11	Q. So there were a whole lot of
12	MR. NARESH: I'll give a belated	12	scientists, mostly talking about science at
13	objection on form. Sorry about that.	13	a science meeting, starting off their meeting
14	BY MR. TILLERY:	14	with a lecture on attorney-client privilege,
15	Q. And despite that change, the primary	15	right?
16	purpose of the meeting remained scientific in	16	A. That's correct.
17	nature, right?	17	Q. What is communications management?
18	A. That's right, and that indeed was	18	A. Well, this, if I remember
19	my recollection of how the meeting did play	19	correctly, as it says in brackets there in the
20	out in practice.	20	words in italics, was, for example, to do with
21	Q. So Mr. Wolff wasn't just attending	21	how we should be taking notes of the meeting,
22	the Atlanta meeting, he was actually	22	how we would be best advised to record what
23	a participant, right?	23	was in our own notebooks or what would appear
24	A. Yes, he was, and that agenda	24	in minutes, so that they this was done in
25	describes some of the more precise ways in	25	ways in which, if we needed to, attract

	Page 1096		Page 1098
1	attorney-client privilege and in further	1	MR. NARESH: Objection to form.
2	communication it would do so.	2	THE WITNESS: I certainly recall
3	Q. Right. And, in fact, the point of	3	that he was giving us guidance on how
4	this, getting to the bottom line, is that the	4	to communicate. I don't know whether
5	lawyers at the meeting were reminding Syngenta	5	he used the word "secret." I don't
6	scientists to keep their communications secret	6	recall if he used that word or not.
7	using attorney-client privileged	7	BY MR. TILLERY:
8	communications. Wasn't that really what this	8	Q. And he told the label strike
9	was about?	9	that.
10	MR. NARESH: Objection to form.	10	He told the scientists the label
11	THE WITNESS: No, I think that's	11	they should use is work product and
12	not the way I would put it. It was	12	attorney-client privilege on their subject
13	to ensure that our ability to	13	matter label, didn't he?
14	communicate, so management of	14	A. Yes, I certainly remember that
15	communications, was being properly	15	we were given guidance on the use of those
16	managed, effectively managed. Not to say	16	terms.
17	the whole thing had to be secret;	17	Q. And Mr. Wolff also told the
18	that was not the intention.	18	scientists that if an outside lawyer like him
19	BY MR. TILLERY:	19	requested work by the scientists, then they
20	Q. Well, are you telling me we're	20	would have a higher level of privilege than if
21	going to look at a number of additional	21	an in-house Syngenta lawyer requested the work,
22	exhibits, I'm just giving you fair warning.	22	right?
23	Are you telling me that you didn't	23	MR. NARESH: Objection to the form.
24	learn from these lawyers how to run the	24	THE WITNESS: I don't remember
25	documents through a central lawyer to try to	25	precisely whether he said that, so you
	Page 1097		Page 1099
1	keep them from public scrutiny? Is that what	1	it may appear in the minutes but I can't
2	you're telling me?	2	confirm that.
3	MR. NARESH: Object to the form.	3	MR. TILLERY: Well, let's go to the
4	THE WITNESS: No, I'm not saying	4	next document to see if I can refresh
5	I'm not telling you that. That was part	5	your recollection.
6	of the way in which the management of our	6	Is that 93?
7	recordkeeping was we were asked	7	MS. BRUMITT: 93.
8	to comply with.	8	MR. TILLERY: Okay, this is
9	BY MR. TILLERY:	9	Plaintiff's Deposition Exhibit 93.
10	Q. Well, in fact, Jeff Wolff told the	10 11	(Botham Exhibit 93 marked for
11 12	scientists at the 2008 meeting that if they sent emails only to lawyers, then they would be	12	identification.) MR. NARESH: Before we get into
13	privileged, didn't he?	13	this document, I see this was produced
14	MR. NARESH: Objection to form.	14	pursuant to rule or 502(d)
15	THE WITNESS: I can't recall if	15	stipulation, so I, as a general matter,
16	that's what he said.	16	don't object to questioning on this
17	BY MR. TILLERY:	17	document; however, I reserve the right
18	Q. And he said that merely Cc'ing the	18	to object to any specific question on
19	lawyers excuse me. Excuse me. Let me start	19	privilege or work product grounds,
20	over. Withdraw that.	20	so long as we have an agreement that your
21	He said that merely Cc'ing the	21	questioning here is done pursuant to the
22	lawyers or copying them on email, that wouldn't	22	502(d) stipulation, i.e. Syngenta is not
23	be good enough; they had to send the emails	23	waiving the ability to object to the
24	only to the lawyers in order to keep them	24	production of any testimony related
25	secret. That's what he told you, wasn't it?	25	to this document under 502(d).

	Page 1100		Page 1102
1	MR. TILLERY: We agree to that	1	BY MR. TILLERY:
2	we agree to that, counsel. Right.	2	Q. This is a document called "Action
3	BY MR. TILLERY:	3	Notes from Atlanta Meeting 13-14 February
4	Q. Can you look at that document, sir,	4	2008."
5	and that's 502(d)-010660,0001. It's a	5	Right?
6	two-page	6	A. That's correct.
7	THE STENOGRAPHER: Sorry,	7	Q. And these are the same people that
8	Mr. Tillery, could you say those numbers	8	we referred to earlier who attended the Atlanta
9	again, please? Sorry.	و ا	meeting, right?
10	MR. TILLERY: Do you want me to say	10	A. Yes, with a couple of additional
11	it even faster? Sorry. Okay.	11	people.
12	502(d)-0106660.0001. Okay?	12	Q. And you're on that list,
13	THE STENOGRAPHER: Thank you.	13	Dr. P.A. Botham, right?
14	MR. TILLERY: You're welcome.	14	A. That's correct, that's me.
15	BY MR. TILLERY:	15	Q. Okay. From looking at this, these
16	Q. That's a two-page document, sir.	16	look to appear to be the notes summarizing what
17	MR. NARESH: Hang on. Hang on.	17	was said at that meeting, correct?
18	I think there's something getting	18	A. That's correct.
19	confused because the document you just	19	Q. Now, would you read for the record
20	identified is not the document that's on	20	what that second bullet says. Do you see the
21	the screen.	21	second bullet there?
22	MR. TILLERY: You're right.	22	A. Under the "General housekeeping
23	MR. NARESH: My little speech	23	rules"?
24	earlier was related to the document	24	Q. Yes.
25	that's on the screen. It may be the same	25	A. Okay. What that says is:
	Page 1101		Page 1103
1	for the document that you're intending	1	"Internal communications with
2	to ask about but I	2	internal or external counsel should make it
3	MR. TILLERY: No, you're right.	3	clear that the correspondence is privileged
4	You're right. I gave you the wrong	4	and that it is for potential paraquat
5	number. I apologize, sir. Excuse me.	5	PD litigation."
6	Yes, I'm sorry, I gave you the	6	Q. This whole thing was about paraquat
7	wrong number.	7	PD litigation; is that what this was?
8	Leah, the correct number is	8	A. What do you mean by "the whole
9	502(d)-022360.0001.	9	thing"?
10	Thank you.	10	Q. This meeting.
11	BY MR. TILLERY:	11	A. No, it was not the whole thing.
12	Q. Do you have that on your screen,	12	It was not just about litigation. It was the
13	Dr. Botham?	13	start of the Health Science Team work, which
14	A. I do. I don't have control on the	14	continued for many years afterwards, and still
15	document now but I can see part of the first	15	is continuing, with one aspect that we needed
16	page.	16	to understand, being the potential for
17	MR. TILLERY: Okay. Why don't you	17	paraquat/PD litigation, but
18	turn that over to him and let him	18	Q. And that's why
19	THE WITNESS: No, it's okay. I did	19	A I don't
20	see the full document up until this point	20	Q. Sorry. Go ahead and finish.
21	so you don't need to do that. Please go	21	I'm sorry.
22	ahead.	22	A. It was not driven by the
23	MR. TILLERY: Okay. Can you put it	23	litigation.
24	back for display, please. All right,	24	Q. Okay. So when it says "internal
25	thank you.	25	communications with internal or external

	Page 1104		Page 1106
1	counsel," that would be Mr. Wolff, right?	1	BY MR. TILLERY:
2	Right?	2	Q. And he did tell you scientists
3	A. He would be external counsel, yes.	3	to label your work as work product and
4	Q. Right.	4	attorney-client privilege, didn't he?
5	" should make it clear that the	5	You didn't know that without him telling you,
6	correspondence is privileged and that it is for	6	did you?
7	potential paraquat PD"	7	A. No. This was something that
8	Does that stand for Parkinson's	8	we were being given guidance on, the first
9	disease?	9	Q. And Mr. Wolff did tell you
10	A. Yes, it does.	10	scientists that if an outside lawyer like him
11	Q. " litigation."	11	requested work, then that would have a higher
12	That's what the document actually	12	level of privilege than if an in-house Syngenta
13	says, doesn't it?	13	lawyer requested it too, didn't he?
14	A. That's what that says, yes.	14	A. No. This is my understanding of
15	Q. Yes. You don't dispute that that's	15	this is this is nothing to do with him
16	a summary, a good summary, of what was spoken	16	requesting work. This is if we are
17	at that meeting either, do you?	17	communicating about study work, that it should
18	A. No, I don't, and this was about	18	correspond with this guidance.
19	communication rather than the content of what	19	Q. In 2008, you were a member of
20	we were discussing.	20	Syngenta's paraquat health science group,
21	Q. Okay. Now let's look at the fourth	21	right?
22	and fifth bullets. If you'd look at those, it	22	A. Yes.
23	says:	23	Q. And that's what this group of
24	"Study work should be labelled Work	24	scientists that are on this document really
25	Product Doctrine Material - Confidential, and	25	made up, that particular group; correct?
	Page 1105		Page 1107
1	carry the Attorney Client Privilege statement."	1	A. Yes. As I said earlier, this
2	Right?	2	meeting led to roughly the same group of
3	A. Yes.	3	people becoming what was known as the Health
4	Q. And the next one:	4	Science Team.
5	"Information cc'd to external	5	Q. And in late February 2008, as
6	Counsel is not privileged."	6	a result of the discussions at the Atlanta
7	Do you see that?	7	meeting, someone at Syngenta drafted a document
8	A. Yes.	8	called "The Paraquat Health Science Group
9	Q. So, in fact, Jeff Wolff did tell you	9	Strategy Discussion Document."
10	scientists at the 2008 Atlanta meeting that	10	Correct'?
11	if they sent emails only to lawyers, they	11	A. Well, I think I take your word
12	would then be privileged documents, didn't he?	12	for it. I haven't I can't recall exactly
13	That's what he told you?	13	that document now.
14	A. That's what this says, certainly.	14	Q. Do you know who would have been the
15	Q. And he did say that merely Cc'ing	15	author of the document?
16	the lawyers, copying them on email, wouldn't be	16	A. No, I don't, so if you're able to
17	good enough; that he had to send the emails	17	show it to me I might be able to help.
18	only to the lawyers in order to keep them	18	Q. We're going to do that.
19	secret. Correct?	19	MR. TILLERY: Is this 597?
20	MR. NARESH: Objection to form.	20 =	MR. NARESH: Just for the record,
21	THE WITNESS: In order to keep	21	it's about 6 o'clock in the UK now and
22	them to have the ability for them	22	I know that there's a little bit of grace
23	to carry the attorney-client privilege	23	period built in, but I just wanted to let
24	statement, yes.	24	you know that Dr. Botham needs to wrap up
25		25	in the next 10 to 15 minutes or so.

Page 1108  1 BY MR. TILLERY: 2 Q. Dr. Botham, you tell us when, okay? 3 A. Yeah. Fifteen minutes would be 4 a good target to reach, if we could. 5 Q. Well, I'm about to start a new area 6 there so I'd like, if we could, to switch 7 circula here and let me ask years a greation.  1 facilities. Deep Store is the name of organization and it's called that because storage is actually in a salt a disuse salt mine in the United Kingdom, und there so I'd like, if we could, to switch 6 there?  2 Page 1108  1 facilities. Deep Store is the name of organization and it's called that because the salt mine in the United Kingdom, und the salt mine in the United Kingdom the salt mine in the United Kingdom, und the salt mine in the United Kingdom the sal	use the
2 Q. Dr. Botham, you tell us when, okay? 3 A. Yeah. Fifteen minutes would be 4 a good target to reach, if we could. 5 Q. Well, I'm about to start a new area 6 there so I'd like, if we could, to switch 2 organization and it's called that because storage is actually in a salt — a disuse salt mine in the United Kingdom, under the could. 5 Q. Okay. And what documents there?	use the
3 A. Yeah. Fifteen minutes would be 4 a good target to reach, if we could. 5 Q. Well, I'm about to start a new area 6 there so I'd like, if we could, to switch 3 storage is actually in a salt a disuse 4 salt mine in the United Kingdom, und 5 Q. Okay. And what documents 6 there?	ed
4 a good target to reach, if we could. 5 Q. Well, I'm about to start a new area 6 there so I'd like, if we could, to switch 4 salt mine in the United Kingdom, und 5 Q. Okay. And what documents 6 there?	
4 a good target to reach, if we could. 5 Q. Well, I'm about to start a new area 6 there so I'd like, if we could, to switch 4 salt mine in the United Kingdom, und 5 Q. Okay. And what documents 6 there?	
5 Q. Well, I'm about to start a new area 5 Q. Okay. And what documents there so I'd like, if we could, to switch 6 there?	aergrouna. I
6 there so I'd like, if we could, to switch 6 there?	
7 signals here and let me ask you a question 7 A. Documents such as reports, s	study
8 about something else. Hold on just one second, 8 files, lab notebooks, pathology slides	
9 sir. 9 toxicology studies but also from othe	
MR. NARESH: I don't know if it's departments, regulatory documents.	
me or if it's anybody else, but Steve's 11 Q. Okay.	
video pane is frozen for me. Everybody 12 MR. TILLERY: Yeah, if you	pull it
else is moving but Steve is frozen. 13 up.	•
THE WITNESS: Yeah, Steve has been 14 BY MR. TILLERY:	
frozen for quite some time actually.  15 Q. The one I wanted to talk to you	ou
MR. TILLERY: Well, it's probably 16 about, of the recitation of items that a	
because the camera gave out at my image, 17 stored there, is laboratory notebooks.	
but 18 And Syngenta stores thousands of lat	
Is it frozen for you? 19 there, doesn't it?	
20 MS. BRUMITT: It is. 20 A. Yes, it does.	
21 MR. TILLERY: Yes, it is, I see it. 21 Q. And have you ever personally	v needed
22 Well 22 to retrieve a lab notebook from Deep	
THE WITNESS: Is that a matter for 23 A. No, I haven't.	
the record, Wendy? 24 Q. If you needed to retrieve a lal	b
25 THE VIDEOGRAPHER: Sorry? 25 notebook from Deep Store, how wou	
Page 1109	Page 1111
1 THE WITNESS: Does the fact that 1 identify the notebook you wanted to	retrieve?
2 Mr. Tillery's image has been frozen for 2 A. Well, I would go to our archi	
3 the last ten minutes matter for the 3 expert with either the person whose la	
4 record? 4 notebook it was, a name, or a department	
5 THE VIDEOGRAPHER: Absolutely not. 5 or even a subject that it might refer to	
6 I'm just focused on you. 6 Q. All right. Let's show you a	
7 THE WITNESS: Okay, that's fine. 7 document. All I'm doing is just show	ving vou
8 Thank you. 8 this to illustrate what we've been give	
9 THE VIDEOGRAPHER: I can only see 9 I just need to clarify some things.	
10 you. 10 MR. TILLERY: Just pull it up	n.
THE WITNESS: Right.   11 You know, Ragan, I don't hone	
12 THE VIDEOGRAPHER: Thank you. 12 think this needs to be a deposition	
13 BY MR. TILLERY: 13 exhibit. It's a demonstrative and	
Q. I just want to clear up something 14 I'm just trying to get some answer	·s
that has nothing to do with what we have been 15 to some questions.	- I
talking about while we've had just a few 16 This is is that our number or	
minutes left to clarify something, and we're 17 theirs?	
going to switch topics. We'll come back to 18 MS. BRUMITT: I don't	
this tomorrow, where we were, okay.  19 MR. TILLERY: Let's just put	tit on
20 Do you know anything about what's 20 the screen for them to see.	
21 called the Deep Store documents? 21 This is something you gave us	but
22 A. I do. 22 I just wanted to I wanted to ask	
Q. Okay. And what are they? 23 about what we would ask for.	
24 A. These are archived documents from 24 BY MR. TILLERY:	
25 Syngenta, from a number of Syngenta 25 Q. Let me know when you can s	see the

70 (Pages 1108 to 1111)

	Page 1112		Page 1114
1	exhibit, Dr. Botham.	1	that correspond with Category A Control? What
2	A. Well, I can see an Excel	2	does that mean?
3	spreadsheet now.	3	A. I don't know, I can't answer that.
4	Q. That's all it is. I'm not going	4	Q. And then list, do you know what that
5	to get into there's no particular reason for	5	is?
6	this page being used. It's just a reference	6	A. Well, list looks like it's what
7	page, okay.	7	it is. When it says study or miscellaneous
8	What I'm trying to find out is, and	8	data, that looks like a descriptor of the
9	we've made requests for some documents, how	9	number, so and then it's present in an
10	you would search for specific study notebooks.	10	archive. The content is present in that box
11	If we wanted to know, for example, the	11	number, which has a barcode attached to it.
12	notebooks referable to a particular study, how	12	Q. And the barcode is an archival
13	would we get those how would you get them?	13	fingerprint for the box, presumably?
14	What would you ask for, what information would	14	A. Yeah, that's right. That much I do
15	you seek and how would you know what you're	15	know, yes.
16	getting?	16	Q. All right. And then box code, do
17	A. Well, from my own experience,	17	you know what that is?
18	I would normally start with a study report,	18	A. I don't know what the difference
19	and rather like the study report we were	19	between box code and the barcode is for the
20	looking at from Dr. Ray earlier on, to see	20	box number, no.
21	if there was a reference to a study number.	21	Q. There appears to be missing
22	If you have a study number, then it's possible	22	a reference to the study. So what
23	to find, in our spreadsheets like this one,	23	I'm wondering is this: If you want the Marks
24	whether the study file is available in	24	data or some other data that's been done
25	Deep Store, and where it might be located.	25	A. Mmm.
	Page 1113		Page 1115
1	The study file can be	1	Q let's pick one of the studies
2	Q. So	2	how do we identify that from this reference
3	A can include a number of	3	code, or where would you go and what would you
4	different items.	4	ask to get the data?
5	Q. Well, I'm just looking, are there	5	A. Yeah. So I think that's fairly
6	more where is the reference to the study	6	straightforward. So if I know the study
7	number on this document? I'm showing you	7	number so forget what's on this
8	A. Just go back the other way for	8	spreadsheet. I'm pretty sure that if I know
9	a minute.	9	the study number which, in the case of the
10	Q. All right, sure. We have date of	10	Marks studies we do, it's XM and four numbers,
11	report or study. Do you see that?	11	as we said earlier. If I went to my archive
12	A. Yes.	12	specialist, she would be able to locate the
13	Q. And then we have we're trying	13	data from Deep Store.
14	to be able to work with Mr. Naresh to find out	14	Q. And that would include the lab
15	which ones of these we want.	15	notebooks as well, wouldn't it, sir?
16	A. Yeah, I I mean, this is not my	16	A. It would it should include all
17	area of expertise, but I think it's possible,	17	the raw data, the information that relates
18	from one of these categories, to be able	18	to that study.
19	you can certainly link a report to study	19	Q. Okay.
20	number and hence to study file. I can't tell	20	MR. TILLERY: All right. Thank you
21	you exactly how you get to that from this	21	very much, and we'll resume tomorrow at
22	spreadsheet. Like you, I can't see the study	22	the same time, okay. Thank you.
23	number here, but that information should be	23	THE WITNESS: Okay, thank you.
24	available.	24	MR. TILLERY: Off the record.
25	Q. If you had a study number, how does	25	THE VIDEOGRAPHER: We are going off

	Page 1116		Page 1118
1	the record. The time is 6:09.	1	*** ERRATA SHEET ***
2	(The deposition concluded for the	2	TRANSPERFECT DEPOSITION SERVICES 216 E. 45th Street, Suit 903
3	day.)	3	NEW YORK, NY 10017 (212) 400-8845
4	· ·	4	CASE: Diana Hoffmann, et al., versus Syngenia Crop Protection, LLC, et al.
5		5	DATE: June 18, 2020
6		6	WITNESS: Philip Botham REF: 27627
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21		20	Philip Botham
22		21	Subscribed and sworn to before me
23		22	
24		23	this day of, 20
25		24	Notary Public
	Page 1117		Page 1119
1	CERTIFICATE OF WITNESS	1	REPORTER CERTIFICATE
2	CERTIFICATE OF WITHESS	2	I, LEAH WILLERSDORF, Accredited Verbatim Reporter,
3	I, PHILIP BOTHAM, declare that I have read the entire	3	Member of the British Institute of Verbatim Reporters
4	transcript of Volume IV of my deposition testimony, or	4	(Accreditation No. 166) and Qualified Realtime Reporter
5	the same has been read to me, and certify that it is a	5	(Level 2), International Participating Member NCRA
6	true, correct and complete record of my testimony given	6	(USA), do hereby certify that: PHILIP BOTHAM appeared
7	on Thursday, June 18, 2020, save and except for changes	7	remotely before me via Zoom on Thursday, June 18, 2020,
8	and/or corrections, if any, as indicated by me on the	8	was sworn by me, and was thereupon examined by counsel;
9	attached Errata Sheet, with the understanding that	10	that the foregoing is true and accurate to the best of my knowledge, skill and ability; that the testimony of
10	I offer these changes and/or corrections as if still	11	said witness was taken and reduced to stenotype writing
11	under oath.	12	before me; that I am neither counsel for, related to,
12		13	nor employed by any of the parties to the action in
13		14	which this deposition was taken; and further, that I am
14	03	15	not a relative or employee of any attorney or counsel
15	Signed	16	employed by the parties thereto; nor financially or
16	Philip Botham	17	otherwise interested in the outcome of the action.
17		18 19	IN WITNESS WHEREOF I have hereunto set my hand this June 28, 2020.
18	Clamed and mikes it. 1 . 1 . C	20	uno suno 20, 2020.
19	Signed and subscribed to before me.	21	
20	this day of, 20	22	LEAH M. WILLERSDORF
21 22			Accredited Verbatim Reporter,
44		23	Member of the British Institute
23			of Wash stime Dansatana A statistical Dr. 166
23	Notary Public	۱	of Verbatim Reporters - Accreditation No. 166,
	Notary Public	24	Qualified Realtime Reporter (Level 2),
23 24 25	Notary Public	24 25	

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IN THE CIRCUIT COURT
TWENTIETH JUDICIAL CIRCUIT
ST. CLAIR COUNTY, ILLINOIS

DIANA HOFFMANN,

individually and as

Independent Administrator

of the Estate of THOMAS R.

HOFFMANN, Deceased, et al.,

Plaintiff,

V.

SYNGENTA CROP PROTECTION,

LLC, et al.,

Defendants.

\*\*\*CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER\*\*\*

VIDEOTAPED ZOOM DEPOSITION OF SYNGENTA CROP PROTECTION, LLC

DILLI ID DOMIJAM

PHILIP BOTHAM (Volume V - pages 1120 - 1420 inclusive)

Friday, June 19, 2020

Berkshire, England, United Kingdom (Deponent's location)

Reported by: LEAH M. WILLERSDORF, (AVR, MBIVR No. 166, QRR2, International Participating Member NCRA.)

Job No. 27626

	Page 1121			Page	1122
١.	rage 1121		ABBRARANGE	Page	1123
1 2		1	APPEARANCES (all via Zoom videoconference)		
	June 19, 2020	2	For the Defendant CHEVRON USA, INC.:		
3	17, 2020	3	For the Determann CHE VRON USA, INC		
	10:12 a.m.	4	HUSCH BLACKWELL, LLP		
4	(British Summer Time)		BY: JOSEPH ORLET, Esq.		
5	Zamanila dan di la salita di COMPTOTRIMI GROR	5	4801 Main Street		
6 7	Zoom videotaped deposition of SYNGENTA CROP PROTECTION, LLC - Philip Botham, Berkshire, England,	6	Suite 1000		
8	United Kingdom, reported remotely via videoconference	7	Kansas City, MO 64112		
9	before Leah Willersdorf, Accredited Verbatim Reporter,		Telephone: (816) 983 8295		
10	Member of the British Institute of Verbatim Reporters	8 9	Email: joseph.orlet@huschblackwell.com		
11	(Accreditation No. 166), Qualified Realtime Reporter	10	ALSO PRESENT:		
12	(Level 2), International Participating Member NCRA	11	Sara Peters - Walkup, Melodia, Kelly & Schoenberger - Plaintiff's		
13	(USA).	12	co-counsel)		
14 15		13	Nicole Graham - Korein Tillery, LLC Juanita Brumitt - Korein Tillery, LLC		
16			Jerry Brown - Korein Tillery, LLC		
17		14	John Craig - Korein Tillery, LLC Mark Smith - Syngenta in-house counsel		
18		15 16	Wendy Viner - Videographer		
19		17			
20		18 19			
21		20			
22 23		21 22			
24		23			
25		24 25			
	Page 1122		- 1	Page	1124
1	APPEARANCES	1	WITNESS DIDEN	_	
2	(all via Zoom videoconference)	2	WITNESS INDEX Witness: Page		
3	On behalf of Plaintiffs:	3	PHILIP BOTHAM (Volume V)		
5	KOREIN TILLERY, LLC BY: STEPHEN M. TILLERY, Esq.	4			
١,	ROBERT L. KING, Esq.		Examination by Mr. Tillery, continued	1134	
6 7	ROSEMARIE FIORILLO, Esq. One US Bank Plaza	5	•		
8	505 N. 7th Street Suite 3600	6			
120	St. Louis, MO 63101	7			
9	Telephone: (314) 241 4844	8			
10	Email: stillery@koreintillery.com rking@koreintillery.com	9 10			
11	rking@koreintillery.com rfiorillo@koreintillery.com	11			
12	On behalf of Defendant SYNGENTA CROP PROTECTION, LLC:	12			
13	·	13			
14	KIRKLAND & ELLIS LLP	14			
15	BY: RAGAN NARESH, P.C.	15			
1	1301 Pennsylvania Avenue, N.W.	16			
16 17	Washington, DC 20004 Telephone: (202) 389 5267	17			
	Email: ragan.naresh@kirkland.com	18			
18 19	For the Defendant GROWMARK, INC.:	19			
20 21	STEPTOE & JOHNSON, LLP BY: ANTHONY HOPP, Esq.	20 21			
22	227 West Monroe Street	22			
23	Suite 4700 Chicago, IL 60606	23			
24	Telephone: (312) 577 1249 Email: ahopp@steptoe.com	24			

2 (Pages 1121 to 1124)

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1 EXHIBITS INDEX	1 EXHIBITS INDEX
2 Botham Description Page Exhibit No.	2 Botham Description Page Exhibit No. 3
Exhibit 94 Color document downloaded 1135	Exhibit 103 Typewritten letter from K. 1270
4 from paraquat com, headed "Peraquat information center	4 Fletcher to Mr. A. W. Weitt, dated July 26, 1971, on
5 - Paraquet and Parkinson's	5 colored paper
disease"	(SYNG-PQ-02450187) 6 [Confidential - Paraquat
6 (No Bates, 11 pages) 7 Exhibit 95 Email from Jonathan Dale 1194	Litigation]
Sullivan to Jeff Wolff,	7 Exhibit 104 Typewritten letter from Dr. 1272
e et al., dated July 15, 2008, attaching draft notes and	8 Baylins to Dr. K. Fletcher,
9 minutes from PS/GPR meeting	dated October 20, 1971 9 (SYNG-PQ-13098673)
on July 10, 2008 10 (502(d)-0107074.0001 -	[Confidential - Paraquat
.0013)	10 Litigation] 11 Exhibit 105 Typewritten letter from Dr. 1275
11 [Confidential - Paraquet Litigation]	K. Fletcher to Dr. D.
12	12 Seaman, et, al., dated November 28, 1972
Exhibit 96 Email from Dave Berry to 1235  Alan Nadel, et al., dated	13 (SYNG-PQ-02469717 - 718)
April 9, 2009	14 Exhibit 106 "Minutes of the First 1280  Meeting of Paraquat:
14 (502(d)-002434,0001) [Confidential - Paraquat	15 Reduction of Hazards by
15 Litigation]	Formulation Project Team on 16 14th December at Jealott's
16 Exhibit 97 Paraquat Health Science Team 1238 document headed "Action	Hill," on ICI Plant
17 Minutes from Marlow Meeting	17 Protection Limited letterhead, date stamped
20 & 21 April 2009 - The 18 Compleat Angler, Marlow UK"	18 December 29, 1972
(SYNG-PQ-04982646 - 2650)	SYNG-PQ-02491713 - 1721) 19 [Confidential - Paraquat
Exhibit 98 Slide deck for Syngents 1240	Litigation]
20 discussion in Marlow, UK,	20 Exhibit 107 "Notes of Meeting with 1283
entitled "CNS barriers: 21 Critical interfaces for CNS	21 Chevron Chemical Company, Richmond, on Wednesday,
entry of paraquat," by N.	22 27 February 1974 - Paraquat
22 Joan Abbott of King's College London, dated April	toxicological problems in
23 20, 2009	23 the USA and proposed label change"
(SYNG-PQ-00471694 - 1386)	24 (SYNG-PQ-02508147) [Confidential - Paraquat
25	25 Littestion
Page 1126	Page 1128
1 EXHIBITS INDEX	1 EXHIBITS INDEX
2 Botham Description Page	2 Botham No. Description Page
Exhibit No.	3 Exhibit 108 Typewritten letter from Dr. 1288 M. Winchester to Dr. A.
Exhibit 99 Typewritten letter to Mr. I. 1263  E. Danter, Biological	4 Swan, dated December 23,
Research, Plant Protection	1975 5 (SYNG-PQ-03719628)
5 Limited, Jealott's Hill, from Dr. A. Swan, dated	[Confidential - Paraquat
6 November 11, 1968	6 Litigation] 7 Exhibit 109 Typewritten letter from Dr. 1289
(SYNG-PQ-02518325) 7 [Confidential - Paraquat	A. Swan to Mr. J.M.
Litigation]	8 Winchester, dated January 5, 1976
8 Exhibit 100 Typewritten letter from N. 1265	9 SYNG-PQ-02450112)
9 Wright to Mr. S. Magee, ICI	[Confidential - Paraquat
(Ireland) Ltd, dated 10 November 11, 1970	10 Litigation] 11 Exhibit 110 Typewritten letter from Dr. 1291
(SYNG-PQ-02517085)	M.S. Rose to Dr. D. Foulkes,
Litigation]	12 et el., dated January 22, 1976
12	13 (SYNG-PQ-03719624)
	14 Exhibit 111 Typewritten letter from Dr. 1293
Exhibit 101 Imperial Chemical Industries 1267  13 plc, Pharmaceuticals	
Exhibit 101 Imperial Chemical Industries 1267 plc, Pharmaceuticals Division, document title "A	D. Foulkes to Dr. M. Rose, 15 dated Jamary 26, 1976
Exhibit 101 Imperial Chemical Industries 1267  1.3 plc, Pharmaceuticals Division, document title "A  summary of clinical results of the phosphodiesterase	D. Foulkes to Dr. M. Rose, 15 dated Jarmary 26, 1976 (SYNG-PQ-03719623)
Exhibit 101 Imperial Chemical Industries 1267 plc, Pharmaceuticals Division, document title "A  summary of clinical results of the phosphodiesterate inhibitor ICI 63,197 in a	D. Foulkes to Dr. M. Rose,  15 dated Jarmary 26, 1976 (S YNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]
Exhibit 101 Imperial Chemical Industries 1267  plc, Pharmaceuticals Division, document title "A  summary of clinical results of the phosphodiesterase  inhibitor ICI 63,197 in a  variety of disease states,"  authored by Dr. P.F.C.	D. Foulkes to Dr. M. Rose,  15 dated Jarmary 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]
Exhibit 101 Imperial Chemical Industries 1267 plc, Pharmaceuticals Division, document title "A  summary of clinical results of the phosphodiesterate inhibitor ICI 63,197 in a variety of disease states,"  authored by Dr. P.F.C., Baylins, dated July 23,	D. Fonikes to Dr. M. Rose,  15 dated January 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]  17  Exhibit 112 "Report of Working Party on 1297  the feasibility of adding an
Exhibit 101 Imperial Chemical Industries 1267  plc, Pharmaceuticals Division, document title "A  summary of clinical results of the phosphodiesterase inhibitor ICI 63,197 in a variety of disease states,"  authored by Dr. P.F.C., Bayliss, dated July 23, 1973, in color SYNG-PQ-14420786 - 0838)	D. Foulkes to Dr. M. Rose,  dated Jarmary 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]  17 Exhibit 112 "Report of Working Party on 1297  18 the feasibility of adding an emetic to Gramoxone," dated
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Exhibit 101   Imperial Chemical Industries   1267     13	D. Foulkes to Dr. M. Rose, dated Jarmary 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]  17  Exhibit 112 "Report of Working Party on 1297  18 the feasibility of adding an emetic to Gramoxone," dated  19 January 29, 1976 (SYNG-PQ-02450023 - 0026) [Confidential - Paraquat Litigation]  21  Exhibit 113 Document headed "Company 1303
Exhibit 101 Imperial Chemical Industries  plc, Pharmaceuticals Division, document title "A  summary of clinical results of the phosphodiesterase influitor ICI 63,197 in a variety of disease states," authored by Dr. P.F.C. Bayliss, dated July 23, 1973, in color SYNG-PQ-14420786 - 0838)  [Confidential - Paraquet Litigation]  Exhibit 102 Imperial Chemical Industries Limited, Pharmaceuticals Division, document headed "Paraquet," by G.E. Davies, dated	D. Fonlkes to Dr. M. Rose, dated January 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]  17  Exhibit 112 "Report of Working Party on 1297 the feasibility of adding an emetic to Gramoxone," dated  19 January 29, 1976 (SYNG-PQ-02450023 - 0026) [Confidential - Paraquat Litigation]  21  Exhibit 113 Document headed "Company 1303 Secret," to Dr. A.
Exhibit 101 Imperial Chemical Industries 1267 plc, Pharmaceuticals Division, document title "A summary of clinical results of the phoephodiesterase inhibitor ICI 63,197 in a variety of disease states," authored by Dr. P.F.C. Baylins, dated July 23, 17 1973, in color SYNG-PQ-14420786 - 0838) [Confidential - Paraquest Litigation] Exhibit 102 Imperial Chemical 1269 Industries Limited, Pharmaceuticals Division, document headed "Paraquat," by G.E. Devies, dated Jume 29, 1971	D. Foulkes to Dr. M. Rose, dated Jarmary 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]  17  Exhibit 112 "Report of Working Party on 1297  18 the feasibility of adding an emetic to Gramoxone," dated  19 January 29, 1976 (SYNG-PQ-02450023 - 0026) [Confidential - Paraquat Litigation]  21  Exhibit 113 Document headed "Company 1303 Secret," to Dr. A. Calderbank, et al., regarding R. 50796 emetic
Exhibit 101   Imperial Chemical Industries   1267     plc, Pharmaceuticals   Division, document title "A     summary of clinical results   of the phosphodiesterate     inhibitor ICI 63, 197 in a     variety of diesees states,"     authored by Dr. P.F.C.     Baylins, dated July 23,     1973, in color   SYNG-PQ-14420786 - 0838)     [Confidential - Paraquat     Litigation]     Exhibit 102   Imperial Chemical   1269     Industries Limited,     Pharmaceuticals Division,     document headed "Paraquat,"     by G.E. Devies, dated     June 29, 1971   (SYNG-PQ-13098675)     Confidential - Paraquat     Confidential - Paraquat     Confidential - Paraquat,     by G.E. Devies, dated     June 29, 1971   (SYNG-PQ-13098675)     Confidential - Paraquat	D. Fonlkes to Dr. M. Rose, dated January 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]  17  Exhibit 112 "Report of Working Party on 1297 the feasibility of adding an emetic to Gramoxone," dated  19 January 29, 1976 (SYNG-PQ-02450023 - 0026)  20 [Confidential - Paraquat Litigation]  Exhibit 113 Document headed "Company 1303 Secret," to Dr. A. Calderbank, et al., regarding R. 50796 emetic agent, dated March 23, 1976
Exhibit 101 Imperial Chemical Industries 1267  plc, Pharmaceuticals Division, document title "A  summary of clinical results of the phosphodiesterase inhibitor ICI 63,197 in a variety of disease states," authored by Dr. P.F.C. Bayliss, dated July 23, 1973, in color SYNG-PQ-14420786 - 0838)  [Confidential - Paraquet Litigation]  Exhibit 102 Imperial Chemical 1269  Industries Limited, Pharmaceuticals Division, document headed "Paraquat," by G.E. Devies, dated June 29, 1971 (SYNG-PQ-13098675)	D. Fonlkes to Dr. M. Rose, dated Jarmary 26, 1976 (SYNG-PQ-03719623)  16 [Confidential - Paraquat Litigation]  17  Exhibit 112 "Report of Working Party on 1297  18 the feasibility of adding an emetic to Gramoxone," dated  19 January 29, 1976 (SYNG-PQ-02450023 - 0026) [Confidential - Paraquat Litigation]  21  Exhibit 113 Document headed "Company 1303  22 Secret," to Dr. A. Calderbank, et al., regarding R. 50796 emetic

3 (Pages 1125 to 1128)

3 1 4 5 6 7 8 8 9 10 11 1 1 12 13 14	EXHIBITS INDEX Botham Description Page Exhibit No.  Exhibit 114 Document headed "Protocol 1304 for a 63197 (R50796) + PQ dog study," dated March 31, 1976  (S YNG-PQ-02450068) [Confidential - Paraquat Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308 Rose from Dr. Lewis Smith, dated 6.7.1976  (S YNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 115 Typewritten document headed 1314  "Toxicity of Gramoxone		1 2 3 4 5 6 7 8	EXHIBITS INDEX Botham Description Page Exhibit 125 Document from Dr. J.R. 1367 Heylings to Dr. L. Smith, dated Jamuary 19, 1990, headed "Emetic Concentration in Paraquat Formulations" (SYNG-PQ-26134258-4265) Exhibit 126 Document from Dr. J.R. 1370 Heylings to Dr. L.L. Smith,	
3 1 4 5 6 7 8 9 10 11 12 13 14	Exhibit No.  Exhibit 114 Document headed "Protocol for a 63197 (R50796) + PQ dog study," dated March 31, 1976 (SYNG-PQ-02450068) [Confidential - Paraquat Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308 Rose from Dr. Lewis Smith, dated 6.7, 1976 (SYNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 116 Typewritten document headed 1314		2 3 4 5 6 7 8	Botham Description Page Exhibit 125 Document from Dr. J.R. 1367 Heylings to Dr. L. Smith, dated January 19, 1990, headed "Emetic Concentration in Paraquat Formulations" (SYNG-PQ-26134258-4265) Exhibit 126 Document from Dr. J.R. Heylings to Dr. L.L. Smith,	
3 1 4 5 6 7 8 9 10 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Exhibit 114 Document headed "Protocol for a 63197 (R50796) + PQ dog study," dated March 31, 1976 (S YNG-PQ-02450068) [Confidential - Paraquat Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308 Rose from Dr. Lewis Smith, dated 6,7,1976 (S YNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 116 Typewritten document headed 1314		4 5 6 7 8	Exhibit 125 Document from Dr. J.R. Heylings to Dr. L. Smith, dated January 19, 1990, headed "Emetic Concentration in Paraquat Formulations" (SYNG-PQ-26134258-4265) Exhibit 126 Document from Dr. J.R. Heylings to Dr. L.L. Smith,	
4 5 6 7 7 8 8 9 10 11 12 13 14	for a 63197 (R50796) + PQ dog study," dated March 31, 1976 (SYNG-PQ-02450068) [Confidential - Puraquat Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308 Rose from Dr. Lewis Smith, dated 6.7.1976 (SYNG-PQ-02450688) [Confidential - Puraquat Litigation]  Exhibit 116 Typewritten document headed 1314		4 5 6 7 8	Heylings to Dr. L. Smith, dated January 19, 1990, headed "Emetic Concentration in Paraquat Formulations" (SYNG-PQ-26134258-4265) Exhibit 126 Document from Dr. J.R. 1370 Heylings to Dr. L.L. Smith,	
5 6 7 8 9 10 11 1 12 13 14	dog study," dated March 31, 1976 (SYNG-PQ-02450068) [Confidential - Paraquat Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308 Rose from Dr. Lewis Smith, dated 6,7,1976 (SYNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 116 Typewritten document headed 1314		5 6 7 8	dated January 19, 1990, headed "Emetic Concentration in Paraquat Formulations" (SYNG-PC-26134258-4265) Exhibit 126 Document from Dr. J.R. 1370 Heylings to Dr. L.L. Smith,	
6 7 8 9 10 11 1 12 13 14	1976 (S YNG-PQ-02450068) [Confidential - Paraquat Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308 Rose from Dr. Lewis Smith, dated 6.7.1976 (S YNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 116 Typewritten document headed 1314		6 7 8	headed "Emetic Concentration in Paraquet Formulations" (SYNG-PQ-26134258-4265) Exhibit 126 Document from Dr. J.R. 1370 Heylings to Dr. L.L. Smith,	
7 I 8 9 10 11 I 12 13 14	[Confidential - Paraquat Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308 Rose from Dr. Lewis Smith, dated 6,7.1976 (SYNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 116 Typewritten document headed 1314		7 8	(SYNG-PQ-26134258-4265) Exhibit 126 Document from Dr. J.R. 1370 Heylings to Dr. L.L. Smith,	
7 8 9 10 11 1 12 13 14	Litigation]  Exhibit 115 Memo-type document to Dr. M. 1308  Rose from Dr. Lewis Smith, dated 6.7.1976 (S YNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 116 Typewritten document headed 1314		7 8	Exhibit 126 Document from Dr. J.R. 1370 Heylings to Dr. L.L. Smith,	
10 11 12 13	Exhibit 115 Memo-type document to Dr. M. 1308  Rose from Dr. Lewis Smith, dated 6.7,1976 (SYNG-PQ-02450688) [Confidential - Paraquat Litigation]  Exhibit 116 Typewritten document headed 1314		8	Heylings to Dr. L.L. Smith,	
10 11 12 13	Rose from Dr. Lewis Smith, dated 6,7.1976 (SYNG-PQ-02450688) [Confidential - Paraquat Litigation] Exhibit 116 Typewritten document headed 1314				
10 11 12 13	dated 6.7.1976 (SYNG-PC-02450688) [Confidential - Paraquat Litigation] Exhibit 116 Typewritten document headed 1314			dated 5.9.90, headed "Human Data with the Paraquat	
10 11 12 13 14	[Confidential - Paraquat Litigation] Exhibit 116 Typewritten document headed 1314		9	Emetic (PP796)"	
11 I 12 13 14	Litigation] Exhibit 116 Typewritten document headed 1314		1.0	(SYNG-PQ-26134270-4272)	
12 13 14			10	Exhibit 127 Document entitled "Safer 1379	
13 14	"Toxicity of Gramoxone		11	Paraquat Formulations - TRC	
13 14	Formulated with PP 796,"	1	12	5th March 1990," edited by H. Swaine, dated February	
14	dated July 27, 1976		1	1990	
	(SYNG-PQ-02450705)		13	(SYNG-PQ-02639780 - 9824)	
15 I	[Confidential - Paraquat Litigation]		14	Exhibit 128 Letter from Dr. L. Smith to 1384 Dr. S. Jaggers, dated	
	Exhibit 117 Cover letter from Dr. D. 1317	- 1	15	October 11, 1990	
16	Foulkes to Dr. N. Ospenson, dated October 19, 1976,	1	16	(SYNG-PQ-04262621) [Confidential - Paraquat	
	attaching a draft appraisal			[Connomian - Paraquat Lingation]	
17	of the emetic potential of PP796		17		
18	(CUSA-00088442 - 451)		18	Exhibit 129 Letter from Dr. L. Smith to 1386 Dr. J. Heylings, dated	
19 I	Exhibit 118 A telex-type document from 1318			November 6, 1990	
20	Dr. Cavalli to Dr. Rose, et al., dated October 21, 1976		19	(SYNG-PQ-04262618 - 19) [Confidential - Paraquat	
	(CUSA-00088433)		20	Litigation)	
21	Exhibit 119 A telex-type document from 1320		21	Exhibit 130 Email string, with the most 1393 recent being from Jon	
22	Dr. Rose to Dr. Cavalli,		22	Heylings to Andy Cook,	
23	et al., deted October 26, 1976			et al., dated November 19,	
	(CUSA-00305732)		23	2018, with attachments (SYNG-PQ-110783241 - 3251)	
24 25			24 25	/	
	1	Page 1130			Page 1132
1	EXHIBITS INDEX		1	EXHIBITS INDEX	
	Botham No. Description Page Exhibit 120 EDC Paper No. 729, headed 1326		2	Botham Description Page	
3 1	Exhibit 120 EDC Paper No. 729, headed 1326 "Emetic Formulation of			Exhibit No.	
4	Paraquat: Proposed Strategy		3	Exhibit 131 Document entitled "A new 1401	
5	for Introduction Worldwide," authored by P. Slade		4	analysis of the human emetic	
_	(SYNG-PQ-04262668 - 2695)			dose-response to PP796 based	
6	[Confidential - Paraquat Litigation]		5	on clinical data for dosing	
7				of PP796 only," authored by	
8 F	Exhibit 121 Letter from Dr. Rose to Dr. 1332 Cavalli, et al., dated		6	K. Travis, dated March 2019 (SYNG-PO-29299971 - 9978)	
	November 2, 1976		7	(	
9	(CUSA-00088398)			Exhibit 132 Various facsimiles, the 1407	
10 E	Exhibit 122 Documents comprising 1338  Chevron's application for an		8	first being a facsimile from	
11	exemption from tolerance for		9	Dr. A. Calderbank to Dr. R. Birtley, dated February 20,	
12	the inclusion of PP796 as an inert ingredient in paraquat		_	1986	
	formulations, with the first		10	(SYNG-PQ-04262400 - 2412)	
13	document being dated			[Confidential - Paraquat	
14	April 1, 1977 (SYNG-PQ-01858013 - 8655)		11	Litigation] Exhibit 133 Document from Dr. J.R. 1409	
	[Confidential - Paraquat		12	Exhibit 133 Document from Dr. J.R. 1409 Heylings to Dr. L.L. Smith.	
15 16 E	Litigation] Exhibit 123 Documents comprising 1338		13	et al., dated October 26,	
	Chevron's application for an			1990, headed "French	
17	exemption from tolerance for the inclusion of PP796 as an		14	Formulation of Paraquat"	
18	inert ingredient in paraquat	1	15	(SYNG-PQ-03709695 - 9697) [Confidential - Paraquat	
10	formulations, with the first		13	Litigation	
19	document being dated July 1970	1	16		
	(SYNG-PQ-01857812 - 8007)		17		
20	[Confidential - Paraquat		18		
	Litigation] Exhibit 124 Document from Dr. P. Slade 1360	1	19 20		
21			20		
21 22 F	to Mr. R. Bailey, et al.,				
21	dated June 30, 1976, "Safer		21 22		
21 22 F			21		

4 (Pages 1129 to 1132)

	Page 1133		Page 113
1	(On the record at 10:12 a.m.)	1	MR. TILLERY: I'm sorry Joe
2	THE VIDEOGRAPHER: This is Volume V	2	Orlet for Chevron, okay.
3	of the videotaped deposition of	3	BY MR. TILLERY:
4	Dr. Philip Botham, in the matter of Diana	4	Q. All right. A couple of housekeeping
5	Hoffmann, individually and as Independent	5	matters from yesterday, Dr. Botham, one of
6	Administrator of the Estate of Thomas R.	6	which is that we referred to a piece of
7	Hoffmann, Deceased, et al., versus	7	a website and I don't think we made an accurate
8	Syngenta Crop Protection, LLC, et al.,	8	record of that. That was where I asked you
9	in the Circuit Court, Twentieth Judicial	9	some questions about a particular sentence,
10	Circuit, St. Clair County, Illinois,	10	if you remember, on that website. I'd like
11	Case No. 17-L-517.	11	to put that up.
		12	MR. TILLERY: We're going to refer
12	This deposition is being held	13	to this as Plaintiff's Deposition
13	remotely via Zoom on June 19, 2020,	14	
14	at 10:12 a.m.	1	Exhibit No. 94, and we'll put it on the
15	My name is Wendy Viner from	15	screen.
16	TransPerfect and I am the legal video	16	(Botham Exhibit 94 marked for
17	specialist. The court reporter today is	17	identification.)
18	Leah Willersdorf, also with TransPerfect.	18	THE WITNESS: Yes, I can see that.
19	Counsel, would you please introduce	19	BY MR. TILLERY:
20	yourselves for the record.	20	Q. Okay. Take a look at that if you
21	MR. TILLERY: For the plaintiffs	21	wouldn't mind. This is directly off
22	in the case, Stephen Tillery of Korein	22	paraquat.com. It's what I think we were
23	Tillery law firm.	23	referring to yesterday during the deposition.
24	MR. NARESH: For Syngenta,	24	MR. TILLERY: Is this in display,
25	Ragan Naresh from Kirkland & Ellis.	25	the main capture?
	Page 1134		Page 113
1	THE VIDEOGRAPHER: Thank you.	1	MS. BRUMITT: No.
2	Could I ask the court reporter to please	2	MR. NARESH: Steve, for the record,
3	swear in the witness and we can proceed.	3	are you making a representation that this
4	PHILIP BOTHAM,	4	is from the current website or
5	was duly re-sworn.	5	from an historic
6	THE STATE OF THE S		from an instoric
_	EXAMINATION ON BEHALF OF PLAINTIFFS	6	MR. TILLERY: No. This is an
7	(continued)	6 7	
			MR. TILLERY: No. This is an historical version and I'm going to put
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7 8 9 10 11 12	(continued) BY MR. TILLERY: Q. Dr. Botham, before we get started, are you ready to proceed? A. I'm ready. Q. All right. Rather than me going through the entire preliminary statement	7 8 9 10 11	MR. TILLERY: No. This is an historical version and I'm going to put the new one up in just a minute.  Unfortunately, that's going to have to be in display mode because it's just on the website.  BY MR. TILLERY:  Q. But if you'd look at this.
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7 8 9 10 12 13 14 15 16 17 18	(continued) BY MR. TILLERY: Q. Dr. Botham, before we get started, are you ready to proceed? A. I'm ready. Q. All right. Rather than me going through the entire preliminary statement yesterday, your situation in Jealott's Hill is precisely the same as it was for the preceding two days, correct? A. It is. Q. In terms of in the room. Okay. All right.	7 8 9 10 11 12 13 14 15 16 17 18	MR. TILLERY: No. This is an historical version and I'm going to put the new one up in just a minute.  Unfortunately, that's going to have to be in display mode because it's just on the website.  BY MR. TILLERY:  Q. But if you'd look at this.  Can you push it down just a little bit, under "Animal studies."  Have you had a chance to read that portion, sir?  Yeah.  A. I can read it now.
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7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	(continued) BY MR. TILLERY: Q. Dr. Botham, before we get started, are you ready to proceed? A. I'm ready. Q. All right. Rather than me going through the entire preliminary statement yesterday, your situation in Jealott's Hill is precisely the same as it was for the preceding two days, correct? A. It is. Q. In terms of in the room. Okay. All right. MR. TILLERY: Do we have any appearances for GROWMARK or Chevron?	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	MR. TILLERY: No. This is an historical version and I'm going to put the new one up in just a minute.  Unfortunately, that's going to have to be in display mode because it's just on the website.  BY MR. TILLERY: Q. But if you'd look at this. Can you push it down just a little bit, under "Animal studies." Have you had a chance to read that portion, sir? Yeah. A. I can read it now. Q. All right. Okay. A. I've read that section on animal
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	(continued) BY MR. TILLERY: Q. Dr. Botham, before we get started, are you ready to proceed? A. I'm ready. Q. All right. Rather than me going through the entire preliminary statement yesterday, your situation in Jealott's Hill is precisely the same as it was for the preceding two days, correct? A. It is. Q. In terms of in the room. Okay. All right. MR. TILLERY: Do we have any appearances for GROWMARK or Chevron? MR. HOPP: Yes. Anthony Hopp for	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	MR. TILLERY: No. This is an historical version and I'm going to put the new one up in just a minute.  Unfortunately, that's going to have to be in display mode because it's just on the website.  BY MR. TILLERY: Q. But if you'd look at this. Can you push it down just a little bit, under "Animal studies." Have you had a chance to read that portion, sir? Yeah. A. I can read it now. Q. All right. Okay. A. I've read that section on animal studies that I can see.
7 8 9 10 11 13 14 15 16 17 18	(continued) BY MR. TILLERY: Q. Dr. Botham, before we get started, are you ready to proceed? A. I'm ready. Q. All right. Rather than me going through the entire preliminary statement yesterday, your situation in Jealott's Hill is precisely the same as it was for the preceding two days, correct? A. It is. Q. In terms of in the room. Okay. All right. MR. TILLERY: Do we have any appearances for GROWMARK or Chevron?	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	MR. TILLERY: No. This is an historical version and I'm going to put the new one up in just a minute.  Unfortunately, that's going to have to be in display mode because it's just on the website.  BY MR. TILLERY: Q. But if you'd look at this. Can you push it down just a little bit, under "Animal studies." Have you had a chance to read that portion, sir? Yeah. A. I can read it now. Q. All right. Okay. A. I've read that section on animal

Page 1137		Page 1139
on paraquat to the public, and particularly	1	anybody who has business with Syngenta?
2 to farmer and grower and other users of	2	A. My understanding is this applies
3 paraquat.	3	to all parts of Syngenta.
4 Q. So the intended audience would be	4	Q. All right. Now, when you have
5 just about anybody in the public who had access	5	sections of this, like this particular
6 to a computer, correct?	6	
7 A. Yes, that's right.	7	displayed Exhibit No. 94 and that's what
8 Q. That would include scientists,		we're going to refer to it as, Botham
9 it would include people like the plaintiffs in	8	Exhibit No. 94, okay.
this case where they're able to know that it	9	When you have this and you look
	10	at various different components that include
	11	science, how does a person who is responsible
	12	for this get his or her information?
	13	A. As you indicated a few moments ago,
	14	from the relevant expert or experts in the
paraquat.com been in existence?	15	company.
A. I don't recall when it was	16	Q. And as they're launching an
originally launched. I believe it was in the	17	update and I presume they are constantly
mid-2000s but I haven't got an accurate date	18	monitoring this website, correct?
in front of me.	19	A. There is periodic review, yes.
Q. When you say mid-2000s, are you	20	Q. Right. How periodic?
saying 2004, '05, something like that?	21	A. I'm afraid I don't know how often
A. My memory is not accurate but	22	that is done.
I would say that 2005 is around about the	23	Q. Okay. You were designated just
24 time, yes.	24	so you know, I'm not trying to embarrass you
Q. All right. And who has charge of	25	or put you on the spot anymore, but you were
Page 1138		Page 1140
1 that particular website?	1	designated to speak to us about this topic on
2 A. Well, today there's an internal	2	behalf of Syngenta, but I'll just say this
3 owner who is a gentleman who is in the	3	to you: Would you say that this particular
4 commercial part of our organization in	4	matter is updated on an as-needed basis? Would
5 Syngenta, and I believe it is still actually	5	that be fair?
6 managed through an external provider who helps	6	A. Yes, that's
with putting the content on to the site.	7	MR. NARESH: Objection.
8 Q. And the content is provided by	8	THE WITNESS: been my
9 different groups of people, depending upon	9	understanding; it is as needed, yes.
their area of work and responsibility within	10	BY MR. TILLERY:
the Syngenta umbrella organization, correct?	11	Q. Okay.
12 A. That is right.	12	Now, on this particular page, we
Q. paraquat.com is an entity strike	13	have at the bottom a section called
14 that.	14	"Animal studies." Do you see that?
paraquat.com is a website that	15	A. I do.
applies to all Syngenta companies, correct?	16	Q. And it says:
17 MR. NARESH: Objection to form,	16 17	
18 foundation.		"Syngenta has undertaken a major
	18	research program using animal models to
J J I I	19	investigate the alleged link between paraquat
	20	and Parkinson's disease."
1	21	And that major research program
	22	would be the Marks studies, the Breckenridge
Q. Well, is this for Syngenta AG, is it	23	study, the Minnema study and the Smeyne study;
for Syngenta Crop Protection, or does it apply to the term "Syngenta" and meant to include	24 25	isn't that correct?  A. That is the main body of that
	· ) L	

	Page 1141		Page 1143
١,	research program on animal models, yes.	1	Marks's work, wasn't it, with respect to her
1 2	Q. Is there any other study that I am	2	studies 2 and 3?
3	omitting?	3	MR. NARESH: Objection to form.
4	A. This is still an ongoing research	4	THE WITNESS: Yes, we agree that
5	program. There are some other studies which	5	the earlier Marks studies were not
6	have been undertaken and which are still in	6	directly communicated to regulatory
7	the process of being published.	7	agencies.
8	Q. So you have other studies that are	8	BY MR. TILLERY:
9	incomplete is what you're saying?	9	Q. And they weren't published either,
10	A. That's right, and I believe	10	were they?
11	I mentioned this in my last deposition.	11	A. The first study was presented at
12	Q. Right. But of the published,	12	an external scientific meeting but not
13	completed studies where Syngenta's standing	13	published.
14	behind what you came up with by way of	14	Q. The second one was not published,
15	a result, the studies that I just described	15	right?
16	are the ones relied upon for this statement;	16	A. That's correct.
17	would that be fair?	17	Q. The third study was not published?
18	A. That is fair.	18	A. That's correct.
19	O. All right.	19	Q. And those studies were never sent on
20	The "Animal studies" section of this	20	to relevant regulatory agencies, correct?
21	website page continues on and says:	21	A. That's right. It was the fourth
22	"The research work has been, and	22	study that was communicated to the EPA.
23	will continue to be, published in peer-reviewed	23	Q. And only part of the fourth study;
24	scientific journals and the results	24	would you agree with me? Or should we go back
25	communicated to relevant regulatory agencies."	25	through that? Only a part of it, only one
	Page 1142		Page 1144
1	Correct? Is that what it says?	1	finding.
2	A. That's what it says.	2	<ul> <li>A. Well, the finding that was relevant</li> </ul>
3	Q. " and the results	3	in terms of 6(a)(2) was communicated.
4	communicated"	4	Q. All right. Only one, a very narrow
5	I'm sorry.	5	section of that report, would you agree or
6	"The key finding is that paraquat,	6	do we have to go back through that? Would you
7	even at the maximum tolerated dose, does not	7	agree that only the fourth one?
8	cause dopaminergic neuronal cell loss in the	8	A. No. The key finding in that study
9	[substantia nigra pars compacta], the area of	9	was communicated.
10	the brain associated with Parkinson's disease."	10	Q. All right. Here we hear, in the
11	Correct?	11	last sentence, that the key finding is that
12	A. Correct.	12	paraquat, even at the maximum tolerated dose,
13	Q. And that was a statement made	13	does not cause dopaminergic neuronal cell loss
14	I think this was 2009 or '11, that statement,	14	in the substantia nigra, the area of the brain
15	would that seem fair?	15	associated with Parkinson's disease, right?
16	A. I think we would be making	16	A. Yes.
17	a statement like that around, more likely,	17 18	Q. And we know, of course, that Dr. Marks's second and third studies found
18	2011.	19	
19	Q. Okay, so 2011. All right.	20	exactly that, didn't they?  A. They did.
20	When we go back here and we see "The research	21	Q. They found that paraquat does cause
21 22	has been, and will continue to be, published in	22	dopaminergic neuronal cell loss in the
23	peer-reviewed scientific journals and the results communicated to relevant regulatory	23	substantia nigra and that is the area of the
23 24	agencies," now we know that statement was just	24	brain associated with Parkinson's disease,
2 <del>4</del> 25	absolutely false when it comes to Louise	25	right?
2.0	ansolutery large when it comes to rouge	120	A A PLANT .

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1	A. They did. As measured in that	1	evidence was telling us.
2	study, yes, that is correct.	2	Q. Dr. Botham, you know that you
3	Q. And you indicated I think yesterday	3	did not have any raw data from Charles
4	that the reason that you did this was because	4	Breckenridge by 2011, did you?
. 5	there was a great weight of authority, or the	5	A. Well, that's why I would need
6	weight of the evidence, scientific evidence,	6	to check the precise the precision of the
1 7	was against her studies. I think that's the	7	date that we're talking about here, when we
8	reason you said you were able to say these	8	made this statement on paraquat.com, when we
9	things on your website. Remember?	9	had generated those data; I don't have that in
10	A. No, I	10	front of me.
11	MR. NARESH: Objection to form.	11	Q. Are you telling the ladies and
12	THE WITNESS: Just to clarify, what	12	gentlemen of the jury that a 2011 statement,
13	I said is that	13	here, in your website, was predicated upon
14	THE STENOGRAPHER: Sorry, I didn't	14	the results of a study not yet concluded in
15	get the objection.	15	that was published in 2013? Is that what
16	MR. NARESH: It was an objection	16	you're saying?
17	to form.	17	MR. NARESH: I'll object to this.
18	THE STENOGRAPHER: Thank you.	18	Steve, you haven't made a representation
19	THE WITNESS: Sorry, Ragan, you'll	19	as to the date of this website.
20	have to shout up again.	20	MR. TILLERY: It was 2009 or 2013.
21	So, yes, the no, the reason why	21	I'll get the date for you. Hold on.
22	the statement is as it appears here on	22	Sorry, I don't have it on your
23	paraquat.com is because, in taking the	23	website when this came out but I think
24	totality of the weight of evidence, so	24	it was Two Thousand
25	when we include the studies that were	25	///
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1	subsequently published in Breckenridge	,	BY MR. TILLERY:
2		1	
1	et al., Minnema, et al., Smeyne, et al.,	2	Q. I agree, I think it was 2011, what
3	where a much more thorough analysis of	3	you said, Dr. Botham. I agree with you.
4 5	the pathology of the brain was conducted,	4	Now
6	even than in the Marks studies, then	5	A. Well, I don't know when this was
	we were able to see that the loss of	6	Q. All right. So
7	dopaminergic neuronal cells was not	7	A because that's quite critical.
8	consistently seen and no other evidence	8	That's quite critical to answering your
9	of damage was seen.	9	question.
10 11	BY MR. TILLERY:	10	Q. Okay. So you're saying that you
	Q. Okay. So it was the 2013, '14, '15	11	published a study strike that.
12	studies that you're talking about, right?	12	You're saying you published studies
13	A. Those are the studies, correct.	13	on paraquat.com, or references to studies, and
14	Q. Would you explain to me how this	14	conclusions that, even at a maximum tolerated
15	statement was created before those studies were	15	dose, paraquat does not cause dopaminergic
16	ever undertaken and concluded?	16	neuronal cell loss in the area of the brain
17	A. As I indicated, I think that if	17	associated with Parkinson's disease before the
18	we were starting to make the statement earlier	18	studies were even completed.
19	than all the final publication date of all	19	Is that a fair statement?
20	those studies, which I'm sure is probably	20	A. No
21	true, then that's because the publication,	21	MR. NARESH: Objection
22	of course, is a can be a lengthy process,	22	THE WITNESS: I'm not saying
23	and we had generated the data, so we were	23	that. I don't know when
24	for some of those studies, and so we were	24	MR. NARESH: Dr. Botham, let me
25	already clearer about what the weight of	25	just get my objections in before we

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1	go on.	1	will reflect that. Let's assume this was 2011
2	Objection to the form. Objection	2	as you originally stated, okay.
3	to foundation.	3	Are you telling me that you knew
4	Please go ahead.	4	in 2011 what the outcome of your studies in
5	THE WITNESS: No, I'm not saying	5	Minnema, Breckenridge and Smeyne were going
6	that because you've not shown me very	6	to be before they were undertaken?
7	clearly when this statement first	7	A. No, of course, and certainly know
8	appeared on paraquat.com, and we would	8	at that time the work that was published in
9	need to relate that to when we had	9	Minnema and Smeyne had not even started, but
10	generated the data from the Breckenridge	10	the so the main work that was being done,
11	study, which, again, I don't have to hand	11	which was initiated certainly before 2011,
12	today.	12	was the work that was ultimately published in
13	BY MR, TILLERY:	13	Breckenridge, et al., which is really where,
14	Q. Well, here's my problem. So we	14	largely, I think this statement would refer
15	filed a Notice for Deposition and we asked for	15	to, more than the other two.
16	the person most knowledgeable at Syngenta,	16	Q. Okay. So you're saying that the
17	all entities, Syngenta Crop Protection and	17	preliminary results of a study from Charles
18	Syngenta AG, to talk about paraquat.com, and	18	Breckenridge, two years before it was
19	guess whose name they gave me. Yours.	19	published, assuming this was 2011, was your
20	So it really isn't my job to answer	20	basis for the last sentence in Plaintiff's
21	your questions. So what I'm asking you is when	21	Exhibit 94? Is that what you're saying?
22	did you make these statements on your website?	22	A. If
23	MR. NARESH: Hang on. I'm	23	MR. NARESH: Objection to form.
24	objecting to this. And, Steve, you've	24	THE WITNESS: If this was a 2011
25	introduced an exhibit that doesn't have a	25	version, then that is a possibility.
	Page 1150		Page 1152
1	date on it. If you'd like to give the	1	I would need, though, to be really sure
2	witness an opportunity to review the	2	about exactly when the date of generation
3	entire document so that he can draw	3	had been completed, but I certainly know
4	inferences from when this document was on	4	that it was completed before 2013
5	the website, I think that would be an	5	because, as I say, the publication
6	appropriate way to go forward. But right	6	process took a long time.
7	now you're showing him and directing him	7	BY MR. TILLERY:
8	to a specific section of an undated	8	Q. But you never mentioned anything
و ا	document and suggesting that he doesn't	9	about Louise Marks's work, did you
10	know, based on that section, when this	10	A. No, because this
11	was published.	11	Q on paraquat.com?
12	If you if this is important to	12	A. No, because this was based on the
13	you, then I suggest that the witness be	13	weight of evidence. To repeat what I said
14	allowed to review the entire document so	14	earlier, the Breckenridge study had looked at
15	that he can assess whether or not he can	15	not just neuronal cell loss as it was assessed
16	infer when this statement was on the	16	in the Marks papers, but with four or five
17	website.	17	other techniques, pathological techniques,
18	MR. TILLERY: Well, to speed this	18	none of which showed a consistent loss of
19	up so we don't just chew up time, because	19	dopaminergic neuronal cells, so the weight of
20	I'm limited today and I want to get	20	evidence had changed by that time.
21	through a lot of material today,	21	Q. By 2011?
22	Dr. Botham.	22	MR. NARESH: Objection to form.
23	BY MR. TILLERY:	23	THE WITNESS: By whenever we were
127			
24	Q. Let's assume if this assumption's	24	we had completed that data generation.

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1	BY MR. TILLERY:	1	Q. You're aware that there were,
2	Q. Explain that last answer, sir. By	2	at times, 60 studies making similar findings.
3	whatever date you had done what?	3	Were you aware of that?
4	A. By whenever we had completed the	4	A. Yes.
5	data generation, which is what I was saying	5	Q. Okay. So based upon Dr. Marks's
6	earlier, I don't, to hand, have exactly the	6	replication of the many studies published in
7	date when we had the data from the	7	the scientific literature, Syngenta decided
8	Breckenridge study to a point where we could	8	to consider neuronal cell loss as a potentially
9	interpret them.	9	real effect of paraquat exposure. We saw that
10	Q. Well, you've testified, then, that	10	in the records. Didn't you?
11	this conclusion cannot be justified strike	11	A. We did.
12	that.	12	MR. NARESH: Objection to form.
13	You're saying that the conclusion's	13	BY MR. TILLERY:
14	based upon the weight of the evidence, because	14	Q. And you can't deny that; there's
15	the preliminary results in 2011 from	15	neuronal cell loss. You knew that, right?
16	Dr. Breckenridge's study told you more	16	A. We were not denying that at that
17	information and was provided the greater	17	time, certainly not, no.
18	weight of the evidence?	18	Q. As a matter of fact, we showed a
19	Is that a fair statement?	19	list of things in 2009 I think it was, that
20	A. That's a fair	20	indicated things "we cannot deny," right?
21	MR. NARESH: Objection to form.	21	A. Absolutely, yes. That was very
22	THE WITNESS: That's a fair	22	much our position.
23	statement, but this statement, I think,	23	Q. All right. Okay. That was it.
24	would have been made when we were able	24	And you performed a preliminary risk
25	to properly interpret those the data.	25	assessment based upon the potential that
		23	
	Page 1154		Page 1156
1	So it's not that they were preliminary,	1	paraquat is neurotoxic to cells in the
2	it was that they were not published.	2	substantia nigra, too, didn't you?
3	BY MR. TILLERY:	3	A. We did. We took the precautionary
4	Q. Okay. But you're aware that	4	conservative approach, as I explained
5	Dr. Marks's study replicated a number of	5	yesterday, that those findings were a real
6	studies in the public literature, aren't you?	6	effect and that the risk assessment we did
7	A. Yes, I am.	7	was on that basis, you're correct.
8	Q. Okay. As a matter of fact,	8	Q. And you conducted new studies, and
9	yesterday you indicated that the reason you	9	that would be the Breckenridge, Minnema, Smeyne
10	didn't turn her studies over to the US EPA	10	studies, right?
11	is because they were redundant to, or	11	A. That's correct.
12	replicated the studies that existed already in	12	Q. These were, all three,
13	the scientific public literature, correct?	13	Syngenta-sponsored studies, right?
14	A. That is correct.	14	A. They are.
15	Q. And that would include Dr. Deborah	15	Q. And based upon these three
16	Cory-Slechta's work, right?	16	Syngenta-sponsored studies, you decided that
17	A. That is correct.	17	Dr. Marks's work strike that.
18	Q. Dr. Alison McCormack's work, right?	18	And based upon just these three
19	A. Yes.	19	scientific studies sponsored by Syngenta,
20	Q. Dr. Dino Di Monte's work, right?	20	you decided that Dr. Marks's work and the
21	A. Yes.	21	approximate 60 similar studies in the published
22	Q. And other similar studies in the	22	literature that she replicated did not
23	paraquat literature that you were aware of,	23	represent a real effect, right?
24	right?	24	MR. NARESH: Objection to form.
25	A. Yes.	25	THE WITNESS: The studies that
The same of	1 N, 1 WD,		TITE WITTEDS. THE STUDIES HIGH

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	ng to suggested that the	1	A. Yes. I was trying to answer your
	ad been seen by Dr. Marks	2	question directly, but, I mean, certainly the
	ay not, indeed, be a true	3	knowledge that paraquat gets into the brain
	ninergic neurones for	4	of experimental animals and, by extrapolation,
	cal reasons, potentially.	5	could therefore get into the brains of humans
	LERY: This is off the	6	in very low levels, yes, of course, that's
	second, please.	7	been communicated to regulatory authorities.
8 Not formally		8	So I was answering your question,
9 BY MR. TILLE		9	do we directly say to regulatory authorities
	identify any flaw in any of	10	paraquat gets into the brain of humans.
11 these Marks stud		11	That I'm saying that information was
	didn't identify a flaw in	12	conveyed, as would be normally the case when
13 the Marks studie		13	you have any kind of toxicological program.
	ll I'm asking. Okay.	14	Q. Okay. So you're telling me that
	y we talked about Exhibit 38	15	you have told regulatory bodies throughout
	d at great length how that	16	the world that Syngenta's product, paraquat,
	or that document led to your	17	gets into the brain of users of your product
	you told me that you were	18	when they're out applying it in their field,
	was aware, from the mid '90s	19	they're mixing, loading it and applying it?
	e amount of paraquat got into	20	You've informed the regulators that it gets
	quat applicators, users,	21	into their brain; are you telling me that?
	when they did their job	22	A. Well, I'm trying to answer your
23 applying the che		23	question directly. So what I'm saying is that
	e said that it was likely	24	we have informed regulatory authorities,
25 that small amou	nts would get into the brain.	25	for example by indicating in the Breckenridge
	Page 1158		Page 1160
Q. Right. V	Was that information ever	1	study, which didn't just look at neuronal cell
2 conveyed to the		2	loss, it also had kinetic studies in there
	RESH: Objection to form,	3	which clearly showed that paraquat gets into
4 foundation.		4	the brain of those same mice.
	FNESS: I can't answer that.	5	What I'm saying is that when
6 BY MR. TILLE		6	we have communicated, which we have
	aware of any evidence that	7	to a number of regulatory authorities, that
	was ever conveyed to them in	8	information, they would have assumed, quite
9 any way?	, , , ab 0 , or 0011, of 02 10 1110111 111	9	rightly, that that might indicate that small
	aware of any such	10	quantities of paraquat would get into the
11 communication.	avvare or may be on	11	human brain.
	aware of any disclosure of	12	MR. TILLERY: I move to strike your
	being made to any regulatory	13	answer as unresponsive.
body in the worl		14	BY MR. TILLERY:
	n't recall whether that	15	Q. The question is not difficult, sir.
16 would have happ		16	It's straight up and straightforward. Please
	n saying have you ever	17	answer my question directly. And it is this:
	een to all the meetings.	18	Since the 1990s, when you've testified that
	ediate past worldwide head of	19	Syngenta was aware that during normal,
	nead of science, and I presume	20	expected, anticipated use of their products
, ,	you'd be aware of the kind of	21	in mixing, loading and applying paraquat
	would be conveyed. You're	22	in farm fields, that those people who used
	e for all regulatory bodies	23	it got the chemical into their brain, that
	the exception of the US EPA.	24	we discussed yesterday, have you ever directly
25 Okay. You unde		25	informed any regulatory body in any direct
22 Okay. Tou und			mormou any roganitory oody in any direct

	CONFIDENTIAL PORSOAN		PROTECTIVE ORDER
	Page 1161		Page 1163
1	way not through a study or not through some	1	in any other regulatory body that people who
2	mouse study, but have you ever told them,	2	eat fruit or vegetables sprayed with this
3	"We believe paraquat gets into the brain of	3	chemical, throughout any of the areas of the
4	those applicators"? Have you ever done that?	4	world that use your product, can also ingest
5	A. I cannot comment whether people may	5	and get paraquat into their brain? Have you
6	have made that communication to regulators.	6	ever done that?
7	I don't know the answer to that.	7	MR. NARESH: Objection to form.
8	Q. Well, you're speaking on behalf of	8	THE WITNESS: Again, we would not
9	Syngenta today. You are the corporation for	9	have given that information directly
10	this deposition. Have you, to your knowledge,	10	because this it is always assumed that
11	ever done what I just asked; directly tell the	11	very low levels of any chemical, paraquat
12	regulators paraquat gets into the brain, since	12	included, could get anywhere in the body,
13	the 1990s when you became aware of it?	13	b <mark>ut these low levels are seen by</mark>
14	A. Well, I have to repeat what I said	14	regulatory authorities of not being of
15	before to answer that question, that we have	15	concern, unless there's a particular
16	informed the	16	reason to think otherwise.
17	Q. I	17	BY MR. TILLERY:
18	A. Well, it's the right answer to the	18	Q. Okay. Have you ever posted on
19	question, Mr. Tillery; it is that we have	19	paraquat.com website that when used as
20	informed regulatory authorities that paraquat	20	anticipated, as you said, from the 1990s at
21	gets into the brain.	21	least, Syngenta knew that paraquat got into
22	MR. TILLERY: Okay. You're	22	the brain of users? Have you ever done that?
23	referring to studies. I'm asking you	23	A. I don't remember what we might have
24	to answer my question directly and I move	24	said on paraquat.com about entry into the
25	to strike your answer as unresponsive.	25	brain over a period of time. I know that
	Page 1162		Page 1164
1	Have you or have you not, Syngenta,	1	early on there was a statement which said that
2	sent a letter, an email, a direct	2	paraquat may not pass the blood-brain barrier
3	communication saying, "By the way, when	3	very easily.
4	the purchasers/end-users of our product,	4	Q. Okay. If we could get a clear
5	farmers, applicators, use it, it gets	5	answer, sir. Are you aware one way or
6	into the human brain"? Have you done	6	another as the designee for paraquat.com on
7	that?	7	behalf of both Syngenta defendants, are you
8	MR. NARESH: Object to the form.	8	aware of ever posting any warning or statement
9	THE WITNESS: No, we have not sent	9	on your website telling users what you've known
10	such a direct communication, in the same	10	since the 1990s; that paraquat will get into
11	way	11	the brain when they use it as anticipated?
12	BY MR. TILLERY:	12	Have you ever done that?
13	Q. All right.	13	A. I don't believe we would because
14	A that we don't send that for any	14	we wouldn't feel that a warning was necessary
15	other chemical or any other pesticide	15	because any small amount of paraquat getting
16	Q. All right. So	16	into the brain would not necessarily be
17	A which probably also gets into	17	harmful.
18	the brain.	18	Q. Okay. So it wasn't information they
19	Q. Okay. How many of your chemicals	19	needed to know, correct?
20	get into the brain of people?	20	A. That would have been the judgment,
21	A. I can't answer that directly but	21	and if that judgment had ever changed,
22	you would from a science perspective,	22	we would have done something differently.
23	you would expect that quite a number of	23	Q. All right, okay. And it hasn't
24	chemicals could get into the brain.	24	changed up to today's date, has it?
25	Q. Have you ever told anybody else	25	A. Well, our view at the moment is

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	Page 1165		Page 1167
1	that the small amounts of paraquat that get	1	MR. NARESH: Are you done,
2	into the brain are highly unlikely to cause	2	Mr. Tillery, with Exhibit 94?
3	damage to the brain.	3	MR. TILLERY: Well, I don't know.
4	Q. But yesterday we talked for a great	4	MR. NARESH: For the record,
5	deal of time we're not going to go do that	5	I'd like to move to strike the earlier
6	again today that you don't know what that	6	testimony on Exhibit 94 in its entirety
7	amount is, correct?	7	based on it being misleading as to the
8	A. We can	8	date of the document. I don't think that
9	MR. NARESH: Objection to form.	9	the representations as to the timing of
10	THE WITNESS: Yes, what I was	10	that document were accurate, as reflected
11	telling you yesterday is that we can do	11	by the document itself, and I think the
12	a calculation of the predicted	12	testimony elicited based on that
13	concentration in the brain, and the	13	representation is misleading, so
14	document that I showed you yesterday was	14	I'll move to strike the testimony
15	giving a more helpful number, which is	15	in relation to Exhibit 94.
16	what exposure a farmer can be can	16	MR. TILLERY: The information
17	receive, to be sure that that level of	17	that's been given to me, Counsel,
18	paraquat was nowhere near exceeded.	18	in response to your motion, is that
19	BY MR. TILLERY:	19	the portion in my outline that
20	Q. Did you come up with these answers	20	I referenced was from a 2008 website.
21	over the night from yesterday to today? Do you	21	MR. NARESH: Well, I will
22	have some new math that you didn't share with	22	MR. TILLERY: That's all I know and
23	us that you learned about last night?	23	we'll deal with this later, when we can.
24	A. No.	24	Can we move on to this exhibit at this
25	MR. NARESH: Objection to form.	25	point?
	Page 1166		Page 1168
1	BY MR. TILLERY:	1	MR. NARESH: In response to that
2	Q. Okay. So should the court and	2	statement, I think that if you look at
3	jury so I don't have to go back to	3	the document, there are references in
4	Exhibit 38 and spend too much time on this,	4	that document to studies published in
5	should they look to your answers you gave	5	2013 and 2016 which indicate that that
6	yesterday and see if what you're saying today	6	paraquat.com excerpt that you used was
7	is consistent? Would that be fair?	7	clearly not from 2011 and
8	A. Yes, what I said yesterday	8	MR. TILLERY: Yeah, the excerpt,
9	Q. All right.	9	however, is what I'm referring to.
10	A was	10	I didn't comment on the entire thing.
11	Q. That's what we'll do	11	But let's move on, if we can. We can
12	A that there was not a figure in	12	resolve it at the after the break.
13	the brain in that document.	13	MR. NARESH: The very studies that
14	Q. All right.	14	you were suggesting in your questioning
15	MR. TILLERY: Now, let's go to	15	as having been published after that
16	Exhibit 93.	16	website was put up are referenced in that
17	MR. NARESH: Is there any way	17	document, including the 2013 Breckenridge
18	to show 93 not in presentation mode?	18	study and the 2016 Smeyne study,
19	MR. TILLERY: We're doing that now.	19	so that's just not true and
20	In other words, to give it to the	20	MR. TILLERY: Well, here's the
21	witness?	21	here's the problem, we don't have
22	MR. NARESH: Yeah, and to me,	22	archival websites. What we have is
23	frankly.	23	information. They're replaced. When
24	MR. TILLERY: Absolutely. We're	24	a new website is created, you don't post
25	doing that now.	25	your past websites; so we're stuck with

	Page	1169		Page 1171
1	what we have and what you have on your		1	Q. All right, and we're going to
2	website or what you've produced.		2	have you gone through all of the pages? I
3	That's it. So that's the point.		3	think there's three pages, right?
4	The fact is that language,		4	A. Yes. I looked at it also yesterday
5	we believe, was apparent earlier.		5	so I've briefly looked at it again this
6	So we're happy to actually go		6	morning.
7	to court over it, happy to do that with		7	Q. All right. Let's go back, if you'd
8	you if you want, but let's go on with the		8	take back the display, the first page.
9	dep. I'm trying to get through this.		9	Just for the record again, that's
10	MR. NARESH: Fine		10	502(d)-022360.0001, Exhibit 93.
11	BY MR. TILLERY:		11	We see here we went over this
12	Q. Now, do you remember this from		12	yesterday who was at the meeting from the
13	yesterday? Do you remember this from		13	science perspective. Then if you go down
14	yesterday, sir? This is the action notes from		14	a little bit on the exhibit and show the bottom
15	the Atlanta meeting, right?		15	of that first page yes, that's perfect.
16	A. Yes. Yes, I remember.		16	If you look at that, we went over
17	Q. You I think, my recollection		17	these things I think, and the second bullet
18	MR. NARESH: Can we have the same		18	point we talked about. Remember? There's no
19	stipulation as yesterday, that any		19	sense in going over it. And the fourth bullet
20	questioning relating to 502(d) documents		20	point we talked about, right?
21	is without waiver of Syngenta's		21	A. Yes.
22	objections on privileged grounds		22	Q. Study work should be labeled Work
23	to testimony related to the documents and		23	Product. And then the sixth or seventh one,
24	the documents themselves?		24	it says:
25	MR. TILLERY: Absolutely.		25	"Work requested by external counsel
	Page	1170		Page 1172
1	Of course.		1	has a higher level of privilege"
2	MR. NARESH: And I'm assuming that		2	Remember that?
3	you'll have additional 502 documents, and		3	A. Yes.
4	can we have the same standing agreement		4	Q. We went through that.
5	both with respect to this document and		5	All right. Now let's go to page 2.
6	the others, to the extent that you use		6	These are the action items. It says
7	them?		7	"Introduction to Paraquat Toxicity."
8	MR. TILLERY: We can, and that was,		8	Who gave that talk?
9	for the record, my intention to give you		9	A. I would need to check back on the
10	that yesterday, even. Okay.		10	agenda who was doing that. I don't recall.
11	MR. NARESH: And just finally, is		11	Q. Okay. Who talked about the
12	there anybody on this call participating		12	introduction to Parkinson's disease?
13	in the deposition that has any problem		13	A. Again, it would be useful if
14	with that approach? If so, please speak		14	we could just have a look at the agenda
15	up.		15	because I wouldn't want to give the wrong
16	(No comment.)		16	name.
17	MR. NARESH: Okay, thank you.		17	Q. Well, let's go back to the page
18	BY MR. TILLERY:		18	before. Take a look at the agenda, then, and
19	Q. Sir, this is Exhibit No. 93. Do you		19	see
20	see it?		20	A. That would be a different document.
21	A. I do.		21	Q. Do you have the agenda oh, that
22	Q. Would you take a look at that		22	would be a different
23	exhibit, and take charge of the exhibit and go		23	A. Yes, that's right, it's embedded.
24	through it.		24	Q. All right. Well, frankly, to move
25	A. Okay, I've done that. Thank you.		25	on, then, let's just say this, if you go back

to the page you were on, page 2. It wouldn't matter your information would be a reflection of what was contained on that other exhibit, right? Whoever it said presented it is what you'd give me in the answer, right?  A. Yes.  O. So we don't need to take the time because whatever it says on there is what you'll tell me that presentation was, right?  A. Yes.  O. All right. And then it says that CB made a presentation. That's Charles Breckenridge, right?  A. Yes, that's correct.  O. He made arguments that may be raised by adversaries. Adversaries were the people who were linking Parkinson's disease to your paraquat product, weren't they?  A. Yes.  O. All right. And then there was the people who were linking Parkinson's disease to your paraquat product, weren't they?  A. I imagine that that would be what was represented here, yes.  O. Okay. And then JW, Jeff Wolff, right?  A. Yes, yes.  O. And that of course related to paraquat and Parkinson's disease, right?  A. That's correct.  O. All right. And then it says that CB made a presentation. That's Charles Breckenridge, right?  A. Yes, that's correct.  O. He made arguments that may be raised by adversaries. Adversaries were the people who were linking Parkinson's disease to your paraquat product, weren't they?  A. I imagine that that would be what was represented here, yes.  O. Okay. And then JW, Jeff Wolff, right?  A. Yes, I think that's probably Jeff Wolff.  O. That's the lawyer from Fulbright & Jarwoski we talked about, right?  A. That's the person, yes.  O. And he is mapping potential claimants. He's telling you who you think you might should be focused on who might bring lawsuits against you, right?  A. He was giving us the background to why there was potential litigation and	
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4 exhibit, right? Whoever it said presented it 5 is what you'd give me in the answer, right? 6 A. Yes. 7 Q. So we don't need to take the time 8 because whatever it says on there is what 9 you'll tell me that presentation was, right? 10 A. Yes. 11 Q. All right. And then there was 12 epidemiology and animal studies, right? 13 A. Yes. 14 Q. Do you see that, on top of that? 15 A. Yes, yes. 16 Q. And that of course related 17 to paraquat and Parkinson's disease, right? 18 A. That's correct. 19 Q. All right. And then it says: 10 paraquat and Parkinson's disease, right? 11 to paraquat and Parkinson's disease, right? 12 pedersen summary table [versus] results in the 12 original paper." 13 What does that reference? 14 A. That was for Martin Wilks, who was 15 one of the scientists present, to check the 16 Page 1174  CB made a presentation. That's Charles Breckenridge, right? A. Yes, than's correct.  Q. He made arguments that may be raised by adversaries. Adversaries were the people who were linking Parkinson's disease to your paraquat product, weren't they? A. I imagine that that would be what was represented here, yes. Q. Okay. And then JW, Jeff Wolff, right? A. Yes, I think that's probably Jeff Wolff. Q. That's the lawyer from Fulbright & Jarwoski we talked about, right? A. That's the person, yes. Q. And he is mapping potential claimants. He's telling you who you think you might should be focused on who might bring lawsuits against you, right? A. He was giving us the background to why there was potential litigation and	
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Q. So we don't need to take the time because whatever it says on there is what you'll tell me that presentation was, right?  Q. All right. And then there was pidemiology and animal studies, right?  A. Yes.  A. Yes.  A. Yes.  A. Yes.  C. He made arguments that may be raised by adversaries. Adversaries were the people who were linking Parkinson's disease to your paraquat product, weren't they?  A. I imagine that that would be what was represented here, yes.  A. Yes.  C. Okay. And then JW, Jeff Wolff, right?  A. Yes, yes.  D. Okay. And then JW, Jeff Wolff, right?  A. Yes, I think that's probably Jeff  Wolff.  To paraquat and Parkinson's disease, right?  A. That's correct.  C. And that of course related  To paraquat and Parkinson's disease, right?  A. That's the lawyer from Fulbright  A. That's the person, yes.  C. Okay. And then JW, Jeff Wolff, right?  A. Yes, I think that's probably Jeff  Wolff.  C. That's the lawyer from Fulbright  A. That's the person, yes.  C. And he is mapping potential  Claimants. He's telling you who you think you might — should be focused on who might bring  Lawsuits against you, right?  A. He was giving us the background  to why there was potential litigation and	
because whatever it says on there is what you'll tell me that presentation was, right?  A. Yes.  Q. All right. And then there was epidemiology and animal studies, right?  A. Yes.  A. Yes.  A. Yes.  A. Yes.  A. Yes.  C. Do you see that, on top of that?  A. Yes, yes.  C. And that of course related to paraquat and Parkinson's disease, right?  A. That's correct.  C. All right. And then it says:  C. All right. And then it says:  C. All right. And then it says:  C. And he is mapping potential claimants. He's telling you who you think you might should be focused on who might bring  Page 1174  Deaders in Mayer and Page 1174  Page 1174  Deaders in kind versaries. Adversaries were the people who were linking Parkinson's disease to your paraquat product, weren't they?  A. I imagine that that would be what was represented here, yes.  Q. Okay. And then JW, Jeff Wolff, right?  A. Yes, I think that's probably Jeff  Wolff.  Q. That's the lawyer from Fulbright  & Jarwoski we talked about, right?  A. That's the person, yes.  Q. And he is mapping potential  claimants. He's telling you who you think you might should be focused on who might bring  lawsuits against you, right?  A. He was giving us the background to why there was potential litigation and	
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10 A. Yes. 11 Q. All right. And then there was 12 epidemiology and animal studies, right? 13 A. Yes. 14 Q. Do you see that, on top of that? 15 A. Yes, yes. 16 Q. And that of course related 17 to paraquat and Parkinson's disease, right? 18 A. That's correct. 19 Q. All right. And then it says: 19 A. That's the lawyer from Fulbright 19 Q. All right. And then it says: 20 "MFW to check Liou data on the 21 Pedersen summary table [versus] results in the 22 original paper." 21 A. That was for Martin Wilks, who was 22 one of the scientists present, to check the 23 A. That was potential litigation and 24 Page 1174 25 Page 1174 26 Page 1174 27 Page 1174 28 Page 1174 29 Page 1174 20 Page 1174 20 Page 1174 20 Page 1174 21 Page 1174 22 Page 1174 23 Page 1174	
11 Q. All right. And then there was 12 epidemiology and animal studies, right? 13 A. Yes. 14 Q. Do you see that, on top of that? 15 A. Yes, yes. 16 Q. And that of course related 17 to paraquat and Parkinson's disease, right? 18 A. That's correct. 19 Q. All right. And then it says: 20 "MFW to check Liou data on the 21 Pedersen summary table [versus] results in the 22 original paper." 23 What does that reference? 24 A. That was for Martin Wilks, who was 25 one of the scientists present, to check the  Page 1174  A. I imagine that that would be what was represented here, yes. 12 was represented here, yes. 13 Q. Okay. And then JW, Jeff Wolff, right? A. Yes, I think that's probably Jeff Wolff. 17 Q. That's the lawyer from Fulbright & Jarwoski we talked about, right? A. That's the person, yes. Q. And he is mapping potential claimants. He's telling you who you think you might should be focused on who might bring lawsuits against you, right? A. He was giving us the background to why there was potential litigation and	
12 epidemiology and animal studies, right?  13 A. Yes.  14 Q. Do you see that, on top of that?  15 A. Yes, yes.  16 Q. And that of course related  17 to paraquat and Parkinson's disease, right?  18 A. That's correct.  19 Q. All right. And then it says:  20 "MFW to check Liou data on the  21 Pedersen summary table [versus] results in the  22 original paper."  23 What does that reference?  24 A. That was for Martin Wilks, who was  25 one of the scientists present, to check the  Page 1174  Page 1174  was represented here, yes.  Q. Okay. And then JW, Jeff Wolff,  14 right?  A. Yes, I think that's probably Jeff  Wolff.  17 Q. That's the lawyer from Fulbright  & Jarwoski we talked about, right?  A. That's the person, yes.  Q. And he is mapping potential  claimants. He's telling you who you think you  might should be focused on who might bring  lawsuits against you, right?  A. He was giving us the background  to why there was potential litigation and	
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14 Q. Do you see that, on top of that?  15 A. Yes, yes.  16 Q. And that of course related  17 to paraquat and Parkinson's disease, right?  18 A. That's correct.  19 Q. All right. And then it says:  20 "MFW to check Liou data on the  21 Pedersen summary table [versus] results in the  22 original paper."  23 What does that reference?  24 A. That was for Martin Wilks, who was  25 one of the scientists present, to check the  Page 1174  14 right?  A. Yes, I think that's probably Jeff  Wolff.  17 Q. That's the lawyer from Fulbright  & Jarwoski we talked about, right?  A. That's the person, yes.  Q. And he is mapping potential  claimants. He's telling you who you think you  might — should be focused on who might bring  lawsuits against you, right?  A. He was giving us the background  to why there was potential litigation and	
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23 lawsuits against you, right? 24 A. That was for Martin Wilks, who was 25 one of the scientists present, to check the  Page 1174  23 lawsuits against you, right? 24 A. He was giving us the background to why there was potential litigation and  Page 1174	
A. That was for Martin Wilks, who was one of the scientists present, to check the  Page 1174  A. He was giving us the background to why there was potential litigation and	
25 one of the scientists present, to check the Page 1174 Page 1174 Page 25 Page 25	
Page 1174 Page 1	
data which appeared in an external 1 claim ves	.176
2 publication, the first author of which was 2 Q. All right. So he was telling you	
3 Liou. 3 who the potential people are; Parkinson's	
4 Q. Okay. And what was the reason you 4 victims, right?	
5 were taking action with respect to that? 5 A. I don't	
6 A. I would be fairly sure that it 6 Q. Is that what he told you?	
7 would be what we did in all of our meetings, 7 A. I don't know, I can't remember	
8 which was to look in detail at some of the 8 exactly what he told us. I don't think he	
9 external publications on the subject of 9 would have been talking about individuals,	
paraquat and Parkinson's disease to make sure 10 individual people with disease. I imagine	
we fully understood what was in those papers.	
12 Q. All right. Then look at DJB, look 12 where potential litigation could come from.	
at that action, "to prepare graphs of papers   13 Q. Well, he says let's just read the	
per year associating paraquat with [Parkinson's plain language of the action item, "Mapping of	
15 disease]." Right?  15 potential claimants." He's telling you where	
16 A. Yes. 16 in the country they might come from, or where	
Q. There were enough of them that you 17 in the world, right?	
had to assign somebody to prepare graphs of 18 MR. NARESH: Objection to form.	
them for the whole group, right?  19  THE WITNESS: Without seeing the	
20 A. That's right. That was to give 20 presentation to remind me, I don't know	
21 a flavor for the amount of literature that was 21 exactly what the content was there	
22 available and that we may need to look at in 22 to define claimants.	
23 detail. 23 BY MR. TILLERY:	
Q. Okay. Amount of literature 24 Q. And then let's skip down. It says:	
25 associating paraquat with Parkinson's disease, 25 "Action - Need to consider doing	

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	Page 1177		Page 1179
1	health surveys at relevant manufacturing	1	young people who get the disease may have
2	plants."	2	a genetic link, right?
3	Who is MFW?	3	A. Yes. That's one other factor, yes.
4	A. That's Dr. Wilks. Martin Wilks.	4	Q. All right. So you looked at that.
5	Q. He's to discuss with chief medical	5	So you were creating a defensive mechanism for
6	officer who will lead. Who was the chief	6	the charge against Syngenta that paraquat could
7	medical officer?	7	cause Parkinson's disease? This was the
8	A. Dr. Clive Campbell.	8	defense of the chemical, wasn't it?
9	Q. And Dr. Clive Campbell did lead,	9	A. This was
10	didn't he?	10	MR. NARESH: Objection to form.
11	A. He did indeed, yes.	111	THE WITNESS: This was an action
12	Q. Okay. So you, at this meeting in	12	to provide an objective, critical review
13	2008, came up with a plan that he was to lead	13	of all possible risk factors so that the
14	a survey at the manufacturing plants, right?	14	risk of paraquat could be seen if it was
15	A. That's where this was initiated,	15	within not just within the narrow
16	that is correct.	16	confines of being as it's shown in
17	Q. That's where the plan was created,	17	other publication.
18	was with these people on this meeting in 2008	18	MR. TILLERY: Move to strike your
19	in Atlanta, Georgia, right?	19	answer as unresponsive.
20	A. That's correct.	20	BY MR. TILLERY:
21	Q. All right. And that ended up in	21	Q. Was this effort here where you're
22	what's called the Widnes study, correct?	22	coming up with explanations of other possible
23	A. It did, yes.	23	alternatives for cause of paraquat, was it in
24	Q. And that was a study we're going	24	defense of your product, paraquat, sir, or not?
25	to talk about in a few minutes that followed	25	A. It was to support our understanding
	Page 1178		Page 1180
1	from this meeting, correct?	1	of the potential for paraquat to cause
2	A. That is correct.	2	Parkinson's disease.
3	Q. Okay. And then if you continue on,	3	Q. Okay. And then at the bottom of
4	it says at the bottom of the page:	4	that second page, it says:
5	" continue with proposal to	5	" request a feasibility study on
6	commission and publish a critical review of all	6	conducting a case control epidemiology study."
7	risk factors associated with [Parkinson's	7	Right?
8	disease]."	8	A. Yes.
9	What does that mean?	9	Q. And what was the epidemiology study
10	<ul> <li>A. In order for us to be able to fully</li> </ul>	10	that eventually grew out of this?
11	understand the bigger picture around	11	A. What we were discussing here was
12	Parkinson's disease and not simply focus on	12	whether it was feasible to conduct our own
13	paraquat, we thought it would be helpful, for	13	epidemiology study, not just looking at
14	our own benefit and also for the benefit of	14	a manufacturing plant, as a way, again,
15	the outside world, that there was a critical	15	of showing our proactive approach to this
16	review of the many risk factors that could be	16	issue, as to whether we could find a feasible
17	associated with Parkinson's disease, not just	17	way in which we could do a longer-term
18	pesticides, not just paraquat.	18	epidemiology study, perhaps looking at farmers
19	Q. And you did that, too, didn't you?	19	and growers who were using paraquat.
20	A. We also did that, that is right.	20	Q. Did you do that?
21	Q. All right. And that was to display	21	A. No, because we were never able
22	or publish so that there was an effort	22	to find a way in which we could do that
23	to explain that it wasn't just paraquat that	23	feasibly because that would have required
24	could cause this, it could be 5 percent of	24	a very big population and a very long period
25	these people who are under especially the	25	of time.

	Page 118	1	Page 1183
1	MR. TILLERY: I move to strike your	1	it's an abbreviation, it's initials of the
2	answer as unresponsive.	2	people on the list.
3	BY MR. TILLERY:	3	A. Yes, that's correct.
4	Q. My question was simply this: Did	4	Q. So KT was to provide a bullet point
5	you do that study?	5	to take to the steering group. What's the
6	A. I believe I've just answered that	6	steering group?
7	and the answer was no.	7	A. Right. LLS is Dr is Lewis
8	Q. All right.	8	Smith. At that time, as part of the internal
9	And then on the next page, it says:	9	governance which any organization has in R&D,
10	"It was agreed that the 14 day	10	it was to ensure that some more senior people
11	kinetic study in mice should proceed, with	11	in R&D were aware of our proposals to conduct
12	slides being read in 2 labs."	12	all the work that we've just been talking
13	What study was that?	13	about.
14	A. Well, these, back in 2008, we were	14	Q. So he was getting approval from the
15	doing a number of preliminary studies that	15	upper parts of the company to do this, right?
16	ultimately led to the publications with longer	16	A. From a more senior group, yes.
17	studies, more detailed studies that we'll be	17	Q. Yes, and he was identifying any risk
18	referring to later. So this was the very	18	to the business, correct?
19	early work in this case on kinetics.	19	A. That's right.
20	Q. So which publication of the three	20	Q. And the risk to the business was
21	you talked about: Smeyne; Minnema; or	21	losing paraquat as a product that you could
22	Breckenridge? Which one?	22	sell, correct?
23	A. This would be a preliminary study	23	A. Of course, because this is science,
24	to the kinetics that were included in	24	and science of course could go could take
25	Breckenridge.	25	it in any direction. If it confirmed that
	Page 118	2	Page 1184
1	Q. All right. So this was the	1	paraquat was causative in Parkinson's disease,
2	beginning, the plan to initiate the	2	of course that would be a risk to the business
3	Breckenridge study, right?	3	as described.
4	A. That's correct. This was one	4	Q. Okay.
5	initiation for it.	5	MR. TILLERY: So I move to strike
6	Q. Right. And then below that, it has:	6	your answer as unresponsive.
7	"KT to provide bullet point protocol	7	BY MR. TILLERY:
8	for LLS to take to Steering Group,	8	Q. Would identifying any risk to the
9	identifying any risks to the business."	9	business mean potentially losing paraquat as
10	Who is KT?	10	a product that the company could sell?
11	A. Yes, just could you just go back	11	A. Absolutely, and that was a risk we
12	to the	12	were prepared to take because we engaged in
13	Q. Rather than take the time, it's an	13	the research.
14	abbreviation it's the initials of one of the	14	Q. Okay.
15	people on that list, right?	15	And then the next is:
16	A. Yeah, yeah, I'm sorry, my brain has	16	"MFW to consider whether we can
17	just gone into relapse	17	use the Sri Lanka and Korean survivor database
18	Q. Mine too, but I'd rather not even	18	for further neurological assessment."
19	spend the time.	19	Now, the Sri Lanka and Korean
20	A. Right.	20	survivor database are the people who
21	Q. It's somebody on that list, okay?	21	survived were lucky enough to survive having
22	A. Yeah, yeah.	22	ingested paraquat, weren't they?
23	Q. That's who it is.	23	A. That's correct, yes.
24	A. Mmm.	24	Q. Because a large percentage of people
25	Q. All right. And LLS is the same,	25	who ingest it intentionally or accidentally

	Page 1185		Page 1187
1	die, correct?	1	A. That's correct.
2	A. Sadly, that is the case.	2	Q. " to confirm if PQ is used as
3	Q. There are no antidotes for this,	3	a desiccant on food crops"
4	correct'?	4	Do you see that?
5	A. There is treatment but no antidote.	5	A. Yes.
6	Q. Right. So if you take a teaspoonful	6	Q. Okay. And a desiccant on food crops
7	or thereabouts what did you tell me in the	7	would tell you how many people throughout the
8	first dep? Two teaspoonfuls, you are likely	8	world had potentially consumed products that
9	going to die, correct?	9	contained paraquat, wouldn't it?
10	A. That is right, depending on the	10	A. That information could be used,
11	concentration of paraquat.	11	certainly, yes.
12	Q. Right. So you were going	12	Q. And that was one of the concerns,
13	to consider using the Sri Lankan/Korean	13	wasn't it?
14	survivor database for further neurological	14	A. This would, I believe again,
15	assessment. Did you do that?	15	this is from memory, would be again to make
16	A. We did, and this was what led	16	sure we understood how widely and under what
17	to the publication by Brent and Schaeffer.	17	circumstances paraquat was used.
18	Q. Brent and Schaeffer?	18	Q. Okay. Now, I've got to I'm
19	A. Yes.	19	trying to move forward a little quicker because
20	Q. And that's where they got their	20	we've spent more time than I anticipated on
21	did they get their database from there	21	some of these projects.
22	primarily?	22	But I wanted to ask you generally,
23	A. I would need to go back and	23	and perhaps our general discussion can obviate
24	double check whether it was just Sri Lanka and	24	the need to go through a number of exhibits.
25	Korea. It may have been wider than that but	25	I just want to ask you this: Were you aware
	Page 1186		Page 1188
١,	it would have included Sri Lanka and Korea,	,	
1 2	,	1	that Jeff Wolff was editing scientific papers
3	so Q. Okay. And then it says so this	2	and presentations at Syngenta? And when I say
4	was where the Brent study was really	3	Jeff Wolff, I mean the outside counsel at
		4	Fulbright & Jarwoski.
5 6	originated? The brainstorm was this meeting,	5	Were you aware of that?
7	correct?	6	MR. NARESH: Objection to form.
1	A. That's right.	7	THE WITNESS: No, I was not aware
8	Q. All right. What was the other study	8	of that.
9	you said?	9	BY MR. TILLERY:
10	A. Which other study did I mention?	10	Q. Okay. And when I say papers, I mean
11	I don't recall mentioning another study.	11	those perhaps that would include presentations
12	Q. Okay. So this was Brent?	12	to the Syngenta executive committee by Lewis
13	A. Yes.	13	Smith. Were you aware that he had done that?
14	Q. That line applied to the Brent	14	MR. NARESH: Objection to form.
15	study.	15	THE WITNESS: No, I was not aware
16	A. Yes.	16	of that.
17	Q. So far we've gotten Breckenridge,	17	BY MR. TILLERY:
18	we've gotten Widnes. Now we're at Brent, okay,	18	Q. Was that something you personally
19	from this meeting	19	would approve of?
20	A. Yeah.	20	A. I guess it depends what the purpose
21	Q right?	21	of that editing was and what the nature of the
22	A. Yes.	22	editing was.
23	Q. Okay. All right.	23	Q. Well, I'm talking about
24	And then it says JM I think	24	a substantive scientific point. If I ask you
25	that's Janis McFarland, right?	25	to assume that it was a substantive scientific

	Page 1189		Page 1191
		_	
1	matter, is that something that you would	1	really their professional duty and input.
2	approve of?	2	So I didn't pass them because I wanted
3	MR. NARESH: Objection to form.	3	to do that. It was certainly not part of
4	THE WITNESS: It depends on the	4	the scientific process. It was lawyers
5	nature of what edit was being proposed,	5	providing us their advice on best
6	if it was	6	practice on documentation.
7	BY MR. TILLERY:	7	MR. TILLERY: I move to strike your
8	Q. Okay.	8	answer as unresponsive.
9	A. So I can't comment on it unless	9	BY MR. TILLERY:
10	I have a specific.	10	Q. Did you or did you not run documents
11	Q. Okay. So it may be that using	11	through lawyers, including Mr. Jeff Wolff, for
12	an outside attorney who isn't even employed by	12	the purpose of asserting attorney work client
13	the company directly, paid from a as you	13	privilege or I'm sorry, attorney
14	would any lawyer you hired in America, that	14	work-product privilege or attorney-client
15	this lawyer, his edits to scientific	15	communication privilege? Did you do that?
16	presentations, scientific statements would be	16	MR. NARESH: Objection to form.
17	appropriate depending upon the context. Is	17	THE WITNESS: Documents were passed
18	that what you're telling me?	18	mainly to internal counsel. I can't
19	A. What I'm saying is that if it	19	comment as to what was sent to external
20	didn't if his edits did not detract from	20	counsel.
21	the scientific message that was meant to be	21	BY MR. TILLERY:
22	conveyed, that would not be, for me, a major	22	Q. Did you even send notes to the
23	issue.	23	counsel telling them that you wanted them
24	Q. Okay. So you would submit it to the	24	to convey them to other scientists but sent
25	outside lawyer. You wrote scientific articles	25	them to the lawyers so that the work-product
	Page 1190		Page 1192
1	for him to change words, right?	1	or attorney-client privilege could be asserted?
2	MR. NARESH: Object to the form.	2	Did you do that as well?
3	THE WITNESS: It was common	3	A. I don't remember. There may have
4	practice for me to get seek advice	4	been examples where, if we were wanting
5	from lawyers when making presentations,	5	to communicate, we were given advice about how
6	but at no time was that advice meant or	6	to do that. But, again, let me reiterate,
7	indeed ever taken to say that the	7	this was not in any way to change the science
8	scientific content, the essence of the	8	content of any communication.
9	content should be changed.	9	Q. It was to hide it, wasn't it?
10	BY MR. TILLERY:	10	MR. NARESH: Objection to the form.
11	Q. But you were getting advice about	11	BY MR. TILLERY:
12	paraquat publications and presentations,	12	Q. It was to protect the communication.
13	weren't you?	13	A. It was to protect it according to
14	A. Yes, the team received advice about	14	the advice given to us by our legal team.
15	how to make communications but the scientific	15	Q. Okay. Well, whether it was by
16	publications were absolutely written with the	16	advice or not I'll admit that you were told
17	words of the scientist.	17	to do this by lawyers. I'll admit that.
18	Q. Did you run certain documents	18	We agree. You told us in February 2008 you
19	through lawyers to be able to assert	19	went to Atlanta and a lawyer named Wolff from
20	attorney-client or attorney work-product	20	Fulbright & Jarwoski sat down and laid out the
21	privilege?	21	whole plan. We get it.
22	MR. NARESH: Objection; form.	22	But I'm trying to say you carried
23	THE WITNESS: Well, we passed	23	out that plan, didn't you, in part?
24	documents to lawyers where they requested	24	MR. NARESH: Objection to form.
25	them to do so, the purpose of which was	25	THE WITNESS: Yes, of course,

	Page 1193		Page 1195
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1	we took the advice from internal and	1	part of it is an inclusion of a document
2	external counsel about how we	2	we discussed yesterday.
3	communicated.	3	BY MR. TILLERY:
4	BY MR. TILLERY:	4	Q. Right, it is. And then all I was
5	Q. And that communication advice	5	the point I wanted to make with you is that
6	included when you wanted to take documents	6	this is global product registration meeting
7	that were sensitive relating to paraquat and	7	notes, right? I think the second page refers
8	Parkinson's disease, communications about	8	to draft notes of PS/GPR meeting, July 10,
9	those, to run them through lawyers and assert	9	2008.
10	attorney work product or attorney-client	10	Do you see that?
11	privilege; is that a fair statement?	11	A. Yes, I do.
12	MR. NARESH: Objection to form.	12	Q. All right. And that's Phil Botham,
13	THE WITNESS: That is a fair	13	at the top, Angela Brady, Andy Cook, Roland
14	statement.	14	Dieterle and for the reporter, that's
15	BY MR. TILLERY:	15	D-i-e-t-e-r-l-e John Doe and Kersten Mewes,
16	Q. All right.	16	right?
17	MR. NARESH: Steve, if you're	17	A. Yes, that's right.
18	shifting topics or changing your line of	18	Q. What was this group meeting about?
19	questioning, would now be time for	19	A. It was a meeting between
20	a break? We've been going for about	20	representatives of product safety and global
21	an hour and 20.	21	product registration on a number of aspects
22	MR. TILLERY: Of course, sir.	22	related to paraquat and Parkinson's disease.
23	Of course.	23	Q. Now, have these draft notes been
24	MR. NARESH: Okay.	24	circulated among the lawyers?
25	MR. TILLERY: Fine. Thank you.	25	A. I can't comment on
	Page 1194		Page 1196
1	We'll go in a breakout room,	1	MR. NARESH: Objection; form.
2	please.	2	THE WITNESS: I can't comment on
3	THE VIDEOGRAPHER: Okay, I'll set	3	that, I don't know.
4	those up.	4	BY MR. TILLERY;
5	We are going off the record.	5	Q. Well, look at the front page, the
6	The time is 11:20.	6	very first page.
7	(Off the record.)	7	A. Right. Okay, so, yes, that's
8	THE VIDEOGRAPHER: We are back on	8	the front page indicates that the attachments
9	the record. The time is 11:40.	9	were sent by Dr. Sullivan, yes.
10	MR. TILLERY: This is 575, right?	10	Q. So they went by there. And who did
11	(Botham Exhibit 95 marked for	11	they copy?
12	identification.)	12	A. Well, they went to Jeff Wolff and
13	MR. TILLERY: Let's look at	13	Alan Nadel, copied to Christoph Maeder.
14	Exhibit 95.	14	Q. So Christoph Maeder was who?
15	BY MR. TILLERY:	15	A. He was on the executive committee.
16	Q. Can you look at that document, sir.	16	so he was Jonathan Sullivan's boss.
17	A. Thank you, yes. Just received and	17	Q. Okay. So these set of notes went
18	looking at it now.	18	through the lawyers, copied to outside counsel,
19	Q. You tell me when you're ready	19	Jeff Wolff at Fulbright & Jaworski, to
20	to speak about it.	20	Alan Nadel, who is the head counsel in the
21	MR. TILLERY: While he's finishing,	21	United States, "Subject: Paraquat," and it was
22	for the record, this is document	22	Cc'ing Christoph Maeder
23	502(d)-0107074.0001.	23	A. Yes.
24	THE WITNESS: Okay, this is quite	24	MR. NARESH: I'll object to the
25	a lengthy document but I think the second	25	form.

20 (Pages 1193 to 1196)

	Page 1197		Page 1199
1	MR. TILLERY: Okay.	1	that is correct.
2	THE STENOGRAPHER: I'm really	2	BY MR. TILLERY:
3	sorry, Mr. Tillery, but I just lost that	3	Q. All right. And it says next:
4	question. I didn't get it, sorry.	4	"In the absence of evidence to the
5	MR. TILLERY: Okay. Let me start	5	contrary, it is prudent to assume that this
6	over. Sure.	6	finding is potentially qualitatively relevant
7	BY MR. TILLERY:	7	to man."
8	Q. This document, which we have marked	8	Correct?
9	as Exhibit No. 95, and the front page is a	9	A. Correct.
10	communication of proposed edits from Jonathan	10	Q. And for the folks who don't have
11	Sullivan to Jeff Wolff at Fulbright & Jarwoski,	11	PhDs like you and have spent years and years
12	correct?	12	in training and education and science, what
13	A. Correct.	13	that really means is that the findings they're
14	Q. All right. So he's editing a	14	seeing in these mouse studies indicate that
15	scientific summary of a group and the draft	15	paraquat gets into the brain the same way,
16	notes from this meeting on July 10. Let's look	16	or in generally the same way; right?
17	at the clarification points, down, that	17	MR. NARESH: Objection to form.
18	might be adjusted, on page 2.	18	THE WITNESS: What this says is
19	Pull that up, please.	19	that the findings of dopaminergic
20	Where it says:	20	neuronal loss in mice cannot be ruled out
21	"Clarification of specific points	21	as something that could happen in man
22	during the discussion lead to the following	22	if paraquat were to get into the brain
23	executive summary which will be included in the	23	of man to a sufficient concentration.
24	next version of the PS document."	24 25	BY MR. TILLERY:
25	What is a PS document?  Page 1198	25	Q. And the way it would happen would be Page 1200
			_
1	A. I believe that that would refer	1	the way you and I talked yesterday, the
2	to what we were calling yesterday the	2	so-called mode of action, which would be
3	"reference dose" document.	3	to create oxidative stress and damage, weaken
4	Q. Okay. And "reference dose" meaning	4	or kill dopaminergic neurons, correct?
5	that which was discussed in Plaintiff's	5	A. That is correct, yes.
6	Deposition Exhibit 38?	6	Q. All right.
7	A. That is correct.	7	Now, were minutes of meetings like
8	Q. All right. And it says here, and	8	these, in your view, things that should be
9	follow along with me, please:	10	edited by lawyers, outside lawyers?  A. I don't didn't have a view on
10	"The one consistent finding in	11	that. As I said earlier, we were happy to
11 12	animal studies is the loss of dopaminergic neurons in the substantia nigra C57BL6J mice."	12	accept advice to from lawyers with regard
13	Correct?	13	to the way in which we documented our
14	A. That is correct.	14	communications.
15	O. "This finding is judged to be real,	15	Q. Well, do you think that a scientific
16	to be related to treatment and to be adverse in	16	meeting like this one that's draft notes of
17	nature."	17	this meeting, talking about purely scientific
18	Right?	18	matters, should be sent to lawyers for edit
19	A. That is correct.	19	first? Is that something that you think is
20	Q. So it would meet all those criteria	20	a standard scientific protocol?
21	we walked through for reporting to the US EPA,	21	A. It's not a
22	so long as you deemed it relevant under your	22	MR. NARESH: Objection to form.
23	definition at Syngenta, correct?	23	THE WITNESS: It's not a standard
24	MR. NARESH: Objection; form.	24	scientific protocol, of course, but in
25	THE WITNESS: At that time in 2008,	25	the situation that we were in with

	Page 1201		Page 1203
1	potential litigation, we were happy	1	BY MR. TILLERY:
2	to receive appropriate advice, as long	2	Q. Didn't you just tell the ladies and
3	as	3	gentlemen of the jury just a little bit ago,
4	BY MR, TILLERY:	4	before the break, that this meeting in Atlanta
5	Q. Well, where	5	was the creation location, that's where all of
6	A as long as the scientific	6	you got together and the Brent study was
7	position was not altered.	7	hatched, the Breckenridge study was hatched,
8	Q. Where was the potential litigation	8	the Widnes study was hatched; all of that came
9	coming from? Where did you hear that?	9	about as a result of that study, right
10	A. Well, if you remember, Dr	10	MR. NARESH: Objection to form.
11	sorry, Mr. Wolff had made a presentation in	11	BY MR, TILLERY:
12	the meeting that we were looking at earlier.	12	Q. As a result of that meeting.
13	Q. And he told you, if you continue	13	A. Yes, it did, but that meeting was
14	to sell this product you're probably going	14	there as a launch pad for the team that was
15	to get sued, didn't he?	15	going to manage this proactive program of
16	MR. NARESH: Objection to form.	16	different scientific studies, and the
17	THE WITNESS: I can't remember the	17	fact that
18	detailed nature of what he told us but	18	
19	he said there was potential litigation.	19	Q. Right, well
20	BY MR. TILLERY:	20	A that we had potential litigation
21		21	was one bit of information that was part of
22	Q. And litigation means a lawsuit, just for everybody's terms, right?	22	that, not the main driver for it.
23	A. Correct.		Q. Okay. And let me ask you, then, why
24		23	in the world did you have all these lawyers
25	Q. And you're going to get sued over	24	there telling you to protect all your
25	Parkinson's disease victims being exposed	25	communications, if this wasn't about potential
	Page 1202		Page 1204
1	to paraquat; that's what he told you, wasn't	1	litigation, and the speech starting off the
2	it?	2	whole process was from an outside counsel
3	MR. NARESH: Objection to form,	3	talking to you about your potential litigation,
4	foundation.	4	and then you sat around and go through we
5	THE WITNESS: Yes, that was the	5	went through that whole list of all the things
6	essence of what he said.	6	you're going to do?
7	BY MR. TILLERY:	7	Are you trying to tell us with
8	Q. And he said that in 2008, didn't he,	8	a straight face that this wasn't because you
9	12 years ago?	9	were trying to create the science to defend the
10	A. Yes.	10	product? Is that what you're telling us?
11	Q. And for that reason you better get	11	MR. NARESH: Objection to form.
12	going and you better start defending yourself;	12	THE WITNESS: I'm telling you that
13	and you had a meeting in Atlanta where you	13	this science program was primarily
14	started that process and did just that, didn't	14	to ensure that we were creating our own
15	you?	15	science evidence base to see whether
16	MR. NARESH: Objection to form.	16	paraquat could be a causative agent in
17	THE WITNESS: I wouldn't put it	17	Parkinson's disease. The prime driver
18	that way. This was we did not get	18	was not potential litigation.
19	going, as you put it, because of the	19	BY MR. TILLERY:
20	potential for litigation; we got going	20	Q. Okay. So all of those things that
21	because it's a duty of care on	21	I pointed out earlier that we read to the court
22	the company, and always has been, for us	22	and jury that talk about all these studies
. – <del>–</del>			
	to be clear about the potential dangers	123	volite going to do everything else the threat
23 24	to be clear about the potential dangers that could be associated with our	23 24	you're going to do, everything else, the threat of litigation, how you're going to create other

	Page 1205		Page 1207
1	disease, they were never published in	1	to be real, to be related to paraquat
2	scientific journals, were they	2	treatment, and to be adverse in nature. It
3	MR. NARESH: Object	3	is not clear if neuronal cell loss in response
4	BY MR. TILLERY:	4	to paraquat exposure is peculiar to this
5	Q. These were changed designed	5	particular mouse model, but in the absence of
6	to protect your product. You even sent people	6	evidence to the contrary, it is prudent to
7	to the high leadership in the company telling	7	assume this finding is potentially relevant
8	them about the threat to the business of	8	to man."
9	paraquat, didn't you?	9	Do you agree with that statement,
10	MR. NARESH: Objection to form.	10	sir?
11	BY MR. TILLERY:	11	A. Absolutely. I stood behind that
12	Q. That all happened as a result of	12	statement as it was believed to be the correct
13	that meeting, correct?	13	science position in 2008.
14	MR. NARESH: Same objection.	14	Q. Okay.
15	THE WITNESS: I think I said before	15	Did you, at that time in 2008,
16	that people went to the senior leaders in	16	convey that particular statement to the United
17	the company to tell them about the	17	States Environmental Protection Agency?
18	proposed program, which was to do exactly	18	A. I don't know whether any of our
19	what I've said, which is to try to get	19	regulatory colleagues were having those kind
20	nearer to the scientific truth of what	20	of discussions with the EPA. I can't confirm
21	relationship there could be between	21	that.
22	paraquat and Parkinson's disease, and	22	Q. Are you aware of them having done
23	that the outcome of that science program	23	so? Have you ever seen documentation, any
24	could be a threat to the paraquat	24	internal communication, where they conveyed
25	business if the science was taking us	25	that to the US EPA?
	Page 1206		Page 1208
1	more in that direction.	1	A. As I say, I can't recall seeing
2	MR. TILLERY: I move to strike your	2	anything which showed if that happened.
3	answer as unresponsive.	3	Q. Are you aware of that communication
4	BY MR. TILLERY:	4	ever appearing on the paraquat.com website?
5	Q. So before we leave this document,	5	A. As we were discussing earlier,
6	which is number 95, if you would take charge of	6	communications on the paraquat.com website
		7	depended on exactly what period of time we're
7	the document, or, if you can, just go to .07	8	talking about and how quickly the paraquat.com
8	.007, which is about six pages back, and it's	9	had caught up with the science.
9	this page right here, "Product Safety	10	Q. Dr. Botham, could you answer my
10	Evaluation."	11	question. Did you put that on the website or
11	Do you see that, "Product Safety	12	not?
12	Evaluation of the Animal Studies"?	13	A. I don't know if we put that on the
13	A. I do.	14	<u>-</u>
14	Q. You were there for this, weren't	15	website.
15	you? You were there for this meeting?		Q. You never saw it on the website, did
16	A. I was there at that meeting, yes.	16	you?  A. I don't recall seeing that on the
17	Q. If we look at this, it says your	17	<u> </u>
18	meeting concluded:	18	website.
19	"The one consistent finding from the	19	Q. Okay. All right.
20	body of animal studies"	20	MR. TILLERY: We're going to
21	Consistent finding. Consistent	21	a completely different topic list now. If you
22	finding.	22	could pull this one up.
23	" is the loss of dopaminergic	23	We don't have to go off the record
24	neurones in the substantia nigra pars compacta	24	but we're switching gears to a new subject area
25	of male C57Bl6J mice. This finding is judged	25	so if you'd give us about actually, let's go

Page 1209 Page 1211 1 off for two minutes or three minutes, okay, 1 Luxembourg; Malta; Netherlands; Poland; so we can get started on a completely different 2 2 Portugal; Romania; Slovakia; Slovenia; Spain; 3 Sweden; Fiji; Kuwait; Laos; Lebanon; Libya; topic. 3 4 THE VIDEOGRAPHER: We are going off 4 Macedonia (and I note that is now called the 5 the record. The time is 12:00 p.m. 5 Republic of North Macedonia): Malaysia: 6 (Off the record.) 6 Montenegro; Norway; Oman; Qatar; Saudi Arabia; 7 THE VIDEOGRAPHER: We are back on 7 Serbia; South Korea; Sri Lanka; Switzerland; 8 the record. The time is 12:04. 8 Syria; Taiwan; Thailand; Tunisia; United Arab 9 BY MR. TILLERY: 9 Emirates; United Kingdom; Vietnam; and Yemen. 10 Q. Dr. Botham, would you please confirm 10 Would you agree with those? 11 for this record that Syngenta is not legally 11 A. I have no information available allowed to sell paraquat in these 70 countries: 12 12 to me that would allow me to disagree with any Albania, do you sell it there? 13 13 of those. 14 A. You're now going to ask me about 14 Q. Okay. And I will just tell you that 15 individual countries which I don't have that 15 the response was admitted to all of these 16 level of detailed knowledge of, so to save 16 countries; so in the court, that admission was 17 time, I'm sure -- I wouldn't want to dispute 17 made that Syngenta is not legally allowed 18 any list that you've got. 18 to sell paraquat in those countries. 19 Q. Well, let me just say this to you. 19 You don't dispute that, do you, sir? I sent to your counsel a list of countries that 20 20 A. I do not dispute that. 21 our research indicated that paraquat was not 21 Q. All right. 22 legal to sell in those countries. I sent them 22 Now, scientists often use laboratory 23 to them, and they came back and told me that as 23 animals to determine the effects of a chemical, to those countries, two of them they disputed 24 24 don't they? 25 and I think actually one on my list, and that 25 A. They do. Page 1210 Page 1212 1 was Brazil. 1 Q. Scientists do not administer known 2 A. Mmm. 2 toxic compounds to humans because of the fact 3 Q. So let me read the list to you that that would be unethical, correct? 3 4 to save time and then you tell me if this 4 A. That is largely true, yes. 5 recitation of 70 different countries where this O. So if a scientist wants to study 5 6 product is not lawful to sell or to distribute 6 the effects of a chemical, he or she would put 7 or to use is accurate or inaccurate. And if it 7 the chemical into the animal in some way and 8 is, if you wouldn't mind making a note of which 8 studies -- or study the effects it has on the country you find in -- you have a dispute with, 9 9 laboratory mouse or rat or whatever animal and stop me if I'm going too quickly, please. 10 10 they're using, correct? 11 Okay? Are you with me? 11 A. Correct. 12 A. Okay, yeah, that's fine. Happy to 12 Q. Scientists develop animal models 13 do that. 13 showing the effects of chemicals, right? 14 Q. Do we understand the assignment? 14 A. They do. 15 A. Absolutely. Please go ahead. 15 Sometimes scientists use animal 16 Q. All right. Thank you, sir. 16 models in the course of studying a chemical 17 So admit that you're not legally 17 to induce pathology that is similar to a human 18 allowed to sell paraquat in: Albania; Algeria; 18 disease; is that correct? 19 Bosnia and Herzegovina; Cambodia; China; Benin; 19 A. Yes, they do. 20 Burkina Faso; Cape Verde; Chad; Gambia; Guinea; 20 Q. Again, that's because we obviously Guinea-Bissau; Ivory Coast; Mali; Mauritania; 21 21 cannot induce that same disease in humans and 22 Niger; Senegal; Tobo; Egypt; Austria; Belgium; 22 then study its effects. That would be 23 Bulgaria; Croatia; Cyprus; Chechnya; Denmark; 23 obviously grossly unethical, right? Estonia; Finland; France; Germany; Greece; 24 A. Yes, that's correct. 24 Hungary; Ireland; Italy; Latvia; Lithuania; 25 25 Q. Scientists often need to recreate

	Page 1213		Page 1215
1	a human disease in an animal model in order	1	BY MR. TILLERY:
2	to try to find medicines that will cure the	2	Q. Well, can you point me to
3	disease, or to treat or lessen the effects of	3	a laboratory manual or to a book, a laboratory
4	the disease; is that right?	4	science, anything, anywhere, where that
5	A. That's right.	5	statement has ever been made by an
6	Q. So the disease is modeled in an	6	authoritative source? Ever.
7	animal, and if a chemical can induce the key	7	A. Well, we may be talking at
8	hallmarks of the disease, these biological	8	cross-purposes here. I mean, if you are
9	pathways are studied for possible cures.	9	saying to me that the way in which you can be
10	Would that also be correct?	10	really sure about how much you get of a
11	A. Yes, it would.	11	chemical you can get into an animal's tissues
12	Q. To be sure a specific intended dose	12	and cells throughout its body, then I would
13	is delivered to the animal, injection is	13	agree with you that intravenous dosing is the
14	probably the most accurate means of	14	most accurate way of doing that. I
15	administering the chemical, correct?	15	Q. That's what I asked you, sir. That
16	MR. NARESH: Objection to form.	16	was my question.
17	THE WITNESS: Not necessarily, no.	17	Let me go back to my question.
18	BY MR. TILLERY:	18	Maybe you answered a different one. I said,
19	Q. Tell me a method of delivery which	19	to be sure a specific intended dose
20	is more accurate I use the word accurate	20	is delivered to the animal, injection is the
21	in terms of administration of a dose.	21	most accurate means of administering the
22	A. It depends on the purpose of the	22	chemical. Would you agree with that?
23	model, a disease model. Sometimes it's	23	A. I don't think I want to disagree
24	important, for example, to give a chemical by	24	with you because I think we were talking at
25	inhalation because you want to give an	25	cross-purposes and I'm saying
	Page 1214		Page 1216
1	accurate dose to the lung; so that was the	1	Q. Right.
2	reason for my response saying "not	2	A you can use other routes of
3	necessarily."	3	administration and accurately calculate how
4	Q. So are you telling me that using	4	much gets in there, but let's not take that
5	an inhalation technique is more accurate than	5	any further. I don't think we need to.
6	a measured dose of injected?	6	Q. Well, you agree with me, don't you?
7	A. It can be as accurate, but I'm	7	A. I'm yes. I'm saying I agree
8	talking to you in general terms here about	8	with you that intravenous dosing is the most
9	disease models. Disease models would want	9	accurate way of ensuring that you know how
10	to create the pathology and sometimes they	10	much chemical has got into a chemical [sic]
11	would do that using a route other than	11	generally internally.
12	injection.	12	Q. So injection, where you have
13	Q. Well, since we're going to come back	13	a measured amount that you're injecting in an
14	and take your dep and finish it we won't	14	animal, is the most accurate means of
15	have time today would you mind giving me	15	administering the chemical; would you agree?
16	your references for that, where you say using	16	Whether or not it's the most effective, whether
17	inhalation of a chemical is as accurate a means	17	it's the most appropriate, that's not the
18	of administering a chemical as injection?	18	question.
19	I want to hear your references so I can go look	19	It's the most accurate means of
20	them up. What are they?	20	measuring the amount of chemical you're dosing
21	MR. NARESH: Objection to form.	21	to the animal; is that right?
22	THE WITNESS: Well, I'm talking in	22	A. Yeah. I'm happy to agree with you
23	very broad terms. I can't give you	23	on that. We can move on, certainly, yes.
24	a reference off the top of my head.	24	Q. All right.
25	///	25	A. Mmm.

	Page 1217		Page 1219
1	Q. Okay. Injection allows a scientist	1	A. It can but very slowly.
2	to ensure that the exact amount is being	2	Q. And paraquat spray mist can be
3	delivered to the animal, right?	3	inhaled, can't it?
4	A. Okay, yes.	4	A. It can, yes.
5	Q. All right. This allows the	5	Q. Paraquat spray mist can be swallowed
6	experimenter to know what the effects may be	6	or ingested, too; if it's on your lips or you
7	at a specific dose, right?	7	put your fingers in your mouth. Correct?
8	A. Yes.	8	A. Correct.
9	Q. All right. Scientists cannot always	9	Q. What route of paraquat
10	mimic the quantity of human/environmental	10	administration was used in the Marks study?
11	exposures. That seems pretty obvious, doesn't	11	A. That was intravenous injection
12	it?	12	sorry, intraperitoneal injection. Excuse me,
13	A. Yes.	13	intraperitoneal injection.
14	Q. So scientists use a dose that may or	14	Q. It was what you refer to, scientists
15	may not be environmentally relevant when they	15	refer to, who hang around laboratories as an
16	do these tests, right?	16	"ip use," right, intraperitoneal?
17	A. They do, yes.	17	
18	Q. And whether the dose is	18	A. ip, yes, intraperitoneal.
19	environmentally relevant or not, scientists are	19	Q. So when the court and the jury sees
20	looking for a biological pathway that is the		references in documents to "i.p.," you
21	same as in the human disease, correct?	20	abbreviate that for intraperitoneal injection,
22		21	right?
	A. If they are trying to develop an	22	A. That's right.
23	animal model of the disease, that is correct.	23	Q. And that's to take a needle and
24	Q. Right. Louise Marks's studies, for	24	stick it into what's part of the body and the
25	example, showed that the paraquat she used	25	belly of the animal called the peritoneum,
	Page 1218		Page 1220
1	caused a loss of dopaminergic neurons in the	1	in that area, correct?
2	substantia nigra and an up-regulation of	2	A. Yes. It's the liquid surrounding
3	alpha-synuclein. Correct?	3	the gastro-intestinal tract.
4	A. Correct, yes.	4	Q. Right. What route of exposure was
5	<ul> <li>Q. And those are two hallmarks of human</li> </ul>	5	used in the Breckenridge 2013 study?
6	Parkinson's disease, aren't they?	6	A. That was also intraperitoneal.
7	A. They are.	7	Q. What route of exposure was used in
8	Q. Paraquat's ability to do that was	8	the Minnema 2014 study?
9	through oxidative stress, as we've discussed	9	A. It's what we call dietary exposure;
10	before, correct?	10	so it was paraquat was part of what the
11	A. Correct.	11	animals were given to eat.
12	Q. The pathology that caused	12	Q. So they eat materials/food laced
13	paraquat strike that.	13	with paraquat?
14	The pathology caused by paraquat	14	A. That's right.
15	is consistent with human Parkinson's disease,	15	Q. Okay, right?
16	correct?	16	A. Yes.
17	A. That part of the pathology we've	17	Q. And then they then ingest this and
18	just spoken about is consistent, yes.	18	then digest the material and it works its way
19	Q. So it was a similar pathway,	19	into the bloodstream, right?
20	correct?	20	A. That's correct.
21	A. It's assumed that the mechanism	21	Q. Okay. What route of exposure was
22	that that had been caused by was through the	22	used for the Smeyne 2016 study?
23	same pathway, yes.	23	A. That was back to intraperitoneal.
24	Q. Paraquat can also be absorbed	24	Q. Right.
25	dermally, can't it?	25	Now, applicators, mixers and loaders
22	Somming, Call Lit:	23	now, applicators, illixers and loaders

	Page 1221		Page 1223
1	of paraquat are those who are most exposed	1	inhalation is certainly more relevant that
2	to paraquat. We've talked about that.	2	intraperitoneal or intravenous.
3	Correct?	3	Q. What does the EPA consider to be
4	A. Potentially that is the case.	4	the environmentally relevant route of exposure
5	Q. All right. And can we call that	5	for paraquat?
6	occupational use?	6	A. Well, it says much the same as
7	A. That's fine.	7	I've said; it considers that oral ingestion,
8	Q. All right. Syngenta contends that	8	dermal absorption and inhalation exposure are
9	occupational exposure to paraquat occurs mainly	9	all relevant.
10	by dermal exposure, right?	10	Q. So is there any one of them that
11	A. Yes, that's right.	11	they consider to be more environmentally
12	Q. So your position has been that	12	relevant than another?
13	dermal exposure and this is set out in	13	A. I think that would depend on the
14	Mr or Dr. Breckenridge's 2013 study on	14	nature of the risk that's being assessed.
15	page 2 that dermal exposure is the main	15	So if they are concerned about you and
16	route by which occupational users of paraquat	16	I eating food that may have residues, they
17	get paraquat in to their system, right?	17	would be saying that ingestion is the most
18	A. Yes, that's been our assumption	18	appropriate route. If they're talking about
19	based on, in some cases, real monitoring	19	farmers and growers, then it could be dermal
20	of people working in the field.	20	or inhalation.
21	Q. Okay. You've done a lot of that,	21	Q. So as they have evaluated the safety
22	right?	22	of paraquat, have they evaluated it more from
23	A. We have.	23 ्	the standpoint of farmer applicators or for the
24	Q. All right. So dermal absorption	24	millions of people who eat products, food
25	would potentially lead to systemic toxicity	25	products, which have been sprayed with paraquat
	Page 1222		Page 1224
1	could potentially, right?	1	and therefore ingest the paraquat; do you know?
2	A. Yes, it could.	2	MR. NARESH: Objection; foundation.
3	Q. And that means it gets into the	3	THE WITNESS: I believe, from what
4	bloodstream, right?	4	I've seen, that the EPA have more focused
5	A. That's correct.	5	on the applicator of paraquat, so through
6	Q. What does an environmentally	6	dermal and inhalation absorption, but
7	relevant route of exposure mean?	7	they've also certainly addressed residues
8	A. Well, it would be to use a route	8	on food.
9	of exposure which was similar to the route	9	BY MR. TILLERY:
10	of exposure that people using a product or	10	Q. So the food residues would be the
11	being exposed to a product would receive.	11	oral portion most likely because you don't
12	Q. Okay. What is the environmentally	12	expect the farmers to be drinking or swallowing
13	relevant route of exposure for paraquat?	13	this chemical, right?
14	<ol> <li>Well, it would potentially include</li> </ol>	14	A. That's correct.
15	the dermal route.	15	Q. And the inhalation or dermal route
16	Q. Well, is it dermal? Is that what	16	would be the most likely for the farmer
17	it is?	17	applicator, mixer, loaders, correct?
18	A. It could be dermal. It could be	18	A. That's correct.
19	inhalation. It could be oral because of	19	Q. All right.
20	residues in food. There are a number of	20	Did Syngenta recommend to the EPA
21	different routes which are relevant.	21	that the environmentally relevant dose of
22	Q. And do you find one of them more	22	exposure to paraquat is the oral route?
23	relevant than others?	23	A. I don't know whether we made such
24	A. We believe that the route of giving	24	a recommendation.
25	it I would say dermal or oral or by	25	Q. When paraquat enters the body,

	Page 1225		Page 1227
1	regardless of the route of exposure, is it	1	that's dropped off so we'll go off the
2	metabolized?	2	record.
3	A. No, it's not.	3	We are going off the record.
4	Q. Doesn't break down in the body, does	4	The time is 12:27.
5	it?	5	(Off the record.)
6	A. No, it does not.	6	THE VIDEOGRAPHER: We are back on
7	Q. Okay. It doesn't break down into	7	the record. The time is 1:53.
8	a different chemical, which is very common in	8	BY MR. TILLERY:
9	cellular metabolism that happens frequently,	9	Q. Dr. Botham, are you there? I can't
10	correct?	10	see you.
11	A. That's correct.	11	A. Yes, I'm here. I can see you.
12	Q. Let's explain this for the jury,	12	Q. There we go. All right.
13	if we can. A chemical can, because of its	13	Are you ready to proceed, sir?
14	certain properties, be dumped out on to the	14	A. I am ready.
15	ground, and because of the sun or because of	15	Q. All right. Apparently I continued
16	wind or rain or whatever, it can go through	16	to talk after the system went down, and we were
17	a fate environmental fate impact which	17	on the topic of the breakdown of paraquat in
18	converts it to a metabolite, correct?	18	the body, and you had explained that it did not
19	A. That's right.	19	metabolize in the human body. Is that correct?
20	Q. And that same thing happens to the	20	A. Yes, indeed, that's what we had
21	human body; the chemicals in the human body	21	indicated, that's correct.
22	sometimes work to cause chemicals to break	22	Q. Okay. When paraquat is administered
23	down. Some pharmaceutical products are	23	orally, it becomes systemic, doesn't it?
24	designed for that purpose, aren't they?	24	A. Some of it becomes systemic, yes.
25	A. Exactly, yes.	25	Q. Some of it becomes systemic and some
	Page 1226		Page 1228
1	Q. They become effective when they	1	of it passes through the body without getting
2	break down and	2	into the bloodstream, right?
3	A. Exactly.	3	A. Yes, that's right.
4	Q the metabolites are what's re	4	Q. All right. So to the extent that
5	A. Yes.	5	it would affect let's pick a target organ
6	Q. Right. But paraquat is different,	6	like the lungs, okay. To the extent that
7	isn't it?	7	paraquat orally ingested affected the lungs,
8	A. Paraquat is not metabolized, that's	8	would you walk me through the physiology of how
9	correct.	9	that would happen.
10	Q. Paraquat stays paraquat, it does not	10	A. So paraquat would, if ingested,
11	change its characteristic. It stays in the	11	would go through the stomach into the
12	body and until it leaves the body it's still	12	intestines, the small intestine, where it is
13	paraquat, isn't it?	13	possible for molecules that are in your diet
14	A. Yes.	14	to be absorbed into the bloodstream at that
15 16	Q. The chemical structure of paraquat	15	point. How readily that happens depends on
17	that you and I talked about from 1933 in the	16	the chemical but some paraquat does enter the
18	THE WITNESS: We've lost the connection.	17	bloodstream that way, and once in the
19		18	bloodstream it can circulate to an organ like
20	MR. NARESH: Okay. Yeah, I can't hear him either. Can we go off the	19 20	the lung, get taken up into lung cells and
21	record.	21	potentially do damage to those lung cells.
22	THE WITNESS: Wendy, can you hear	22	Q. If the dermal route were the route
23	us?	23	of exposure, how would that happen?
24	THE VIDEOGRAPHER: Yeah. I can	24	A. So the skin has a pretty thick
25	hear you fine. It must be Mr. Tillery	24 25	layer, or an impermeable layer, which means
27	nom you thic. It must be ign. Thiely	45	that chemicals like paraquat don't get across

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1	that layer very easily, so that's what's	1	bloodstream, yes
2	called dermal penetration, but some does get	2	Q. Yes.
3	across. And when it does so, it can similarly	3	A but there's yes, yes.
	get into blood vessels under the skin.	4	Q. So the route by which it got to the
4	Once there, it likewise can get transported	5	brain would be through the blood depending on,
5		6	obviously, if you talk about absorption and
6	around the body, including to the lung.  Q. Okay. And if it's inhaled, how does	7	passage through the blood-brain barrier.
7		8	But beyond that, the method by which the
8	it happen?	9	chemical got to the brain would be through the
9	A. So if it's inhaled, it depends on	10	bloodstream; is that right?
10	the size of the droplet. Some larger droplets	11	A. That's right, it
11	will just go as far as back of the nose and	12	Q. Irrespective
12	may be into the throat. It's possible that you	13	A. Yeah, you don't
13	can similarly then get transfer across into	14	
14	blood vessels. Smaller particles will get		Q. Irrespective of intraperitoneal injection or subcutaneous or oral ingestion
15	deeper into the lung, and again there, there's	15	
16	a ready blood supply which can take	16	or dermal absorption, it wouldn't matter, would
17	it elsewhere, as well as it doing direct	17	it?
18	damage to the lungs.	18	A. No. In terms of getting to the
19	Q. And if it's by intraperitoneal	19	blood-brain barrier then, yes, it's the same.
20	injection, how would it get back to the lung?	20	So getting across the blood-brain barrier
21	A. If it's by intraperitoneal	21	is another mechanism which changes the amount
22	injection, likewise because you're already	22	of paraquat, of course, but that's another
23	into the cavity around the intestines, those	23	story which we've been into before.
24	intestines have got an adequate blood supply	24	Q. Right. So paraquat reaches the
25	around them so some can get from that	25	brain regardless of the route of exposure
	Page 1230		Page 1232
1	peritoneal fluid into the blood vessels, just	1	through the bloodstream, correct?
2	as I've described.	2	MR. NARESH: Objection to form.
3	Q. Okay. And if it's by subcutaneous	3	THE WITNESS: It can get into the
4	injection, how does it happen?	4	brain and the route of exposure will
5	A. Subcutaneous injection is basically	5	change how much gets there.
6	bypassing that dermal layer that I was talking	6	BY MR. TILLERY:
7	about before in the skin, so you're injecting	7	Q. But it does get there, that's what
8	just below that into the subcutaneous fat, and	8	I'm saying
9	that just gives you more ready access to the	9	A. Yes.
10	blood supply than directly on to the skin.	10	Q regardless, yes.
11	Q. And no matter how you cut it,	11	A. Yes.
12	really, it, through one route or another, gets	12	Q. Let me ask you a question. If I
13	into the blood stream and finds its way passing	13	dose two mice with the same amount of paraquat
14	through body to the lung, right?	14	using different routes of exposure and I then
15	A. Yeah, and, depending on the routes,	15	gave you their brains to examine, would you be
16	the amount that gets through will change.	16	able to tell me what route of exposure I used
17	Q. Right. But eventually, the means by	17	to dose each one?
18	which it gets to the lungs is the same,	18	A. Possibly. If you told me the
19	correct, through the bloodstream?	19	concentration that you had given, it may be
20	A. That's right, it travels through	20	possible for us to predict that, yeah.
21	the bloodstream.	21	Not necessarily 100 percent but it may be
22	Q. All right. And now let's pick a	22	possible.
			Q. Okay. And you talked about dermal
	target organ of the brain. Would each one	123	O. Okay. Allu you laikeu aboul ucimai
23 24	target organ of the brain. Would each one of those be the same?	23 24	absorption a minute ago. Do non-ionic

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١.		.55		
1	A. Yes, they can do.		1	MR. TILLERY: Now, can we go to
2	Q. And what studies has Syngenta		2	what will the next exhibit be?
3	undertaken to determine what level of dermal		3	MS. BRUMITT: 96.
4	absorption or what change occurs in dermal		4	MR. TILLERY: 96. We'll go to
5	absorption of paraquat as a result of the		5	Plaintiff's Deposition Exhibit 96.
6	addition of non-ionic surfactants to the		6	For counsel, this is 502(d)-002434.0001.
7	chemical?		7	(Botham Exhibit 96 marked for
8	A. Well, we've done many dermal		8	identification.)
9	absorption studies, not just of the technical		9	BY MR. TILLERY:
10	paraquat chemical but of paraquat with		10	Q. Do you have it, sir?
11	in its formulated product form where there are		11	A. Yes, it has just arrived, thank
12	different surfactants, including ionic		12	you.
13	surfactants, as you describe.		13	Okay. I've read that.
14	Q. And have you published those		14	Q. All right.
15	studies?		15	MR. TILLERY: If we'd open that up,
16	A. Those have all been written up as		16	please.
17	what we call regulatory reports and submitted	*	17	Excuse us just a second. We're
18	to regulatory agencies.		18	logging in again.
19	Q. And do you understand that the		19	BY MR. TILLERY:
20	addition of non-ionic surfactants increases		20	Q. Okay. At the top it says Dave
21	dermal absorption of paraquat?	- 1	21	Berry, right?
22	A. Yes. We know that can happen.		22	A. Yes.
23	Q. And you know that that means that		23	Q. Who is Dave Berry?
24	it gets into the bloodstream faster when		24	A. He was a junior product
25	you add the non-ionic surfactants, right?		25	toxicologist, so he supported Mike Clapp and
	Page 12	34		Page 1236
1	MR. NARESH: Objection to form.		1	Barry Elliott and was based at CTL.
2	THE WITNESS: Yes. If you get	- 1	2	
3	greater dermal absorption, then you've	- 1	3	Q. And this is an email communication
4	got the potential for more to get into	- 1		dated April 9, 2009, to Alan Nadel, Cc Lewis
5	the bloodstream.	- 1	4	Smith, re Marlow meeting. Lewis Smith was at
6	BY MR. TILLERY:	- 1	5 6	that time what at Syngenta?
7		- 1		A. Yeah, I think as we said yesterday,
	Q. And the reason for adding non-ionic	1	7	I can't exactly remember the chronology.
8 9	surfactants to paraquat is what?		8	I think he was no longer the head of CTL.
	A. Because paraquat is a herbicide	- 1	9	I think by that time he was head of crop
10	which needs to kill the weed and if you want		10	protection development.
11	to, for example, increase the absorption of		11	Q. Okay. And the letter, or email,
12	paraquat across the cuticle of the plant,		12	says it's confidential and privileged, just
13	the outer layer of the plant, a surfactant		13	like we've been talking about before, right?
14	will enable that to happen.		14	A. Yes.
15	Q. Actually, not just the outer layer	- 1	15	Q. And it says:
16	but the cellular membrane that you're trying		16	"Alan, I spoke to Matthew Bayliss
17	to kill, correct?		17	this morning who reminded me that all materials
18	A. It will help the paraquat to get		18	intended for display at the Marlow Meeting
19	to the site of action in the plant, yes.		19	should first be cleared with yourself or Jeff
20	Q. Okay. And what that does is		20	Wolff."
21	facilitate the killing mechanism of paraquat		21	Is that the same Jeff Wolff at
22	on the plants that you're targeting, right?		22	Fulbright & Jarwoski we've been talking about?
23	A. It increases the concentration of		23	A. Yes, I would I'm sure it
24	paraquat inside the plant.		24	would be.
25	Q. Right. Okay.		25	Q. All right.

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		,	A. I think this is
1	"Two of the guest speakers,	1 2	MR. TILLERY: Can you open it?
2	Prof Abbott and Prof Brooks will be giving	3	THE WITNESS: the one we saw
3	(essentially) generic talks on PET imaging and	4	yesterday.
4	BBB"	5	BY MR. TILLERY:
5	What is BBB?	6	Q. I think so, and it just
6	A. Blood-brain barrier.	7	demonstrates I'm just orienting you so you
7	Q. " though you should be aware that	8	understood what we were talking about, okay?
8	Prof Abbott will have put the PQ structure"	9	A. Mmm, Mmm,
9 10	That's paraquat, right?  A. That's correct.	10	Q. This is a document which contains
11	Q. " through her computational model	11	the meeting agenda for who is talking and the
12	to assess the feasibility of [paraquat]	12	order in which they're speaking, correct?
13	crossing the [blood-brain barrier] and will	13	A. These are action minutes, not an
14		14	agenda.
15	report back on this."  Correct?	15	Q. Okay. But it tells you what they
16	A. That's correct.	16	did and what they talked about, right?
17	Q. "In addition, Prof DiMonte has	17	A. That's correct.
18	offered to give us an update on his most recent	18	Q. All right. And this mentions
19	work with [paraquat] and primates."	19	Dr. Di Monte's presentation of his monkey
20	Right?	20	research at the Marlow meeting, right?
21	A. Correct.	21	A. It does.
22	Q. Okay. So Professor Joan Abbott	22	Q. Dr. Abbott's presentation about the
23	would be presenting at the Marlow meeting, and	23	meeting, right?
24	that is the same one we've talked about	24	A. That's right.
25	previously, isn't it?	25	Q. All right.
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1	A. Yes, this would be the meeting in	1	MR. TILLERY: Now let's go to 589,
2	the first half of 2009, correct.	2	which will be Exhibit 98.
3	Q. Okay. Now, who is Professor Abbott?	3	(Botham Exhibit 98 marked for
4	A. Professor Abbott is an academic	4	identification.)
5	research worker in the United Kingdom.	5	BY MR. TILLERY:
6	Q. And did you agree with Dave Berry's	6	Q. This is a quite substantial document
7	assessment of Dr. Abbott and Dr. Di Monte as	7	and I'll represent to you, as it's being pulled
8	eminent experts?	8	up, that this is the entire presentation that
9	A. Yes. We I agree.	9	Dr. Abbott brought with her for the
10	Q. Okay. And that's why you invited	10	presentation to all the Syngenta scientists in
11	them, because you thought their research was	11	attendance, and it is 143 slides long.
12	leading and cutting edge and you wanted to hear	12	So I'm not going to ask you to go
13	about it, correct?	13	through all of them but I'm going to direct
14	A. That's right.	14	your attention to at least the conclusions of
15	Q. All right.	15	this.
16	MR. TILLERY: So let's go to	16	But first of all can you identify
17	Exhibit 96, which is 588. 97, I'm sorry,	17	it? And this is SYNG-PQ-00471694.
18	Plaintiff's Deposition Exhibit 97.	18	Can you see it? "CNS barriers:
19	While that's being pulled up,	19	critical interfaces for CNS entry of paraquat."
20	this is SYNG-PQ-04982646.	20	Do you see that?
21	(Botham Exhibit 97 marked for	21	A. I do.
22	identification.)	22	Q. What does CNS stand for
23	BY MR. TILLERY:	23 24	MR. NARESH: Dr MR. TILLERY: I'm sorry.
24	Q. I think you'd seen this document	25	MR. NARESH: Dr. Botham, you
25	before perhaps. I think we did.	123	IVIX. IVAIXEDII. DI. DOMAIII, YUU

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1	certainly don't need to review the whole		1	Q. All right. And she was invited, as
2	thing but if you do want to take a moment		2	we've indicated, because she was an expert in
3	to just familiarize yourself with the		3	the blood-brain barrier and penetration into
4	document, please feel free. But, like		4	the brain by chemicals through the blood-brain
5	Mr. Tillery said, I don't think you need		5	barrier, correct?
6	to read the whole thing, but		6	A. That's correct.
7	BY MR. TILLERY:		1	Q. All right. So if we look at these,
8	Q. And you're welcome to take as much		8	she told you in her conclusion, after 70 pages
9	time as you need to just go through it.		91	of analysis, she said:
10	It's her presentation. I think you were in	//	10/	of analysis, she said: "[Paraquat] enters rodent brain
11	attendance at the meeting, right?	/	11/	rapidly, and cleared slowly."
12	A. I was, yes.		7	Doesn't she?
13	Q. All right. Can you take charge of		<b>U</b> /	A. She does.
14	this to see if you want to look at it and		14/	
15	familiarize yourself with it?			Q. And then she says blood-brain
16	A. I currently do have charge of it.		15 16	barrier that's BBB, right?
17	It's going to take	$\overline{}$	17	A. That's correct.
18	Q. All right, let me		18	Q. " uptake transporters L1 (+OCT?
19				PAT?) + leak into CSF implicated."
20	A. It's going to take a long time for me to go through it, though, because each		19	And that CSF stands for cerebral
21	alide is taling swite a lang time to save each	- 1	20	spinal fluid, doesn't it?
22	slide is taking quite a long time to come up.		21	A. It does, yes.
23	So maybe can we just proceed and if I need		22	Q. All right. What does that second
	to take some more time as your specific	- 1	23	bullet point mean to you?
24	questions arise, I'd prefer to do it that way,		24	A. It means that Dr. Abbott is an
25	otherwise I suspect I'll be spending a lot of		25	expert in what are called transporter
	Page 12	42		Page 1244
1	time trying to		1	molecules in membranes, including at the
2	Q. Right.		2	blood-brain barrier, and she is suggesting
3	A download the slides.	- 4	3	that a compound like paraquat can cross the
4	Q. Right. If you wouldn't mind, just	- 1	4	blood-brain barrier using these transporter
5	go to 00471764. It's what's called	- 1	5	molecules.
6	Conclusions.	- 1	6	Q. And the transporter molecules
7	A. Right, okay. This will take a long	- 1	7	provide sort of like a vehicle for transport
8	time because it's to do it manually	- 1	8	across this membrane, correct? That's what she
9	it's taking about 10 to 20 seconds per slide,		9	told you?
10	so I can't it might be quicker for you		10	A. Yeah. That's right, yes.
11	to take control and go straight to it.		11	Q. And then the next one she says,
12	Q. All right. We'll do that, sir.		12	there's no metabolic breakdown in the CNS
13	MR. TILLERY: So we're on it's		13	What does that mean?
14	1764, this page right here.	1	14	A. That the paraquat, as we've been
15	BY MR. TILLERY:		15	discussing, is not broken down or metabolized
16	Q. All right. Those are the conclusion	1	16	in the central nervous system.
17	pages that reference page 71 of 143.		17	Q. So as of the date of this
18	Do you see that?		18	presentation, Syngenta knew that once this
19	A. Yeah, I can now see that. Thank		19	chemical got into the brain, there was
20	you.		20	no metabolic breakdown of it, right?
21	Q. All right: Now, these were the		21	A. That's right.
22	conclusions that Dr. Joan Abbott presented		22	Q. And then it says, in the next bullet
23	to the Syngenta scientists during the Marlow		23	point:
24	meeting, weren't they?		2,A	"No clear efflux transporter from
25	A. They were.		25	CNS."
Sec. Line		7	No.	1/1/
		1		32 (Pages 1241/to/1244)
			N.	-// X

Page 1245 Page 1247 1 chemical. Do you want to explain to the court 2 2 Then it says -- the very last is and jury what that means. 3 most important for that. It says what? 3 A. Okay. So the transporters we were 4 "Potential for long-term toxicity," doesn't it? talking about before were uptake transporters, 4 5 5 so that means transporter molecules that could A. It does. 6 Q. Now, when you knew, putting the 6 take substance into a compartment like the 7 7 brain. An efflux transporter is a similar pieces together, that paraquat got into the 8 kind of molecule that would take a compound 8 brains of users of your product, like sprayers 9 like paraquat out of the brain. 9 and applicators when they were using it as you 10 intended for them to use it, you also learned 10 Q. But she couldn't find that. 11 here that when it got in their brains it was 11 So while it got in the brain, she wasn't finding a clear efflux transporter from outside 12 very slow to clear and there was a potential 12 the central nervous system; is that correct? 13 for long-term toxicity. Would that be a 13 14 correct statement? 14 A. Yeah, what she was saying is that 15 A. That would be correct. 15 she could find no evidence for paraquat 16 16 getting out of the brain through the mechanism MR. NARESH: Objection. of an efflux transporter. That's not 17 BY MR. TILLERY: 17 18 18 to say --Q. All right. And did you tell the 19 Q. All right. 19 users, the end-users of the product, what you 20 A. -- she wasn't telling us that 20 knew about that? 21 paraquat doesn't get out of the brain; she 21 A. No, because this is still -- it's 22 said there was no evidence for it hitching 22 still very important to know how much gets in a ride on an efflux transporter. 23 there in the first place. So this -- these 23 24 measurements were all made using her 24 Q. Why don't you look at the very next 25 experimental systems. There was no 25 bullet point: Page 1248 Page 1 measurement at this point in exactly how much "Very slow clearance suggests 2 might get into the brain. intracellular sequestering in [the central] So, yes, it may get in there, it 3 nervous system] - potential for long-term toxicity." 4 may come out slowly, but if there's only 5 a small amount gets in there, even if it's Would you agree with me that "very only cleared slowly, what we didn't know 6 6 slow clearance" means once it's in your brain 7 is whether that potential for toxicity may 7 it stays in there a long time? Would you agree actually be a real issue. 8 8 with that? This was another reason why 9 A. Yes. That's what that was 9 suggesting from her work, and we subsequently 10 we wanted to continue with our science 10 11 program, to try and answer some of these 11 measured that clearance ourselves very 12 questions. 12 accurately. 13 13 MR. TILLERY: I move to strike your Q. And so let's stay on Dr. Abbott, 14 though, if we can here, okay. 14 answer as unresponsive. 15 A. Mmm-hmm. 15 BY MR. TILLERY: 16 Q. Doctor, did you tell the end-users 16 Q. So "very slow clearance" suggests 17 of your products -- sprayers, applicators --17 intracellular sequestering in the central 18 that once they used it, and in their normal use 18 nervous system, which means that it stays in 19 of the product, it would get in their brain and 19 the brain and intracellular sequestering means 20 that it was very, very slow clearance and it accumulates in the central nervous system. 20 21 accumulated in their brain and that there was That's what she was saying. 21 22 a potential for long-term toxicity? Did you 22 A. Yes, it does --23 23 Q. Right? tell them that?

33 (Pages 1245 to 1248)

No, we didn't --

MR. NARESH: Objection to form.

24

24

25

A. Yes, it does mean that.

Q. It's an accumulation of this

Page 1249 Page 1251 THE WITNESS: No, we did not tell 1 correct? 2 them that. 2 A. Yeah, she was saying that that BY MR. TILLERY: 3 3 tomography, that imaging, may not be 4 Q. Okay. And did you put that on your 4 sufficiently precise to show exactly where 5 paraquat.com website? 5 in the brain chemicals like paraquat may 6 A. No, we did not put that on 6 get to. 7 paraquat.com because we still needed 7 Q. Then she says, in the next one: 8 to understand that and put it into proper 8 "CNS [central nervous system] 9 context. 9 barriers more leaky/vulnerable in neonate 10 Q. Did you ever tell any regulator. 10 That's like brand-new babies, right? 11 US EPA or any other regulator worldwide, that 11 A. Yes. 12 there was very slow clearance suggesting 12 Q. And possibly in old age. Right? 13 intracellular sequestering in the central 13 A. Yes. 14 nervous system and the potential for long-term 14 O. So you knew that people were more 15 toxicity. Did you ever tell them that? 15 vulnerable when they were very, very young or 16 A. As I said earlier, we had certainly 16 when they were older, right? 17 told regulators that paraquat is able to cross 17 A. Yes. This is a biological fact 18 the blood-brain barrier, but this issue here 18 that was relatively well-known. of slow clearance and potential for long-term 19 19 Q. And didn't you find with 20 toxicity was something which we were only just 20 Dr. Di Monte's squirrel monkeys that paraquat 21 beginning to understand. 21 was persistent in the brain? 22 Q. Okay. Well, let's look at the next 22 A. It was still present at the time bullet. It says: 23 23 that we actually did the analyses, a week or "Similarities between species in 24 24 two, I think it was, after he had administered 25 [central nervous system] barrier organization 25 paraquat, yes. Page 1250 Page 1252 1 and uptake transporters mean it is likely that 1 Q. Well, Dr. Di Monte's squirrel 2 similar toxicokinetics and dynamics will apply 2 monkeys, you found paraquat persisted in the 3 in humans." 3 brain beyond eight weeks. Do you want to be 4 Correct? 4 reminded of that? 5 A. Yes. 5 A. Yeah, I'm sorry, I couldn't 6 Q. She was telling you that the animal 6 remember the -- several weeks, you're right, 7 studies would be very predictive about how this 7 8 chemical would react to human beings, too, 8 Q. So it was eight weeks. And wasn't 9 wasn't she? 9 it clear what Dr. Travis submitted to the A. She was. 10 10 PRF Approach Committee, that paraguat persisted 11 Q. And she says: 11 in the brain longer than you had previously 12 "Low dose [paraquat] bolus PET study 12 believed, correct? 13 in primates may not be sufficiently sensitive 13 A. Can you remind me exactly how you 14 to show CNS distribution." 14 think we said that? 15 Q. I'm just saying that when you, as What does that mean? 15 16 A. So the other presenter that was 16 a -- on the PRF Committee, heard from 17 referred to in this meeting, Dr. Brooks, was 17 Dr. Travis, Dr. Travis was indicating that this 18 telling us about studies done by another 18 was one of the features that you were learning; 19 group -- and I'm not sure whether Dr. Brooks 19 that in Dr. Di Monte's squirrel monkeys the 20 was himself part of that group -- where people residue studies demonstrated that the paraquat 20 21 had done PET, which is a positron electron 21 persisted in the brain beyond eight weeks, 22 tomography. It's an imaging to look at 22 right? 23 paraquat in the brain of primates. 23 A. I don't think we were saying beyond 24 Q. She was suggesting that different 24 eight weeks, were we? types of studies would be more appropriate. 25 25 Q. Actually, it wasn't on the PRF

	Page 1253		Page 1255
1	committee report, that's correct. It was	1	A. It does.
2	in the study of the residue studies. You knew	2	Q. ICI, the predecessor to Syngenta
3	that it lasted beyond eight weeks, right?	3	we've been referring to them collectively as
4	A. We knew that it was still present	4	Syngenta knew that paraquat was extremely
5	in the samples that were taken the last	5	toxic to mammals when ingested orally before
6	time at the last time point, which you	6	it even began selling it in the United States
7	reminded me was eight weeks.	7	in 1965, didn't it?
8	Q. Well, let's put it this way: The	8	A. Yes. I think we had that
9	findings you had are consistent with what	9	discussion in the first part of my deposition.
10	Dr. Abbott told you at the Marlow meeting,	10	Q. Correct. And they knew without
11	correct?	11	trying to pin the date down, they knew
12	A. Indeed, yes.	12	certainly from testing, from animal testing,
13	Q. All right.	13	that it was extremely lethal, correct?
14	Now let's continue on, if we can.	14	A. It's a very toxic molecule, yes.
15	It says:	15	Q. Okay. Just from a general
16	"Entry [paraquat] into [the] brain	16	standpoint, explain, when you ingest it, what
17	can be increased by other toxicants"	17	it does to your body, to the human body.
18	And then it says:	18	A. When it's ingested, as we were
19	"Neuronal damage by [paraquat]	19	saying a few moments ago, it then is able to
20	exacerbated by LPS/infection - priming role of	20	cross from the intestine into the blood
21	microglial activation."	21	supply, into the blood vessels, be circulated
22	Okay? And that was then she ends	22	around the body, and it primarily expresses
23	by referencing more studies, right?	23	this toxicity that we're talking about in
24	A. Yes.	24	two main organs of the body; the lung and the
25	Q. All right. Did anyone take umbrage	25	kidney. It's damage to those organs which
	Page 1254		Page 1256
1	or offense or a different view at the meeting,	1	most frequently causes the acute toxicity that
2	during her presentation or afterwards?	2	you're referring to.
3	A. I don't remember anybody doing so.	3	Q. And we have gone through, through
4	My memory is that these were very important	4	previous depositions and earlier this week,
5	conclusions and hypotheses that we were	5	references to postmortem analyses where you've
6	hearing from Dr from the doctor concerned.	6	pointed out that or acknowledged that it
7	Q. Abbott. Yes, Dr. Abbott.	7	also gets into the human brain, doesn't it?
8	A. Dr. Abbott, yes, yes. Dr. Abbott,	8	A. Yes.
و ا	yes.	9	Q. Now, 1967, A.B. Swan was the
10	Q. Yeah, yeah.	10	director of CTL's predecessor, that's ICI's
11	And were they accepted by the	11	industrial hygiene laboratories, from about
12	scientific team at Syngenta, as far as	12	1963 to 1981, wasn't he?
13	you know?	13	A. He was.
14	A. That's certainly my memory because	14	Q. Is there an antidote for paraquat
15	we that's in part why we were designing our	15	poisoning?
16	future studies to look at some of these	16	A. I'm not aware of an antidote, no;
17	challenges.	17	just treatment.
18	Q. Sure, okay.	18	Q. Okay. ICI, Zeneca and Syngenta all
19	We're going to switch topics just	19	collected information on the occurrence and
20	a little bit now, okay. Dr. Botham, paraquat	20	circumstances of paraquat poisonings over the
21	is extremely toxic to mammals when it's	21	years, haven't they?
22	ingested orally, isn't it?	22	A. They have.
23	A. Yes, it is.	23	Q. As a matter of fact, during the
24	Q. And that includes human beings,	24	meeting that you had in Atlanta, there was
25	doesn't it?	25	a reference on the many meeting minutes
23			a solution of the many mooting limitates

	Page 1257		Page 1259
1	afterwards, or the summaries, that there was an	1	slides were precisely that. They were slides
2	entire database of people who had died from	2	of people whose doctors or pathologists had
3	ingesting paraquat in Sri Lanka and Korea,	3	sent them on because they were the distributor
4	correct?	4	of paraquat and they wanted them to be aware
5	A. Yes, those are two examples of such	5	of the pathology associated with the ingestion
6	a database.	6	of the chemical.
7	Q. Okay. And you keep that database	7	You're aware of that?
8	for the entire world, don't you?	8	A. Yes.
9	A. We do have a global database, and	9	Q. Okay.
10	we also have access to databases that other	10	Now, do Syngenta's current products
11	people maintain.	11	of paraquat, formulated products, contain an
12	Q. How many people worldwide have died	12	ingredient called an emetic?
13	from ingesting paraquat?	13	A. They do.
14	A. I'm afraid I can't give you	14	Q. Is an emetic a substance that
15	a number off the top of my head.	15	induces vomiting?
16	Q. By that I mean accidental ingestion,	16	MR. NARESH: I'll object here on
17	intentional ingestion. There have actually	17	scope and foundation.
18	even been cases of murder using paraquat as	18	MR. TILLERY: I'm looking at
19	well, haven't there?	19	topic 31:
20	A. Yes, that's true.	20	"The Methodologies, results,
21	Q. Now, would you knowing that	21	significance, and replication of, and
22	paraquat has caused so many deaths around the	22	Syngenta's internal and external
23	world, would you think that number to be in the	23	communications about, studies
24	thousands?	24	investigating the health effects [and]
25	A. It is of it is a high number.	25	other aspects of the safety of paraquat,
	Page 1258		Page 1260
1	As I say, I can't give you the number right	1	or any paraquat product or formulation,
2	now.	2	whether published or unpublished"
3	Q. Okay.	3	To go further into that and other
4	ICI and Zeneca exchanged information	4	topics, it's mentioned more and more and
5	with Chevron on the occurrence and	5	more again. I can go over them all but
6	circumstances of paraquat poisoning, didn't	6	there's multiple ones of them.
7	they?	7	So I think it's clearly within the
8	A. Yes.	8	formulation of the chemical.
9	Q. And actually, Chevron exchanged	9	MR. NARESH: Steve, I haven't
10	information with ICI about this topic,	10	instructed the witness not to answer but
11	didn't it?	11	I'm objecting on foundation and scope
12	A. Yes.	12	MR. TILLERY: Okay.
13	Q. And when it was first marketed in	13	MR. NARESH: but if the witness
14	the United States, Chevron actually received	14	knows the answer, he should feel free to
15	from the pathologist's office in postmortem	15	answer.
16	exams all around the country, of the United	16	MR. TILLERY: All right.
17.	States, different tissue specimens and samples	17	THE WITNESS: Okay. I'm willing to
18	which they analyzed in their own labs because	18	answer the
19	they were the sole distributor and formulator	19	THE STENOGRAPHER: Sorry.
20	in the United States of your product, correct?	20	Mr. Naresh, I didn't get the end
21	A. I believe so. I think that might	21	I didn't get
22	have been some of the information we talked	22	MR. NARESH: I said I haven't
23	about earlier.	23	instructed the witness not to answer.
	Q. That is exactly right. Some of the	24	I'm objecting on foundation and scope but
24	O. That is Cauchy Hym. Admic of the		

	Page 1261		Page 1263
1	he should feel free to answer.	1	being considered around that time, I would
2	THE STENOGRAPHER: Thank you.	2	agree. Again, I can't give you a precise
3	THE WITNESS: And I was just saying	3	date.
4	I'm willing to give an answer to that.	4	MR. TILLERY: All right. Let's
5	MR, TILLERY: Okay.	5	pull up, if we can what exhibit number
6	BY MR. TILLERY:	6	would this be?
7	Q. And the question was is an emetic	7	MS. BRUMITT: 99.
8	a substance that induces vomiting?	8	MR. TILLERY: This is number 99.
9	A. It is.	9	This is SYNG-PQ-02518325.
10	Q. Okay. Is the purpose of including	10	(Botham Exhibit 99 marked for
11	an emetic in paraquat products to cause	11	identification.)
12	vomiting quickly enough after a person ingests	12	BY MR. TILLERY:
13	the product to eliminate paraquat from the body	13	Q. If you would take a look at the
14	before it absorbs a lethal dose?	14	document when you get it, sir.
15	A. That is the purpose, yes, to take	15	A. Okay. Received and now reading.
16	paraquat out as quickly as possible.	16	I can't read it now because you've
17	Q. So, in other words, you want that	17	taken it away from me.
18	poison out of the system before it gets to	18	Q. Okay, I'm sorry. Actually, can you
19	a position where it can do what we talked about	19	read it from there?
20	before, that is to absorb into the bloodstream,	20	A. Yeah, okay. As it's only one
21	reach vital organs and ultimately cause death,	21	Q. I think that
22	correct'?	22	A. As it's only one page, I can read
23	A. That's right, as much as possible.	23	it, yes, thank you. Just give me a few more
24	Q. And the quicker that you do it, the	24	minutes to read it.
25	more likely it is that the person who ingested	25	Q. Take your time, sir.
	Page 1262		Page 1264
1	the paraquat survives, right?	1	A. Thank you.
2	A. Yes, that's right.	2	Okay, thank you. I've read that
3	Q. Okay. ICI first added an emetic	3	now.
4	to paraquat products it sold outside the United	4	Q. Okay. So Dr. Swan was the director
5	States in 1978, didn't it?	5	of IHRL at that time, right?
6	A. I can't give you a date. That's	6	A. That's correct.
7	nothing something that I haven't got in my	7	Q. Okay. And we've mentioned his name
8	head, I'm afraid.	8	many times but it's been some time ago in the
9	Q. I'll show you some information in	9	transcript so, one more time, acquaint us with
10	a little bit and perhaps it will refresh your	10	acquaint all of us with who he was at that
11	recollection. But I'll represent to you that	11	time?
12	that's what the documents say, but we'll get	12	A. He led the laboratory that was
13	to that later.	13	involved in doing the toxicology testing for
14	The same emetic was added to the	14	ICI at the time. It was the predecessor of
15	paraquat products that Chevron and ICI America	15	the Central Toxicological Laboratory which
16	sold in the United States beginning in about	16	we've mentioned many times.
17	1983. Would that sound right, sir?	17	Q. All right. In that letter, Dr. Swan
18	A. Again, I take your word for it.	18	tells Mr. Darter in substance that a centrally
19	I don't carry those dates in my head,	19	acting emetic, one that induces vomiting by
20	I'm afraid.	20	acting on the central nervous system, would act
21	Q. Yes. ICI first considered including	21	quickly enough to induce vomiting before a
22	an emetic in its paraquat products to prevent	22	fatal level of paraquat could be absorbed.
23	fatal poisoning by ingestion as early as 1968,	23	Correct?
24	didn't it?	24	A. That's what this says, yes.
25	A. Certainly that kind of thought was	25	Q. And in his opinion, an emetic would

	Page 1265		Page 1267
1	have to act within a few minutes in order to	1	interpretation, yes.
2	work?	2	Q. So does Mr. Wright also note that
3	A. That's what he's indicating here.	3	paraguat itself is an emetic that induces
4	Q. He said that using a local emetic	4	vomiting?
5	that would act quickly enough would not make	5	A. He does.
6	economic sense in attempting to cope with	6	Q. But paraquat doesn't induce vomiting
7	a rare event, didn't he?	7	quickly enough so that a person's life is
8	A. That's what it says in the middle	8	saved, does it?
و ا	of the second paragraph, yes.	9	A. That's what that's what he's
10	Q. In other words, it would cost too	10	saying here, yes.
11	much to try to prevent the rare event of people	11	Q. And that's what you know, too,
12	dying from paraquat poisoning, right?	12	yourself, correct?
13	A. That's what that says.	13	A. It is, which is why we eventually
14	Q. All right.	14	did put an emetic into the paraquat
15	MR. TILLERY: Let's go to	15	formulations.
16	Exhibit No. 100. This is	16	
17	SYNG-PQ-02517085.	17	Q. Right. We're getting to there.
18	(Botham Exhibit 100 marked for		MR. TILLERY: All right. Now we're
19		18	going to Exhibit 101.
20	identification.) BY MR. TILLERY:	19	(Botham Exhibit 101 marked for
		20	identification.)
21	Q. And let me know when you're ready	21	BY MR. TILLERY:
22	to talk about it. I think this is a one-page	22	Q. Now, have you ever seen this report?
23	document as well, sir.	23	A. I have, yes.
24	A. Thank you.	24	Q. You're familiar with this one,
25	Okay. I've read that, thank you.	25	aren't you?
	Page 1266		Page 1268
1	Q. This is another example of	1	A. I am.
2	correspondence from one ICI employee to another	2	Q. This Exhibit No. 101, which is
3	on this subject, dated November 1970, isn't it?	3	SYNG-PQ-14420786 for the record, is an ICI
4	A. Yes, although I don't I'm not	4	pharmaceutical report written by Dr. Bayliss,
5	familiar with either of the individuals.	5	entitled "A summary of clinical results of the
6	Q. One of them is Nigel, or Nigel,	6	phosphodiesterase inhibitor ICI 63,197 in a
7	Wright and he tells a Mr. Magee at	7	variety of disease states."
8	ICI (Ireland) what was ICI (Ireland)?	8	Correct'?
9	A. That would be the marketing	9	A. Correct.
10	organization of ICI in the Republic of	10	Q. Does this report relate to an
11	Ireland.	11	attempt by ICI Pharmaceuticals Division, in the
12	Q. Okay. He tells Mr. Magee at	12	late 1960s and early 1970s, to develop
13	ICI (Ireland) that no emetic, no matter how	13	a compound called ICI-63197 as a therapeutic
14	powerful, would act quickly and strongly enough	14	drug to treat asthma or other certain medical
15	to prevent the absorption of paraquat following	15	conditions?
16	ingestion of a lethal dose, doesn't he?	16	A. That's correct.
17	A. That's what he asserts here, yes.	17	Q. And that attempt was abandoned after
18	Q. He also says including a large	18	ICI-63197 was found, during human-volunteer
19	enough quantity of the emetic in the produce	19	trials, to have no beneficial effects and
20	would be commercially undesirable.	20	numerous side effects, including vomiting,
21	Correct?	21	dizziness, et cetera, correct?
22	A. That's what this says.	22	A. That's correct.
4	Q. Commercially undesirable means it	23	Q. Exhibit 101 is the report of the
23	O. Commercially undestraine means it		
23 24	just costs too much, correct?	24	results of those studies, including all the

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,		1	BY MR. TILLERY:
1 2	<ul><li>A. That's right.</li><li>Q. And over the years, did ICI refer</li></ul>	2	Q. Can you see it, sir?
2 3	to this same compound at various times as	3	A. It just disappeared because you
4	63197, R-50796, and PP796?	4	were taking control, so yeah, I've got it
5	A. That is correct.	5	back now, thank you.
6	Q. It's the same chemical?	6	Q. Yeah, and while you're looking at
7	A. It is.	7	it, the preceding exhibit, I said
8	Q. It's just used yes.	8	I misspoke. It was Davies's view, not
9	MR. TILLERY: Now let's go to	9	Winchester's. I had the two people mixed up
10	Exhibit 102. Exhibit 102 is	10	in my comment. I just wanted to clarify that
11	SYNG-13098675.	11	for the record. I didn't mean to misspeak
12	(Botham Exhibit 102 marked for	12	about that, okay.
13	identification.)	13	A. Okay, thank you. All right.
14	BY MR. TILLERY:	14	Q. You're welcome. All right.
15	Q. Is Exhibit 102 correspondence	15	Now we're looking at number 70
16	between two ICI employees concerning the	16	103, I'm sorry.
17	potential use of ICI-63197 in paraquat as an	17	A. Okay.
18	emetic?	18	Q. This is also correspondence between
19	A. Just let me read it. I'm not sure	19	ICI employees regarding the inclusion of 63197
20	I've seen	20	as an emetic in PQ products, right?
21	Q. Okay.	21	A. It is.
22	A this particular memo before.	22	Q. And I should have said paraquat
23	Q. Take your time, sir.	23	products instead of PQ.
24	A. Yes, okay. I've read it. And	24	In the first paragraph,
25	please ask your question again.	25	Dr. Fletcher who is he?
	Page 1270		Page 1272
1	O. Of course. Is this this is	1	A. I believe this would be the same
2	correspondence between two ICI employees	2	Dr. Fletcher we have discussed in the past.
3	about using it, 63197, as an emetic in	3	He would have been at the CTL IHRL laboratory.
4	paraquat, right?	4	Q. Right. Dr. Fletcher notes that ICI
5	A. Yes, that's correct.	5	scientists had already considered and rejected
6	Q. And the letter indicates	6	including an emetic for a number of reasons.
7	Dr. Winchester's view that the emetic dose of	7	Can you read those into the record?
8	ICI-63197 is between 4 and 8 milligrams,	8	A. Yes.
9	correct?	9	"(a) 'Gramoxone' itself is quite a
10	A. That's what this says, yes.	10	good emetic, (b) there was no really suitable
11	O. And that information strike that.	11	agent to add which would be effective, and (c)
12	That formulation of paraquat would	12	the expense would be prohibitive."
13	have to include an amount of 63197 sufficient	13	Q. Okay. In the second paragraph,
14	to ensure this 4-8 milligrams was taken in with	14	Dr. Fletcher notes that an emetic dose of
15	whatever volume of paraquat was likely to be	15	ICI 63,197 is about 10 milligrams, right?
16	toxic, correct?	16	A. Yes.
17	A. That's correct.	17	Q. And then he again mentions that one
18	Q. All right.	18	obstacle to incorporating it into paraquat
19	MR. TILLERY: Let's look at	19	products would be cost, right?
20	Exhibit 103. This, while she's pulling	20	A. Yes.
21	it up, is PQ-02450187.	21	MR. TILLERY: Let's go to
22	(Botham Exhibit 103 marked for	22	Exhibit 104. While she's pulling this
23	identification.)	23	up, this is SYNG-PQ-13098673.
24	MR. TILLERY: Leave that up,	24	(Botham Exhibit 104 marked for
25	please.	25	identification.)

	Page 1273		Page 1275
1	BY MR. TILLERY:	1	he said?
2	Q. Tell me when you're ready to talk	2	A. Yes, that's a fair statement of
3	about it.	3	what he said here.
4	A. I can't see it at the moment.	4	Q. All right. And you have no reason
5	Q. I'm sorry. We're having technical	5	to dispute anything about that up to that point
6	trouble.	6	in time, do you?
7	A. Okay. I can now see this.	7	A. No, not at that point in time.
8	Q. Can you read it from there, sir?	8	MR. TILLERY: All right. Let's go
9	A. I can, yes.	9	to 105. This is SYNG-02469717.
10	Q. All right. Take your time, read it,	10	(Botham Exhibit 105 marked for
11	and let me know when you're ready to talk	11	identification.)
12	about it.	12	MR. TILLERY: I don't know if this
13	A. Okay, I can see that and have read	13	is a single page that you can see here or
14	that.	14	if it's more than that but we can
15	Q. And this is further correspondence	15	let's try to pull it up no, it's
16	between ICI employees on this subject, isn't	16	1 of 2.
17	it?	17	Would you mind handing that to him
18	A. It is.	18	so he can read it.
19	Q. From 1971, right?	19	THE WITNESS: Yeah, I've got it
20	A. The yes, I can see that now,	20	now, thank you, Mr. Tillery. I can see
21	yes. 1971, correct.	21	it now.
22	Q. Yes. Dr. Bayliss was from the	22	MR. TILLERY: All right. You're
23	clinical research department in the	23	welcome, sir.
24	pharmaceutical divisions that ran the initial	24	THE WITNESS: Okay, thank you.
25	human trials on 63197 when it was being	25	I've read that.
	Page 1274		Page 1276
1	developed as a drug, right?	1	BY MR. TILLERY:
2	A. That's correct.	2	
3	Q. Dr. Bayliss says that ICI 63197 has		Q. All right. This is also
4	no clearly defined emetic dose, doesn't he?	3	correspondence between ICI employees, isn't it?
5		4	We're putting it on the screen for display at
6	<ul><li>A. That's what he says here, yes.</li><li>Q. And he said it would be very hard</li></ul>	5	this moment.
7	to settle on a dose that would be certain	6	A. It is, yes.
8		7	Q. Dr. Fletcher is one of the people,
9	to induce vomiting in most individuals unless	8	right?
10	it's a very high dose, right?	9	A. He is.
11	A. That's what it says, yes.	10	Q. All right. And he concludes that
12	Q. And he says also it'd take about	11	including a centrally acting emetic like 63197
13	15 minutes for 63197 to induce vomiting,	12	in a paraquat formulation would be expensive
14	correct?	13	and of marginal use because they take too long
15	A. Correct.	14	to induce vomiting, right?
16	Q. In his opinion, 15 minutes is too	15	A. Yes, reinforcing what had been said
17	long because a toxic dose of paraquat would	16	before.
	already have been absorbed in the human body,	17	Q. All right. If you go, I think,
18 19	correct?	18	to 718, I think this is the 717, so if you
	A. That was his assertion, yes.	19	go to the next page. Do you see where he says,
20	Q. Dr. Bayliss concludes the 63197	20	that is Dr. Fletcher, K. Fletcher, that the
21	would not be suitable for use as an emetic in	21	only real way to reduce paraquat's toxicity is
22	paraquat and that including an emetic in	22	by considerable dilution.
23	paraquat generally would likely not be much	23	Right?
24	benefit because paraquat is absorbed rapidly.	24	A. Yes.
25	Is that a fair statement of what	25	Q. What's he mean by that?

	Page 1277		Page 1279
1	A. By adding more water to the	1	BY MR. TILLERY:
2	paraquat to the Gramoxone, which is the	2	Q. Go ahead, sir.
3	trade name for paraquat, when it is sold.	3	A. Yeah. No, I would interpret that
4	Q. So adding water to would dilute	4	to say that it would he is suggesting that
5	it and make it less toxic to the person who	5	some work is done in this area, even if,
6	consumed it, correct?	6	in the end, it proves not to be something that
7	A. That's correct, yes.	7	is making a difference.
8	Q. Okay. And does he also say that	8	Q. Well, actually, it means that you
9	if they do something sensible, even if not	9	would be perceived to be making a difference.
10	effective, they will be seen to be trying?	10	"We would be seen to be trying," that's what
11	Do you see that right at the very last	11	it said
12	paragraph?	12	A. Seen to be making best endeavors
13	A. Yes.	13	to try and do something, I think, yes, quite.
14	Q. "We have a considerable amount of	14	Q. We'd be perceived by people in
15	sympathy for our position and if we do	15	charge that we're trying to do something even
16	something sensible, even though it proves not	16	though we're not, correct?
17	to be very effective, we would be seen to be	17	A. Well, I don't know that's the
18	trying. At the moment I would sympathies with	18	bit that I would just be not so sure about.
19	a registration authority"	19	You could say that this is to say
20	"At the moment I would sympathise	20	it would seem to be worth trying to look for
21	with a registration authority that said it was	21	things that might have some benefit. I don't
22	trying its best without very much support from	22	think it's saying we should try it knowing all
23	ICI."	23	along that it won't have any benefit.
24	Do you see that?	24	Q. Okay. Well, I guess we disagree.
25	A. I do.	25	We'll agree to disagree and move on, okay?
	Page 1278		Page 1280
1 1	Q. So you got to look like you're	1	A. Okay.
2	making it safer whether or not you are or not;	2	MR, TILLERY: Let's go to 106.
3	is that a fair statement of what he said?	3	Let's go to 106, and this is
4	MR. NARESH: Objection to form.	4	SYNG-PQ-02491713.
5	THE WITNESS: Well, I think you're	5	(Botham Exhibit 106 marked for
6	reading into what was behind there.	6	identification.)
7	I couldn't comment if that's what he was	7	BY MR. TILLERY:
8	really getting to.	8	Q. You take charge of the document,
9	BY MR. TILLERY:	9	look it over. I'm going to focus you on
10	Q. Well, call me stupid but what	10	page 715.
11	I read:	11	MR. TILLERY: Does he have it?
12	"We have a considerable amount of	12	THE WITNESS: I have got it now and
13	sympathy for our position and if we do	13	I can read it, thank you.
14	something sensible, even though it proves not	14	BY MR. TILLERY:
15	to be very effective, we would be seen to be	15	Q. And take a look at 715, too.
16	trying."	16	A. Okay, that's quite difficult
17	Seems to be elevating form over	17	to read. It's small print and a little bit
18	substance is what I guess I'm saying.	18	indistinct in places, if you're looking at
19	MR. NARESH: Objection	19	Table 1.
20	THE WITNESS: Yeah, I think	20	Q. I am. That's exactly what
21	I would interpret that to	21	I'm looking at. Can you enlarge that at all,
22	MR. NARESH: Let me just get my	22	or do you want us to try to do that?
23	objections in.	23	A. No, I can enlarge it. If you want
24	Object to the form, please.	24	to look at certain parts, I can certainly
25	MR. TILLERY: Yeah.	25	enlarge it.

	Page 1281		Page 1283
1	Q. Okay. So if you would, just look at	1	MR. TILLERY: Yeah, I will,
2	the columns. Do you see the columns?	2	thank you.
3	A. I do, yes.	3	BY MR. TILLERY:
4	Q. All right. If you look at the sixth	4	Q. Does it say there that paraquat
5	column, where it says "Containing emetics."	5	would be safer if an effective emetic existed
6	A. Yes.	6	but that large quantities would be needed and
7	Q. Can you enlarge that and read it out	7	they are too slow-acting?
8	loud for the ladies and gentlemen of the jury	8	Is that what that one column says?
9	and the court, the first paragraph.	9	MR. NARESH: I'll object to the
10	A. So under "Containing emetics,"	10	form. I still think you're misreading
11	in answer to the question "Is the formulation	11	the document.
12	safer," is that what you'd like me to read	12	MR. TILLERY: If you want to read
13	out?	13	it again, you can, but I thought that's
14	Q. It says "Is the formulation safer?"	14	what it said.
15	and then go to the seventh column over,	15	THE WITNESS: Well, it says
16	"Containing emetics."	16	my version says "would be safer if
17	A. Yeah, got it.	17	a suitable emetic existed. I.H.R.L.
18	Q. Can you read that?	18	state that large quantities are required
19	A. It says:	19	or they are too slow in action."
20	"Would be safer if a suitable	20	MR. TILLERY: Right. That's what
21	emetic existed. I.H.R.L. state that large	21	I meant.
22	quantities are required or they are too slow	22	Now let's go to 107. This is
23	in action. I.H.R.L. advise there is little	23	SYNG-PQ-02508147.
24	scope here."	24	(Botham Exhibit 107 marked for
25	Q. And then go over two columns where	25	identification.)
	Page 1282		Page 1284
1	it says "Reduced uptake." Do you see that?	1	THE WITNESS: Okay. I'm looking at
2	A. Yep. So under the same question	2	that document. Do you need me to look at
3	Q. Read that first sentence. Read that	3	any particular part?
4	first sentence.	4	BY MR. TILLERY:
5	A. "Leaving out wetters or changing	5	Q. Actually, I may ask you, over all
6	to others can substantially reduce uptake into	6	the pages, a few things.
7	dogs."	7	Do you know generally from looking
8	Q. Okay. ICI was well aware of 63197's	8	at this what it is?
9	emetic properties when this was written, wasn't	9	A. Well, this is a Chevron document
10	it?	10	and it looks like it's the meeting of a
11	A. Yes.	11	involving people from Chevron toxicology,
12	Q. And this says that paraquat would be	12	registration, R&D, and certainly at least one
13	safer if an effective emetic existed but that	13	person from ICI.
14	large quantities would be needed and they're	14	Q. Right. This was one of their
15	too slow in acting, right?	15	meetings concerning paraquat, wasn't it?
16	MR. NARESH: Objection; I think you	16	A. That would be the likely scenario
17	misspoke.	17	here, yes, I agree.
18	MR. TILLERY: I'm sorry? They're	18	Q. Okay. And the topic or title to the
19	too slow-acting.	19	exhibit is "Notes of Meeting with Chevron
20	MR. NARESH: I don't think you did	20	Chemical Company, Richmond, on Wednesday,
21	this on purpose but I think you misread	21	27 February 1974."
22	the first	22	Right?
23	MR. TILLERY: Okay.	23	A. Yes.
24	MR. NARESH: You missed a word.	24	Q. "Paraquat toxicological problems in
25	Can you just start over, please?	25	the [United States] and proposed label change."

Г	Page 1285		Page 1287
1	Is that what it says?	1	page (ii) for him, please.
1 2	A. That's what it says.	2	BY MR. TILLERY:
3	O. It indicates that Mr. Cavalli was	3	Q. If you go to (ii), do you see?
4	there from Chevron, a toxicologist. It says	4	A. Yeah.
5	a Mr. Kamienski was there, Ospenson was there,	5	Q. The Department of Health has
6	Lewis, and a Calderbank.	6	20 poisoning incidents of paraquat for '73 by
1 7	Who was Mr. Calderbank	7	the Public Department of Health and forwarded
8	Dr. Calderbank?	8	to PPL by Carl Tanner.
9	A. Yeah, he was the person who I	9	Do you see that?
10	recognized as being from ICI, so from the	10	A. I do.
11	plant protection part of ICI.	11	Q. Okay. Then, if you go down to (vi),
12	Q. And the basis of concern was:	12	it says:
13	"Increasing numbers of reports of	13	"Chevron have a representative
14	toxicological effects of paraquat to	14	whose main function is to liaise with officials
15	applicators in the field."	15	in California"
16	Right?	16	Then the last sentence:
17	A. Yes.	17	"He learned in time of the proposal
18	Q. " growing concern amongst	18	that farm employees should take a
19	California State Officials brought about by	19	cardio-pulmonary medical exam. prior to using
20	fatal poisoning incidents (by swallowing) and	20	paraquat - which Chevron were subsequently able
21	drift damage."	21	to hold off."
22	And then third:	22	Do you see that?
23	"It is believed that EPA are	23	A. I do.
24	particularly influenced by California State	24	Q. So ICI and Chevron feared that
25	Officials."	25	US regulators might cancel paraquat's
	Page 1286		Page 1288
1	And then goes down to (e):	1	registration in part because of poisoning
2	"If incidents with paraquat	2	problems, or recommend glyphosate as a safer
3	continue, it is believed that officials may	3	alternative, correct?
4	recommend Glyphosate when it is registered."	4	A. Correct.
5	What is glyphosate?	5	Q. Would you agree that's a fair
6	<ul> <li>A. Glyphosate is another herbicide.</li> </ul>	6	yes, all right.
7	Q. That's one that's not made by	7	A. Yes, correct, that's fair.
8	Syngenta, isn't it?	8	Q. All right.
9	A. We do not no. We're not a	9	MR. TILLERY: That was Exhibit 107.
10	principal registrant of glyphosate, that's	10	Let's go to 108.
11	true.	11	(Botham Exhibit 108 marked for
12	Q. Okay. And then it talks about	12	identification.)
13	a suicide, and it talks about a 17-year-old boy	13	MR. TILLERY: This is
14	drinking from a beverage bottle and	14	SYNG-PQ-03719628.
15	accidentally consuming this, and they're both	15	BY MR. TILLERY:
16	dead, right?	16	Q. Please take your time looking at
17	A. Yes.	17 18	this. It's a one-page document. We can just pull it up so you can read it.
18	Q. And then the action taken by Chevron	19	A. Okay. I've read that, thank you.
19	was to want to strengthen the label to say	20	Q. Okay. And Dr. Winchester, who's he?
20	"May cause death if swallowed. Harmful if	21	A. I'm not sure what Dr. Winchester's
21	splashed in the eyes"	22	role was but he was obviously in the plant
22	Do you see that?	23	protection department of ICI.
23 24	A. I do, yes. Q. All right.	24	Q. And he's sending a letter to
25	MR. TILLERY: Now, can we go to	25	Mr. Swan, whose name appears in a lot of these
2	MIN. TILLENT. HOW, CAU WE go to	-	Management of the second secon

	Page 1289		Page 1291
1	communications, the same Swan, correct?	1	Right?
2	A. That's the same Swan, yes.	2	A. Yeah, I
3	Q. Okay. Dr. Winchester suggests here	3	Q. I've not said that very well but you
4	that it would be worth a substantial monetary	4	get the gist of what I'm saying?
5	investment, several hundred thousand British	5	A. Yeah, I
6	pounds, to try to develop a new, faster-acting	6	Q. He suggested go ahead, sir.
7	emetic compounds, doesn't he?	7	You'll say it better.
8	A. Yes.	8	A. No, I read this to say that
9	Q. And he was aware of the internal	و ا	Dr. Swan was suggesting a group with Dr. Rose,
10	debate over 63197 at the time, wasn't he?	10	which Dr. Rose would head, to look at the
11	A. I assume he was.	11	possibility of other emetics, essentially,
12	Q. Did, to your knowledge, Syngenta or	12	that could be added to paraquat.
13	ICI ever do the research that Dr. Winchester	13	MR. TILLERY: All right. Let's go
14	suggested?	14	to Exhibit 110. This is SYNG-PQ-0319624
15	A. I'm not aware of any research on	15	[sic].
16	alternative emetics, but that may be a line of	16	(Botham Exhibit 110 marked for
17	research that I was never involved in.	17	identification.)
18	MR. TILLERY: Okay. Let's go to	18	BY MR. TILLERY:
19	Exhibit 109. That's SYNG-PQ-02450112.	19	Q. It is a one-page document.
20	(Botham Exhibit 109 marked for	20	We'll pull it up for viewing on the record.
21	identification.)	21	A. Okay, thank you. I've read that.
22	BY MR. TILLERY:	22	Q. Okay. Now, this is again, it's
23	Q. This is a one-page exhibit, sir, so	23	a Dr. M.S. Rose, right?
24	we can put it up and make sure you can read it.	24	A. Yes.
25	It may be thank you. Take your time,	25	Q. He wrote the letter. And who is
	Page 1290		Page 1292
1	please.	1	he writing it to?
2	A. Okay.	2	A. To some people from the company,
3	Yes, okay. I've read that,	3	from both the plant protection division and
4	thank you.	4	from the pharmaceuticals division, who
5	Q. Who is Mike Rose?	5	I assume were being invited into the group
6	A. Mike Rose was an investigative	6	that was asked to be formed in the previous
7	toxicologist in CTL.	7	memo.
8	Q. He worked there during the '70s,	8	Q. So in this document, Dr. Rose states
9	didn't he?	9	that an emetic that induces vomiting within
10	A. He did. He had come there from the	10	an hour might prevent the absorption of a fatal
11	pharmaceuticals division.	11	dose, doesn't he?
12	Q. Okay. And was he in charge of the	12	A. He does.
13	department responsible for studying the	13	Q. He mentions an hour. The earlier
14	mechanisms of pesticide toxicity at that time?	14	correspondence that you reviewed just a little
15	A. He was in charge at one point in	15	bit ago indicated variously that vomiting would
16	time of what we call our investigative	16	have to be induced within a few minutes, or
17	toxicology department, yes, which looked at	17	within 15 to 30 minutes to be effective, right?
18	effects of pesticides.	18	A. It did, you're right.
19	Q. In this letter, that's marked as	19	Q. And Dr. Rose wrote in this letter,
20	Plaintiff's Deposition Exhibit 109, Dr. Swan	20	ICI didn't have any scientific data that
21	suggests that instead of immediately jumping	21	supported the statement that an emetic that
22	into the research to attempt to develop a new	22	induced vomiting up to an hour after ingestion
23	emetic for use in paraquat products, that	23	could be sufficient to prevent the absorption
24	Dr. Rose would hold a team or head a team into	24	of a fatal dose, did it?
25	the feasibility of doing research instead.	25	A. Yes. He's saying that he says

	Page 1293		Page 1295
	_		
1	there:	1	Gramoxone, right?
2	" if an agent which caused	2	A. Yes.
3	emesis within [the] hour, could be added	3	Q. Now, what's a lethal volume of
4	it might be possible to prevent the absorption	4	Gramoxone for a person, say, your size?
5	of a lethal quantity of paraquat."	5	A. It depends on the concentration of
6	That's what this says.	6	paraquat in the Gramoxone because that depends
7	Q. Yeah. What I'm asking you is was	7	on the formulation, whether it's been diluted
8	there any intervening scientific analysis that	8	or not. But it can be as little as 15mls,
9	would be responsible for reducing that period	9	10 to 15mls, as we've discussed before;
10	of time from a few minutes to an hour, that	10	a couple of teaspoonfuls, as I think you
11	you're aware of?	11	indicated.
12	A. I'm not aware of anything that	12	Q. Yeah, I'm not talking about diluted
13	might have resulted in that change of time.	13	stuff out of a spray tank. I'm talking about
14	Q. Okay. ICI know strike that.	14	stuff that's coming out of a
15	ICI knew when Dr. Rose wrote this	15	two-and-a-half-gallon jug.
16	letter that paraquat was rapidly absorbed	16	A. Yeah. So my answer reflects that
17	in the human gut, didn't it?	17	situation.
18	A. Yes.	18	Q. All right. Okay.
19	MR. TILLERY: Let's move to	19	So another criterion is that it be
20	Exhibit 111. This is SYNG-PQ-03719623.	20	an established emetic agent obviating the need
21	It's a single-page letter.	21	for extensive toxicological testing, correct?
22	(Botham Exhibit 111 marked for	22	A. Yes.
23	identification.)	23	Q. ICI would want to obviate the need
24	BY MR. TILLERY:	24	for extensive toxicological testing because
25	Q. Please look at it, Dr. Botham.	25	testing of that sort's very expensive, correct?
	Page 1294	1	Page 1296
1	A. Okay, I've got that.	1	A. It would be, yes. Yes.
2	Q. In this letter	2	Q. In effect, Dr. Foulkes was
3	A. Yes, I've read that, thank you.	3	instructing Dr. Rose's team to focus on known
4	Q. All right. In this letter,	4	emetics and not on the more expensive process
5	Dr. Foulkes, who is he?	5	for trying to develop new emetic compounds;
6	A. Well, again, I don't know the	6	would that be fair?
7	person but the header would suggest that	7	A. I don't think he was instructing.
8	he was in the registration section.	8	I don't think Mr. Foulkes, or Dr. Foulkes,
9	Q. Of ICI?	9	in registration will be doing anything other
10	A. Of ICI Plant Protection Division,	10	than offering his opinion.
11	excuse me.	11	Q. Okay. Was he their boss?
12	Q. Right. And he sets forth ideal	12	A. I don't know exactly what his role
13	criteria for a PQ emetic, an emetic a	13	would be but he certainly wasn't the boss of
14	formulation that would cause people to throw up	14	Dr. Rose or other people involved here.
15	to save their lives, right?	15	Q. Do you agree that in order to be
16	A. That's right.	16	an effective emetic, the proper dose has to be
17	Q. Get it out of their system?	17	determined?
18	A. Yes.	18	A. Yes, you clearly do need to
19	Q. All right. He says he can't imagine	19	estimate what an effective dose is likely
20	using a compound far removed from these	20	to be.
21	criteria, doesn't he?	21	Q. Do you agree that the proper dose
22	A. These seem to be the criteria that	22	would be the dose that, after the ingestion of
23	he believes to be important, yes.	23	a minimally lethal volume of a paraquat
24	Q. One of the criteria is that the	24	formulation, induces vomiting within the time
25	emetic be effective in a lethal volume of	25	required to absorb a minimally lethal dose of

	Page 129	7	Page 1299
1	paraquat?	1	red cover that we saw earlier, which described
2	A. Yes. You're describing the	2	the clinical trials, so this will be
3	optimal, desirable properties, yes.	3	Q. Okay.
4	Q. Well, the optimal meaning trying	4	A an estimate. This will be
5	to save the greatest number of lives?	5	an estimate. These numbers these number of
6	A. Exactly.	6	milligrams will be an estimate of the dose
7	Q. Okay.	7	that caused emesis in those clinical trial
8	MR. TILLERY: Let's move to	8	studies.
9	Exhibit 112, and this is	9	Q. That's your assumption. It came
10	SYNG-PQ-02450023.	10	from the Bayliss report
11	(Botham Exhibit 112 marked for	11	A. Yes.
12	identification.)	12	Q is that what your assumption is?
13	BY MR. TILLERY:	13	A. That's my assumption.
14	Q. This is a three-page letter so we'll	14	Q. All right. The Bayliss report is
15	give it to you. A four-page letter. We'll	15	the '73 report we've referred to earlier,
16	give it to you to read, please, if you'd look	16	right?
17	at this?	17	A. That's the one, yes.
18	MR. NARESH: And Steve, I suggest	18	Q. All right. There was and is no
19	that we we've been going for about an	19	scientific date that supports that statement by
20	hour and a half. After this document.	20	Dr. Rose to a reasonable degree of scientific
21	how about we take a break?	21	certainty that you're aware of other than that
22	MR. TILLERY: Absolutely.	22	scientific report, correct?
23	THE WITNESS: Okay, thank you.	23	
24	I've had a look through that.	24	A. Yeah, and I'm familiar with that
25	///	25	scientific report we just described by
	/// Page 1298	_	Bayliss, and there are so I know the data  Page 1300
,	BY MR. TILLERY:		
1		1	in there don't give a very precise estimation
2	Q. Okay. According to this report,	2	of what that dose could be. There's an
3	Dr. Rose's working party considered only	3	estimate of what it could be.
4	existing emetics, right?	4	Q. Does Dr. Rose also state that
5	A. It did.	5	ICI 63197 is fast-acting?
6	Q. One of which was 6397, right?	6	A. I can't remember whether he has
7	A. Yes. 63197, yes.	7	said that.
8	Q. And if you look at page 23, going on	8	Q. Well, let's assume he says it.
9	to page 24, Dr. Rose describes ICI 63197 as	9	We can look at it at the break.
10	"a potent, centrally acting emetic, causing	10	A. Mmm. Okay.
11	vomiting in man with oral doses of the order of	111	Q. Okay. Is that term is that
12	5mg."	12	term is that term
13	Correct?	13	MR. NARESH: Well
14	A. Correct.	14	MR. TILLERY: I'm sorry?
15	Q. Do you see it okay.	15	MR. NARESH: Rather than making an
16	You can't reconcile that statement	16	assumption, I think the discussion of
17	with the earlier statements in the	17	63197 is only one paragraph. I would
18	correspondence you received today that the	18	suggest that we read it rather than
19	emetic dose of ICI 63197 was between 4 to	19	making an assumption and having to redo
20	8 milligrams, the dose was 10 milligrams, and	20	it.
21	there was no clearly defined emetic dose of	21	BY MR. TILLERY:
22	63197, can you, unless there's intervening	22	Q. Go ahead and read it.
23	signs?	23	A. What are we reading here?
24	A. Well, I assume that this dose has	24	Q. We're looking for where Dr. Rose
25	come from that original ICI report in the	25	says it's fast-acting. Does he say that?

	Page 1301		Page 1303
1	A. Well, it says here that the	1	so we'll let you take a look at this and
2	compounds are examined for their suitability	2	control it yourself.
3	against the following criterion, including	3	(Botham Exhibit 113 marked for
4	fast-acting.	4	identification.)
5	It then says, under paragraph 4,	5	THE WITNESS: Okay, thank you,
6	"63197 was chosen as meeting all of the above	6	I've read that.
7	criteria," so I think that's perhaps where the	7	BY MR. TILLERY:
8	reference is that you're looking for.	8	Q. All right. This is a document
9	Q. All right. Is that term defined	9	SYNG-PQ-02450073, marked as Plaintiff's
10	anywhere in the report, to your knowledge?	10	Deposition Exhibit 113.
11	A. By which you mean what does	11	The front page, does Dr. Foulkes
12	fast-acting mean?	12	say and that's the same Foulkes we've talked
13	Q. Yes, sir.	13	about before, it's F-o-u-l-k-e-s.
14	A. Well, I don't think I've seen a	14	Does Dr. Foulkes say that the
15	clear definition of what fact-acting might	15	existing human data show that 0.05 grams per
16	mean, no, not to date.	16	liter of the emetic in Gramoxone is likely to
17	MR. TILLERY: Okay.	17	produce emesis following ingestion of
18	That's the end of that topic,	18	10 milliliters of Gramoxone?
19	Mr. Naresh, if you want to move on	19	A. Yes, that's what that says.
20	MR. NARESH: Yeah.	20	Q. At that time, ICI did not have any
21	MR. TILLERY: to a very brief	21	human data on the subject other than the data
22	let's make a I'd like to get finished	22	from the volunteer in clinical trials that
23	with this topic today before the end of	23	we discussed was conducted by Dr. Bayliss,
24	the dep so let's make it a very brief	24	correct?
25	break, sir, okay. Five minutes and we're	25	A. I believe that's the case, yes.
	Page 1302		Page 1304
1	back on, okay.	1	Q. All right.
2	MR. NARESH: Wendy, can you put us	2	MR. TILLERY: Let's move to 114.
3	in the breakout room. Thank you.	3	This is a single-page document so we'll
4	THE VIDEOGRAPHER: Of course.	4	display it.
5	We are going off the record.	5	(Botham Exhibit 114 marked for
6	The time is 3:31.	6	identification.)
7	(Off the record.)	7	BY MR. TILLERY:
8	THE VIDEOGRAPHER: We are back on	8	Q. It says, at the top, "Company
9	the record. The time is 3:40.	9	Secret," "Highly Confidential." It's
10	BY MR. TILLERY:	10	SYNG-PQ-0250068.
11	Q. And before we leave Exhibit 112,	11	Have you seen this before?
12	Dr. Botham, I just wanted to put on the record	12	A. I don't believe I have.
13	that the title of that document was "Report of	13	Q. At the bottom it's got "Monkey study
14	Working Party on the feasibility of adding	14	being undertaken at Huntingdon." Do you see
15	an emetic to Gramoxone," dated July 29, 1976,	15	that?
16	and it is listed at the top "Company Secret,"	16	A. I do.
17	"Highly Confidential," and it's composition of	17	Q. Okay. What is Complan?
18	working party is a Mr. Davies, Mr. Samuels,	18	C-o-m-p-l-a-n.
19	Mr. Nicholls, Mr. Foulkes and Mr. Rose.	19	A. I assume that that is the kind of
20	Those were all ICI people as far as	20	dietary substance that is used to, in humans
21	you know, correct?	21	actually, to promote good digestion.
22	A. As far as I know, yes.	22	Q. Actually to add weight, too, right?
23	Q. All right.	23	A. Mmm. Yes. Through better
24	MR. TILLERY: Let's go to	24	digestion, yes. Mmm.
25	Exhibit 113. This is a two-page document	25	Q. Why was Complan being used as

	Page 1305		Page 1307
1	a carrier in paraquat and paraquat plus emetic	1	BY MR. TILLERY:
2	given to the dogs by oral gavage in the study?	2	Q. Okay. Using Complan as a carrier
3	A. I'm afraid I don't know the answer	3	would also increase the effectiveness of
4	to that.	4	vomiting if vomiting did occur, wouldn't it?
5	Q. Okay. Using Complan as a carrier	5	MR. NARESH: Objection to form,
6	would make the dosing solution thicker, or more	6	foundation.
7	viscose, wouldn't it, if you understand the	7	THE WITNESS: And the basis for you
8	characteristics of Complan?	8	saying that is what, may I ask?
9	A. It's possible, yes. Yes.	9	BY MR. TILLERY:
10	Q. Using Complan as a carrier would	10	Q. Reverse peristalsis, the methodology
11	keep the solution in the stomach longer,	11	by which it occurs is if there's volume in the
12	delaying paraquat from reaching the parts of	12	gut and reverse peristalsis occurs, it is
13	the digestive system where it would be more	13	a muscular reaction that forces the contents of
14	readily absorbed than it is in the stomach,	14	the stomach upward, out through the esophagus,
15	wouldn't it?	15	out of the body?
16	A. I don't know whether that would be	16	A. Yes.
17	the case. I couldn't comment from a science	17	Q. If there's volume there it takes the
18	perspective.	18	rest with it. You understand that part of it,
19	Q. Well, let's walk it through. You're	19	right?
20	the scientist and I know just a little bit	20	A. Yes. I understand that, yes.
21	about it. If it's a thick, viscose material	21	Q. Does that make sense to you?
22	that is highly adherent to the molecules of	22	A. That does, yes.
23	paraquat, would it without adhering any	23	Q. All right.
24	more, would it be likely to retain in the	24	MR. TILLERY: Let's go to 115.
25	stomach before passage into the small intestine	25	This is a one-page document.
	Page 1306		Page 1308
,	•	١,	
1	the chemical paraquat?	1	Can you display the whole thing so
2	A. Well, you've made an assumption	2	he can see it. Yes, thank you.
3	there that paraquat would essentially bind	3	Take your time reading this,
4 5	to Complan and I don't know whether that	4	Doctor. It's Plaintiff's Deposition
6	happens.	5	Exhibit 115.
7	Q. Okay. So you don't know whether or	6	(Botham Exhibit 115 marked for
	not it binds or not, right?  A. I don't know.	7	identification.)
8 9		8	THE WITNESS: Okay, I've read that.
1 -	Q. Do you know anything else of	9	BY MR. TILLERY:
10 11	okay.	10 11	Q. Okay. Dr. Rose strike that.
12	A. I don't know, sorry.		Dr. Smith tells Dr. Rose the reason
13	Q. If it does bind, if it turns out you	12	for using Complan is what?
	leave the deposition and you find out that	13	" in order to optimise the
14	I'm right, that Complan actually binds with	14	effectiveness of vomiting."
15	paraquat, then using Complan as a carrier would	15	Right?
16	keep the solution in the stomach longer,	16	A. That's what that says, yes.
17	delaying paraquat from reaching the parts of	17	Q. Did ICI ever intend to put Complan
18	the digestive system, and that's primarily the	18	in its formulated paraquat products?
19	small intestine as you indicated, where it is	19	A. I've never heard that before.
20	more readily absorbed than it is in the	20	Q. Did ICI, to your knowledge, ever put
21	stomach; correct?	21	Complan in its formulated products?
22	MR. NARESH: Objection to form.	22	A. I don't believe so.
23	THE WITNESS: That is that is	23	Q. Does Syngenta currently put Complan
24	a potential scenario, yes.	24	in its formulated paraquat products?
25	///	25	A. No.

Page 1309  1 Q. Did ICI have reason to believe people were ingesting Complan along with paraquat in poisoning cases?  1 Q. Well, because they answered it for you, Dr. Smith said, because it increases effectiveness of vomiting. It's a viscose	age 1311
2 people were ingesting Complan along with 2 you, Dr. Smith said, because it increases	
	or
2 affectiveness of veniting little a risease	the
paraquat in poisoning cases:   5 effectiveness of voluting. It's a viscose	
4 A. I doubt it. 4 material. When you have convulsive effective.	ect from
5 Q. Okay. You had no anecdotal reports 5 vomiting, it increases the effectiveness.	
6 they were drinking a British product called 6 That's what Dr. Smith said. That's	·
7 Complan in America while they were also 7 what he told Dr. Rose, didn't he?	1 ()
8 ingesting, accidentally, a mouthful of 8 A. Yeah, I think I'm still	
9 paraquat, were you? 9 MR. NARESH: Objection to form	
10 A. No. 10 THE WITNESS: struggling to 1	cnow
11 Q. All right. Then how well would 11 why that how that would be the case	Ε,
adding Complan to dosing solutions in animal unless it was, in some way I don't	
experiments help in modeling real-world 13 know if this is what you were referring	g
poisoning incidents?   14 to, the presence of a bulk in the stoma	ch
MR. NARESH: Objection; form, 15 somehow helps the process of vomiting	ıg,
16 foundation.   16 but I don't I honestly don't know wh	at
THE WITNESS: Well, I'm not sure 17 that statement was based on.	
exactly why this was done, but whilst 18 BY MR. TILLERY:	
we have this because I've never seen 19 Q. And you don't know one way or	
20 this before. 20 another whether that's the case?	
21 Whilst we're looking at this, I 21 A. No, I really don't know. I'm	
22 would just point out the NB, which says 22 sorry, I wasn't involved in the research at	
23 this stage.	
24 "I understand the LD50 in monkeys 24 Q. All right. But can you tell me ho	
to be approximately 70 mgs/kg and when 25 adding Complan to dosing solutions in ar	imal
Page 1310	age 1312
1 given in Complan to be approximately 1 experiments would help in modeling real	-world
2 80 mgs/kg." 2 poisoning accidents?	
Well, actually, as a toxicologist,  3 A. I would say, this is just purely	
4 that's pretty much the same. That's 4 hypothesis of opinion, it may be that in so	ome
5 within the margin of error of those kind 5 way it's trying to mimic the reality that w	hen
6 of studies, so that suggests to me that 6 human beings perhaps take paraquat, they	
7 actually the presence of Complan doesn't 7 have eaten a meal so their stomach might	be
8 affect the toxicity of paraquat. 8 might contain undigested food.	
9 BY MR. TILLERY: 9 Q. Is that your is that what you	
Q. Well, it says here it optimizes the 10 think they were doing this for?	
effectiveness of vomiting. Right? 11 A. No, I'm giving you my potential	
12 A. Yeah, I guess I was reading that 12 explanation. I honestly do not know why	they
out in answer to the discussion or to build on 13 did it, what their explanation was.	
the discussion we had a few moments ago, that Q. It actually wouldn't help; it would	i
15 Complan does not necessarily and any 15 hurt by making the experience unreflective	e of
binding to paraquat doesn't necessarily seem   16 real-world incidence, wouldn't it? Addin	g
to have an effect on the toxicity of paraquat.   17 Complan that doesn't exist or didn't exist	
18 Q. Okay. 18 in the United States, adding that to these	
A. So as I haven't seen that before, 19 animals would create an experiment result	t that
20 I thought I would just add that. 20 would not be reflective of real-world	
21 Q. If it doesn't do anything to the 21 incidents, correct?	
22 analysis, then why were they adding it to the 22 MR. NARESH: Objection to form	l,
23 test animals? Why? 23 foundation.	
24 A. I really don't I'm afraid, I'm 24 THE WITNESS: Real-world situa	
25 sorry, I really don't know why. 25 would always be hugely variable, wou	ldn't

	Page 131	3	Page 1315
1	they? What's in the stomach from one	1	milligram-per-kilogram body weight than the
2	individual to another will be very	2	minimally lethal milligram-per-kilogram dose in
3	variable, and so I don't know that you	3	humans that was used in setting the
4	can say what you're saying is true, but,	4	concentration of the emetic in Gramoxone?
5	equally, I don't know whether they added	5	A. So they were given just repeat
6	Complan in some way to compensate for	6	that, sorry, so I can understand that again.
7	that. I think it's not possible for me	7	Q. Do you agree that the animals in
8	to comment any further.	8	these studies were given a far greater dose of
9	BY MR. TILLERY:	9	the emetic, in terms of milligrams per kilogram
10	Q. So according to this, Dr. Rose was	10	of body weight, than the minimally lethal
11	to conduct or have conducted animal studies in	11	milligram-per-kilogram dose in humans that was
12	part to estimate the dose-response relationship	12	used in setting the concentration of the emetic
13	of 63197, correct?	13	in Gramoxone?
14	A. Yes.	14	A. So what concentration of emetic in
15	Q. Is that right?	15	Gramoxone do you think is being added to make
16	A. Well, this not the dose-response	16	that comparison
17	of 63197. Excuse me, I was still reading this	17	Q. I'm asking yeah, I'm asking you
18	document. This	18	if this dose was far greater than the dose that
19	Q. Actually, it'd be the 63197/PP796.	19	ended up in Gramoxone, by milligrams per
20	A. Yeah. What I've just what	20	kilogram for these test animals.
21	I'm reading here, I'm just checking again my	21	A. I'm just trying to remember what
22	understanding, is that they are I assume	22	that dose is. So what dose do you think is
23	that they've got a dose of emetic, PP796,	23	added?
24	which they've added to the paraquat and they	24	Q. Actually, I don't have it in my mind
25	have tested here two doses of paraquat.	25	right now. We'll get to it down there.
		-	
	Page 131	1	Page 1316
1	How they varied the emetic level, if at all,	1	Without that reference and I'm
2	I don't think you can see from this telex	2	not trying to test your recollection of it.
3	here.	3	You don't know what it is?
4	Q. Those studies were conducted in	4	A. I think I just need to be these
5	pigs, dogs and primates having a vomit reflex,	5	dose levels are often shown in different ways,
6	correct?	6	so, yeah, let's just make sure we understand
7	A. That's the reason for choosing	7	what that dose level in humans is.
8	those species, yes, of course, so that they're	8	Q. Okay. I don't have that number with
9	able to vomit.	9	me right now so I really don't often I think
10	Q. Yes.	10	it's going to be apparent in the next line of
11	MR. TILLERY: Let's go to 116,	11	questions.
12	please. This is SYNG-02450705. Please	12	A. Okay.
13	take a look at this one-page document,	13	Q. We can mark this back if you want.
14	sir.	14	Do you agree that the animals in
15	(Botham Exhibit 116 marked for	15	these studies were given a greater dose of the
16	identification.)	16	emetic in relation to the dose of paraquat they
17	BY MR. TILLERY:	17	were given in other words, emetic to
18	Q. If you wouldn't mind, as you read	18	paraquat than the dose of emetic in relation
19	this, take note of the amount of the emetic	19	to the dose of paraquat that was ultimately
20	that they were given.	20	decided to be included in Gramoxone?
21	A. Okay, so they were given	21	A. Well, for the same reason, I think
22	2 milligrams per kilogram of the emetic.	22	it would be helpful to try and look at those
23	Q. Okay. Do you agree that the animals	23	data as we move through this so I can be sure
24	in these studies were given a far greater dose	24	that I'm answering
	- 1		
25	of the emetic in terms of	25	Q. All right. So we'll

	Page 1317		Page 1319
1	A that I can answer your question	1	to you to look at.
2	accurately.	2	The question I'm going to read
3	Q. We'll come back to 116, okay.	3	give you the question
4	MR. TILLERY: Let's go to 117 at	4	A. Mmm.
5	this time. This is a multipage document.	5	Q and then you can look for this
6	If you would take a look at it, please.	6	as I go through it, okay, as you go through the
7	(Botham Exhibit 117 for	7	exhibit.
8	identification.)	8	A. Okay.
9	THE WITNESS: Okay. Yeah,	9	Q. This document here appears to be
10	thank you, I can I'm familiar with	10	related directly to the exhibit we just saw,
11	what this document is now.	11	right?
12	BY MR. TILLERY:	12	A. Yes, I think that's probably true.
13	Q. All right. This is correspondence	13	Q. And Dr. Cavalli we've talked about
14	from ICI to Chevron enclosing a draft of	14	several times, of Chevron, states in this
15	Dr. Rose's report regarding his emetic testing	15	document that he had reviewed the studies
16	in animals and his estimation of the emetic	16	provided by ICI and was concerned:
17	dose for humans, correct?	17	" [an] argument for 5 milligrams
18	A. That's right.	18	being an effective emetic dose in man is weak
19	Q. At the second page, the report	19	and still does not support the statement that
20	states if we could pull up that second page	20	it will cause emesis in 85 percent by 15
21	and display it that at 5 milligrams in	21	minutes. I believe EPA will likely require
22	10 milliliters, 0.05%, it is estimated that	22	actual data regarding effectiveness of dose
23	about 70% of those ingesting	23	recommended in humans."
24	A. Sorry, I can't see what you're now	24	Do you see that?
25	reading.	25	A. Yes.
	Page 1318		Page 1320
1	Q. All right. Let's go back to the	1	Q. And then Dr. Cavalli then suggests
2	document. Let me see if I can give you the	2	a volunteer human trial to evaluate the
3	exact actually yeah, where it says	3	dose-response relationship for the emetic,
4	"Summary." It should be page 3, 444.	4	doesn't he?
5	Do you see the summary information,	5	A. Yes.
6	sir?	6	Q. That trial was never done, to your
7	A. Yes, I can see that, thank you.	7	knowledge, was it?
8	Q. The report states that at	8	A. I have got no record of such
9	5 milligrams in 10 milliliters	9	a trial having been done, no.
10	A. Yeah.	10.	Q. All right.
11	Q or 0.05%. Do you understand that	11	MR. TILLERY: Let's go to 119.
12	percentage, okay?	12	(Botham Exhibit 119 marked for
13	A. Yes.	13	identification.)
14	Q. It is estimated that about	14	BY MR. TILLERY:
15	70 percent of those ingesting 10 milliliters of	15	Q. Now, this is one lengthy, like
16	the paraquat formulation will vomit within	16	a legal-sized sheet that was provided to us, so
17	an hour. Is that right?	17	you'll probably have to go down the sheet when
18	A. Yes, that's what that says.	18	you take charge.
19	Q. All right.	19	A. Yeah, I've not got I don't have
20	MR. TILLERY: Now let's go to 118.	20	charge of this document, sorry.
21	This is CUSA-00088433.	21	Q. Okay.
22	(Botham Exhibit 118 marked for	22	MR. TILLERY: Let's give it to him
23	identification.)	23	and let him look at it.
24	BY MR. TILLERY:	24	BY MR. TILLERY:
25	Q. It's like a telex. We'll give it	25	Q. Actually, looking at just the first

	Page 13	21		Page 1323
1	half of the page for questions but take a look	34	1	the evidence for it is certainly weak, a
2	at the whole thing.	- 1	2	responsible and reasonable step that a prudent
3	A. Okay. Can you give me control,		3	scientist would make under these circumstances,
4	please?		4	in your opinion, sir?
5	Q. Oh, I thought we did. It shows we		5	A. Well, as it happens, I mean,
6	did. I'm sorry.		6	I relatively recently looked at those same
1 7	A. I can still only see the top of		7	clinical data myself. I agree that with
8	this document.		8	today's standards of clinical trials you could
9	MR. TILLERY: Why don't we just		9	describe them as weak. They're not perfect,
10	let's move it forward for him. It's one		10	but a reasonable estimate of effective dose
11	lengthy page. There we go. Just keep	- 1	11	was and could still be made. So it's not
12	moving it down slowly for him to see.		12	ideal but it was not not completely
13	Keep going down now. If you go down		13	unreasonable.
14	until where the 1 is at the top. There,		14	Q. When did you look at them?
15	stop there for him.		15	A. I've looked at them a couple of
16	THE WITNESS: Okay, I can see that	- 1	16	times in the last two years.
17	bit.		17	Q. Okay. What were the circumstances
18	BY MR, TILLERY:		18	by which you started looking at emetics data
19	Q. I'm not going to ask about number 2	-	19	back in the '70s? What caused you to do that?
20	but we can show it to you in case you want	- 1	20	A. Are you talking about me
21	to see this.		21	personally?
22	MR. TILLERY: Advance it so he can		22	Q. Yes.
23	see the rest of the letter. That's the		23	A. I wasn't looking at
24	end of it.		24	Q. Why did you start
25	THE WITNESS: Okay.		25	A. Sorry, I didn't look at them in the
	Page 13	22		Page 1324
1	BY MR. TILLERY:		1	1970s.
2	Q. Okay?		2	Q. No, I said you said you started
3	A. Yeah, sure.	- 1	3	in the last couple of years looking at
4	Q. All right.	- 1	4	documents and one of these documents date
5	MR. TILLERY: If you would go back		5	back to the 1970s.
6	up to number 1, paragraph number	- 1	6	A. Yes.
7	that's it right there.		7	Q. Why would you start why in the
8	BY MR. TILLERY:		8	world would you start looking at archival
9	Q. This is Dr. Rose's response		9	emetics data?
10	to Dr. Cavalli's concerns, isn't it?		10	A. Because we have been asked again
11	A. Yes.		11	if we could look at the evidence for the
12	Q. And at 732, this first page here,		12	effectiveness of the emetic.
13	he admits that the clinical data is certainly		13	Q. Who was it that caused that?
14	weak, doesn't he?	- 1	14	Who asked again?
15	A. Yes.		15	A. We were asked by a former employee
16	Q. Does Dr. Rose go on to say:		16	of ICI.
17	"In the absence of hard evidence,		17	Q. And who was that?
18	I have produced a draft report making the case	- 1	18	A. Professor Jon Heylings.
19	for addition at 5mgs in 10mls We believe		19	Q. And why did he ask you to do this?
20	this case adequate for proposed European		20	A. Because he felt that there were
21	registration."		21	other ways in which those clinical data could
22	Do you see that?		22	have been interpreted.
23	A. Yes, that's what that says.		23	Q. Okay. And he had a different
24	Q. Is the belief that a regulator can		24	interpretation than who?
25	be convinced to accept a claim, even though		25	A. Than, for example, Dr. Rose.

	Page 1325		Page 1327
1	Q. So did he have some position that	1	aren't you, sir?
2	he took with your company?	2	A. You know, I don't know that I've
3	A. Did who have did Dr. Heylings	3	actually seen this particular document.
4	have a physician?	4	Q. This was sort of how it was
5	Q. Yes, did he have something that was	5	launched, wasn't it, worldwide, the emetic?
6	on his mind that he	6	A. Well, that would suggest from
7	A. Oh, position	7	the title it would suggest so, yes.
8	Q wanted to share with Syngenta?	8	Q. All right. This document indicates
9	A. Sorry, your question was did	9	that ICI intended to use its patents on PP796,
10	he have a position, not a physician?	10	the compound itself, and in formulations with
11	Q. Yes, a position.	11	paraquat to preclude competitors from entering
12	A. Yeah, yeah. Yes, he had a position	12	paraquat markets around the world, by
13	that he believed that an incorrect	13	convincing regulators to mandate only emetic
14	interpretation had been made by Dr. Rose.	14	formulation of paraquat, doesn't it?
15	Q. Do you know or understand that	15	A. Well, I have not you have not
16	Dr. Cavalli from Chevron looked at the data	16	pointed that out in the document so I can only
17	of 1976 and said that he didn't believe it	17	confirm if you'll allow me to do that.
18	supported 5 milligrams per kilogram? Were you	18	Q. Right. Well, you know, let me just
19	aware of that?	19	say this, that if you're saying you don't know
20	A. No, I was not aware of that.	20	the document, you don't understand that or
21	Q. Okay.	21	you've never learned of that or never known
22	MR. TILLERY: Do you have the next	22	it as the worldwide or chief of science, and
23	one, 742? Okay. Let's go to what	23	in all of the meetings you've had over
24	number's that? 120.	24	Dr. Heylings's complaints in his reports
25	We'll go to Plaintiff's Exhibit	25	worldwide about the number of deaths that have
	Page 1326		Page 1328
1	No. 120, and that's SYNG-PQ-04262668 -	1	occurred unnecessarily over the years from not
2	2695.	2	putting the appropriate emetic in this chemical
3	(Botham Exhibit 120 marked for	3	paraquat, you're telling me you've not looked
4	identification.)	4	at this document, right?
5	THE WITNESS: Okay.	5	A. I don't think I've seen
6	BY MR. TILLERY:	6	MR. NARESH: Object
7	Q. Do you have	7	THE WITNESS: this particular
8	A. I can see it. Is there a	8	document.
9	particular part of the document you would like	9	I'm sorry, Ragan's saying
10	me to read?	10	something.
11	Q. Actually, I don't think so.	11	MR. NARESH: Please let me get my
12	This document sets forth ICI's	12	objections in.
13	worldwide strategy for the introduction of	13	I'm objecting to the form of the
14	an emetic formulation of paraquat, doesn't it?	14	question.
15	A. Yes, that's what that says.	15	Go ahead.
16	Q. And this is the "Emetic Formulation	16	THE WITNESS: Yeah. So I do not
17	of Paraquat: Proposed Strategy For Introduction	17	believe that I have read this specific
18	Worldwide," EDC Paper No. 729. Correct?	18	document. I don't recall having done so.
19	A. Yes, correct.	19	BY MR. TILLERY:
20	Q. It says, at the top, " Original	20	Q. Well then let me ask the question
21 22	report by M.S. Rose as appendix," right?	21	this way. Did ICI intend to use its patents on
23	A. Yes, that's correct.	23	this emetic, which is referred to as PP796
23 24	Q. And this author is P. Slade, right?		here, which you identified is the same
24 25	<ul><li>A. Yes.</li><li>Q. You are familiar with this document,</li></ul>	24 25	compound, correct? A. Correct.
25	Q. I ou are familiar with this document,	120	A. COHCOL

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	1	
Q. Did it intend to use these patents	1	believed that the prospects of competitors
themselves in formulation with paraquat to preclude competitors from entering the	2	discovering suitable alternative emetics
The state of the s	3	to 796, PP796, were very remote?
4 paraquat markets around the world?	4	MR. NARESH: Objection; foundation.
5 A. Well, I can't comment on that	5	THE WITNESS: Again, I can't
6 commercial strategy. I certainly know that	6	comment. I don't know.
7 it was important that PP796 could confer some	7	BY MR. TILLERY:
8 commercial advantage. That's as much as	8	Q. Would you agree that ICI's goal in
9 I know from the information that I've been	9	introducing the emetic around the world, as set
10 given.	10	forth in this document, was to leverage the
Q. And how would commercial advantage	11	emetic to maintain ICI's monopoly on the market
be defined in that comment, sir?	12	for paraquat products after its patents on
A. Well, it could potentially include	13	herbicidal formulations of paraquat expired?
what you just said, but these are discussions	14	MR. NARESH: Objection; form,
that I was never a part of, and my recent	15	foundation.
investigation of this literature really didn't	16	THE WITNESS: Well, as I believe
go into that into that part of the history.	17	that I've never read this document,
18 Q. You wouldn't disagree with the	18	I can't, equally, give you an accurate
notion that this was included for paraquat	19	answer to that question.
20 markets around the world as a formulated	20	BY MR. TILLERY:
21 product with this emetic to maintain control	21	Q. Do you have any information from any
22 over the paraquat market? You wouldn't	22	source that what I just asked you is wrong?
23 disagree with that, would you?	23	A. No, I don't have any information
A. I would say that the main reason,	24	which says that your interpretation is wrong.
as we've been going through this this	25	MR. TILLERY: Okay. Let's go
Page 1330		Page 1332
afternoon, was that we wanted to make paraquat	1	to 121. This is CUSA-00088398.
2 a safer product.	2	(Botham Exhibit 121 marked for
Q. Okay. Would you also include as one	3	identification.)
4 of the reasons that by adding it in	4	BY MR. TILLERY:
5 formulations with paraquat and patenting it,	5	Q. This is a one-page document so
6 that it precluded competitors from entering the	6	she'll just display it for you, sir. I'll give
7 paraquat markets around the world?	7	you a second to look at it and then I have some
8 A. Well, I'm not an expert on the	8	questions.
9 implication of patenting on marketing, so,	9	A. Okay, I've read that.
you know, I don't think it's right that	10	Q. This is a letter to Chevron,
11 I should speculate on an area which is not	11	enclosing a copy of Dr. Rose's final report,
12 in my area of expertise.	12	CTL/R/390, which is the report in which
Q. Okay. Do you have any information	13	Dr. Rose determined the concentration of PP796
that says that I'm just wrong about that?	14	that was ultimately included as an emetic in
15 A. No, I'm not saying you're wrong.	15	
		paraquat products, correct?
16 I'm just not able, from my knowledge base, 17 to give you confirmation.	16 17	A. Correct.
		Q. In that report, Dr. Rose concluded
Q. Would you agree with me that ICI	18	that the emetic concentration should be
believed the prospects of competitors	19	0.5 grams per liter in the standard 200 gram
discovering suitable alternative emetics were	20	per liter Gramoxone product, correct?
21 remote	21	A. Yes, that's correct.
A. Again, I can't	22	MR. NARESH: Objection; foundation.
Q suitable to strike that.	23	BY MR. TILLERY:
24 I'm striking the question.	24	Q. He also concluded in that report
25 Would you agree with me that ICI	25	that this concentration would be expected

			Page 1335
1 1	to produce vomiting within one hour in the	1	selecting data to support a desired conclusion
2	majority of those people ingesting such	2 3	cherry-picking, don't they?
3	quantity, which is the approximate minimum	4	MR. NARESH: Objection to form, foundation.
4	lethal dose of Gramoxone in man, correct?	5	
5	A. That's correct.	6	THE WITNESS: Yes, that sometimes is an accusation.
6	Q. If you look up at this document,	7	BY MR. TILLERY:
7	there's references to it says copies	8	Q. Okay. It's a practice that good
8	to Waitt, Calderbank, Foulkes, Barratt, Smith, Litchfield. Who are those people?	9	scientists frown upon, don't they?
9 10	A. Well, starting from the bottom,	10	A. It is.
11	Dr. Litchfield was a product toxicologist in	11	Q. What Dr. Rose did was
12	CTL. Dr. Smith is the same Dr. Lewis Smith	12	cherry-picking, wasn't it?
13	we have mentioned various many times.	13	A. Well, as we as you now have had
14	Dr. Barratt, I don't know who he was, but	14	confirmed by me, I've looked at those data
15	clearly it says he was in the United States	15	with other colleagues more recently and we
16	for ICI. Dr. Foulkes we've talked about.	16	we actually think that Dr. Rose made a not
17	Dr. Calderbank was in the plant protection	17	unreasonable job of trying to find an
18	division of ICI in Jealott's Hill. And	18	appropriate dose response from those very
19	Mr. Waitt, again, I'm not sure what his role	19	I mean, they were described as weak data
20	Was.	20	earlier. They were not particularly good data
21	Q. Okay. He also concluded in the	21	to try and do that.
22	report that this concentration I'm sorry,	22	Q. Was he cherry-picking or not?
23	strike that.	23	Can you answer straight up yes or no?
24	The conclusion that Dr. Rose reached	24	A. My judgment is that he was not
25	was based on dose-response curves that he said	25	cherry-picking.
	Page 1334		Page 1336
1	showed that ICI 63197/PP796 was ten times more	1	Q. Okay. That's what I needed to hear,
2	potent in man than in the three other vomiting	2	one way or nothing.
3	animal species studied, correct?	3	There was no other human data on
4	A. Yes, indeed, that is correct.	4	which Dr. Rose relied, was there?
5	Q. All right. And we'll wait until	5	A. I'm not aware of any other human
6	you're finished there, sir.	6	data, no.
7	A. Yeah, okay.	7	Q. No. For the main global product
8	Q. Are you	8	Gramoxone, containing 200 grams per liter of
9	A. I'm just making checking so	9	paraquat ion, ICI followed Dr. Rose's
10	I've got a record of some of these numbers.	10	suggestion and set the emetic concentration at
11	Do go ahead.	11	0.05 gram per liter, or 0.05 percent, correct?
12	Q. All right. Do you need to consult	12	A. Did we not just say 0.5, not 0.05?
13	some other document to	13	Q. It's 0.05 percent, 0.5 gram per
14	A. No, no, no, I'm just making sure	14	liter.
15	I've got some of these figures to hand that	15	A. Yes, yeah, I thought you'd
16	we were talking about.	16	I think you'd said 0.5
17	Q. All right. Okay. The human data on	17	Q. The same measure it's the same
18	which Dr. Rose based the human dose response	18	measurement.
19	curve was some but not all of the data on	19	A. Yeah.
20	vomiting as a side effect collected during the	20	Q. If I misspoke, it's
21	volunteer trials, and some but not all of the	21	A. I think you yeah, 0.5 grams per
22	data on vomiting as a side effect collected	22	liter, yes. 0.05 percent.
23	in the ICI pharmaceutical trials, wasn't it?	23	Q. 0.5 grams per liter is the same as
24	A. That's correct.	24 25	0.05 percent?
25	Q. Scientists call the practice of	145	A. That's correct, yes.

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١.,			
1 2	Q. Okay. All right.	1	these together. Look at the first one and then
2	The Rose report, an internal ICI	2	pull up the second one.
3	report that was never actually published,	3	A. The first one is a 643-page
4	is cited in the open literature, isn't it?	4	document.
5	A. Yes, it is.	5	Q. That's correct. And what we're
6	Q. For example, the Onyan and Bullins	6	trying to do is just direct your attention
7	Human Toxicology, as evidence for the effective	7	to the beginning so you understand and can
8	dose of an emetic in man, isn't it?	8	identify it.
9	A. It is.	9	And these exhibits, for your
10	Q. Okay. The report was among data	10	reference, sir, comprise Chevron's application
11	Chevron submitted to the United States EPA that	11	for an exemption from tolerance for the
12	helped convince the EPA not to put paraquat on	12	inclusion of PP796 as an inert ingredient in
13	a list of products subject to a rebuttable	13	paraquat formulations.
14	presumption against registration, wasn't it?	14	If you would look at that and
15	A. That bit, I'm not sure that I knew	15	confirm.
16	that directly.	16	A. Right, well, I'm reading
17	Q. Were you aware of the fact that the	17	Q. This is
18	number of deaths from ingestion had caused the	18	A. I'm reading page 3. Is that the
19	United States EPA to consider putting paraquat	19	place where I would find that?
20	on the list of rebuttable the list of	20	Q. Actually, yes. And if you look at
21	products subject to a rebuttable presumption	21	page I think it's 015 in the first exhibit,
22	against continued registration in the 1970s?	22	you'll see, I think, that's the third page.
23	A. No, because I wasn't around in	23	It says to the United States to the
24	the company at that time.	24	Environmental Protection Agency, April 1, 1977.
25	Q. Okay. In deciding not to put	25	A. Okay.
	Page 1338		Page 1340
1	paraquat on that list, they call it the RPAR	1	Q. Do you see that?
2	list, the EPA required that the emetic be	2	A. You've taken control now so could
3	included in Chevron's paraquat products, didn't	3	you just go to the right page, please?
4	it?	4	Q. We'll open it yes, we will.
5	A. Again, I can't confirm that because	5	MR. TILLERY: This page right here.
6	I wasn't around at the time, I haven't seen	6	It's it would be there's a blank
7	the documentation.	7	and then this page, it'll be page 3.
8	Q. Okay.	8	BY MR. TILLERY:
9	MR. TILLERY: Let's go to the next	9	Q. There we go.
10	exhibit. What number would that be?	10	A. Mmm-hmm. Okay, thank you.
11	122. We're going to 122 and 123.	11	Q. So "We are interested in obtaining
12	We'll go to 122. This is	12	clearance for" and then it describes the
13	SYNG-PQ-01858013.	13	chemicals, and it describes this particular
14	(Botham Exhibit 122 marked for	14	inert as "an inert ingredient for [inclusion]
15	identification.)	15	use as an emetic at not more than 0.1% in
16	MR. TILLERY: Okay. We also ought	16	paraquat dichloride herbicide formulations."
17	to I think these are to be used	17	Do you see that?
18	together. He'll have to look at	18	A. Yes, I do.
19	number 123 at the same time, and this is	19	Q. And this was done by Chevron
20	exhibit SYNG-PQ-01857812, and we'll call	20	
21	,	1	Chemical Company?
22	it Plaintiff's Deposition Exhibit 123.	21	A. Yeah.
23	(Botham Exhibit 123 marked for	22	Q. Okay. And I'll ask you if the
	identification.)	23	support for the application includes the Rose
24	BY MR. TILLERY:	24	report and about 19 other ICI reports.
25	<ul> <li>Q. So we're going to have you look at</li> </ul>	25	I think you'll find those, if you

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	Page 1341		Page 1343
1	want to reference them, on the listing of	1	next one below it, "A Summary of Clinical
2	documents on pages if you go to 020, which	2	Results of the Phosphodiesterase Inhibitor"
3	is right here, list of documents, and 021.	3	Imperial Chemical Industries Limited.
4	MR. NARESH: Steve, do you want him	4	The next one, "The Concentration of
5	to confirm the Rose report or the	5	PP 796"
6	number 19?	6	Do you see that?
<b> </b> 7	MR. TILLERY: Actually, he can do	7	A. Yes.
8	them all at the same time.	8	Q. Next one, "The Emetic Effects of ICI
9	BY MR. TILLERY:	9	63,197"
10	Q. And there's no mystery about it.	10	Do you see that?
11	I'm just asking you to confirm what's in the	11	A. Yes.
12	document. I'm not asking you to interpret it,	12	Q. These are documents that are created
13	Dr. Botham, okay.	13	by ICI that Chevron used when they made this
14	A. Okay.	14	filing to the United States EPA for an order of
15	MR. TILLERY: Is that the first	15	clearance for listing this emetic in paraquat,
16	page, "Listing of Documents"? 020?	16	for use in paraquat, right?
17	If you go up just a little bit, take that	17	A. Okay, yes, fine with that.
18	down just a tiny bit. There you go.	18	Q. All right.
19	More.	19	Would it have cost more to include
20	BY MR. TILLERY:	20	a larger concentration of the emetic in
21	Q. Okay, "Title of Document." "Listing	21	paraquat products?
22	of Documents," and it's got "Title of Document"	22	MR. NARESH: Objection; foundation.
23	and the first one, "Submission of Evidence to	23	THE WITNESS: I'm not an expert on
24	[the] Committee on Study of Drugs Prior to the	24	those matters, but, yeah, common sense
25	Introduction to Humans of I.C.I. 63,197	25	would tell you probably.
	Page 1342	<del></del>	Page 1344
		1	
1	Chemistry and Pharmacy. Imperial Chemical	1	BY MR. TILLERY:
2	Industries Limited. July 1970."	2	Q. Was Zeneca, another corporate
3	Do you see that?	3	predecessor, another name of one of the
4	A. Yes.	4	entities preceding the formation of Syngenta?
5	Q. And then go to the push the page	5	A. It was.
6	up a little further. And if you go to the	6	MR. NARESH: Objection to the form.
7	bottom of the page, 8A, do you see that?	7	MR. TILLERY: Okay.
8	A. Yes. Yes.	8	MR. NARESH: Could you rephrase
9	Q. There. Thank you. All right.	9	that question, please?
10	That's I.C.I. 63,197. Volume III; I.C.I.	10	MR. TILLERY: Absolutely.
11	63,197 Volume IV; Paraquat Emetic Formulation.	11	BY MR. TILLERY:
12	Do you see that?	12	Q. Was Zeneca another corporate
13	A. Yes.	13	predecessor of Syngenta; and you said yes,
14	Q. Okay. Let's go to the next page.	14	okay?
15	The first item, "The Effect of administration	15	MR. NARESH: I'll object to the
16	of an Emetic (PP 796) on Paraquat Toxicity in	16	form.
17	Dog and Monkey" by M.S. Rose, Report No.	17	And Steve, we have reached an
18	CTL/R/391. November 1976."	18	agreement on discovery on topics like
19	Do you see that?	19	this, and so I'd asked you to
20	A. Yes.	20	MR. TILLERY: Yeah, yeah. I'm just
21	Q. Then let's take the page up a little	21	confirming for this record because
22	further. And then you see where it says "ICI	22	I'm going to ask him about Zeneca, okay.
23	63,197"?	23	MR. NARESH: Yeah, just ask him if
24	A. Yes.	24	it's the name.
25	Q. That's another ICI document. The	25	MR, TILLERY: Right.

	Page 1345		Page 1347
1	BY MR, TILLERY:	1	personally confirm what you've said one
2	Q. So in 1990, Zeneca or Syngenta	2	way or the other.
3	estimated it would cost an additional	3	BY MR. TILLERY:
4	£30 million per year to include an emetic dose	4	Q. But you also can't deny it either,
5	ten times higher than the dose Dr. Rose and ICI	5	can you, sir?
6	settled on in 1976, didn't it?	6	A. No, I can't deny it.
7	A. I don't have that information	7	Q. Okay.
8	to hand to confirm.	8	Now, let's look at that next
9	Q. Did you find that when you went back	9	exhibit, if you'd pull that up. If you would,
10	and looked at these historical documents	10	just look at the next page. This is a
11	recently	11	July 1970 document. And the only reason
12	A. I	12	I raise it is for you to tell me what the
13	Q after Dr. Heylings paid you	13	document is and to confirm that it's the
14	a visit?	14	intellectual property protection for that
15	A. Yeah, I made I think probably	15	emetic?
16	one of my colleagues looked at that particular	16	MR. NARESH: Objection to form;
17	document. I was focusing on the technical	17	foundation, scope.
18	documents.	18	THE WITNESS: Well, I can't see
19	Q. Okay.	19	what that is from the
20	A. So, yes, I think the answer is it	20	MR. TILLERY: Can you give it to
21	was part of the information we were looking at	21	THE WITNESS: page that I can
22	again. I won't disagree with you.	22	see.
23	Q. Okay. ICI's patents on the emetic	23	BY MR. TILLERY:
24	formulations of paraquat made it commercially	24	Q. She's turning it over to you now,
25	beneficial for ICI to lobby regulators to	25	sir.
	Page 1346		Page 1348
1	require an emetic in all paraquat products,	1	If you just take a look at it and
2	didn't it?	2	then I'm going to direct your attention
3	MR. NARESH: Objection; foundation,	3	to a report that's referenced within that
4	form.	4	document.
5	THE WITNESS: Yeah, the principal	5	A. So I still can't see it.
6	reason to add emetic was to improve the	6	Q. Oh, you can't see the document,
7	safety of paraquat. I think that needs	7	okay. It may be too large. It's a very large
8	to be reasonably stated.	8	document. The title of the document is
9	BY MR. TILLERY:	9	"ICI 63197."
10	Q. Well, do you agree with me the	10	MR. TILLERY: If you go to the next
11	second document that we had in that list,	11	page oh, I'm sorry. To the next page,
12	of course, was Exhibit 123, and that is	12	I apologize. Yes, there it is.
13	SYNG-PQ-01857812, and that's a document	13	BY MR. TILLERY:
14	entitled well, we'll look at it in a second.	14	Q. This is what we have in the
15	I want you to identify it.	15	document. SYNG-PQ-01857814 is the page we're
16	Let's go back to my question. ICI's	16	referring to and displaying on the record right
17	patent on 63197 and on emetic formulations of	17	now. It says, "Volume II - Pharmacology and
18	paraquat made it commercially beneficial for	18	Biochemistry."
19	ICI to lobby regulators to require an emetic in	19	I believe this was one of the
20	all paraquat products, didn't it?	20	documents contained in the file and referenced
21	MR. NARESH: Objection; form,	21	in that filing with the United States EPA that
22	foundation.	22	you just looked at and confirmed for me, okay.
23	THE WITNESS: It may have done but	23	MR. TILLERY: Now, if we could
	I've not have never been involved in	24	if you can find a way to get to 7957 and
24	1 ve not nave never been hivorved in	44	

58 (Pages 1345 to 1348)

	Page 1349		Page 1351
1	those to Dr. Botham.	1	think
2	BY MR. TILLERY:	2	A. Well, of course it's
3	Q. Okay, do you see that?	3	Q Gee, this stuff gets in your
4	A. Yes, I do.	4	brain. It gets in your brain when you use
5	O. "The concentration of PP 796	5	it as intended, it passes through the
6	required to produce emesis in experimental	6	blood-brain barrier, it hangs around in the
7	animals and an estimation of the emetic dose in	7	brain for a long time, it redox cycles,
8	man - M.S. Rose." That was one of the	8	if people accidentally ingest it, there's
9	documents filed.	9	no antidote. What's this all add up to?
10	Let's go to the next page, which is	10	You think you ought to be selling
11	the summary.	11	MR. NARESH: Object to the form.
12	A. Yes, I can see that.	12	BY MR. TILLERY:
13	Q. It says would you read that into	13	Q. You think you ought to be selling
14	the record, please.	14	this product, Dr. Botham?
15	A. "From the limited evidence of	15	A. This product can be sold
16	clinical trials and data from experimental	16	THE STENOGRAPHER: Sorry.
17	animals, it is concluded that PP 796 should be	17	Sorry, Mr. Naresh, I saw your lips
18	added to paraquat formulations at a level of	18	move but I didn't hear you. Sorry.
19	5mg in 10ml (0.05%). It is estimated that the	19	MR. NARESH: I said objection to
20	majority of those ingesting 10ml of this	20	form.
21	formulation will vomit within an hour."	21	THE STENOGRAPHER: Thank you.
22	Q. And is it still your belief that one	22	MR. TILLERY: Okay.
23	hour saves the average person if the chemical	23	THE WITNESS: Okay.
24	stays in their body for an hour?	24	This product, of course,
25	A. No, we don't say that that would	25	is dangerous, particularly with respect
	Page 1350		Page 1352
1	save everybody who invested paraquat. Again,	1	to its acute toxicity, if it is
2	it depends how much they take, how much they	2	accidentally consumed or if it is
3	weigh, and so on; so we wouldn't make that	3	deliberately consumed.
4	claim, certainly not.	4	We've taken enormous steps, made
5	Q. But if you put more emetic in,	5	enormous investment to try to avoid that
6	they'd certainly vomit faster, wouldn't they?	6	situation by adding things like the
7	A. That's a possibility.	7	emetic but also all the labels that we've
8	Q. Yes. So the more emetic you put in,	8	touched on before, all the training
9	the quicker they vomit, the less chance it is	9	that's used for farmers and growers.
10	for them to die; is that right?	10	So we have gone to great lengths to make
11	A. Yes, although it's not quite as	11	sure that it's possible to use this very
12	straightforward as that because if you put	12	important herbicide safely.
13	too much emetic in, then actually you can get	13	BY MR. TILLERY:
14	what's called uncontrolled vomiting.	14	Q. And have you added the amount of
15	And actually, you would then what happens	15	emetic that Dr. Heylings says you should add?
16	is that you can then in the regurgitation	16	A. No, because it's not as simple as
17	process, you can start to inhale the vomit,	17	saying that Dr. Heylings's judgment of what
18	so there are and that can cause severe	18	that level is necessarily being the right
19	problems, so you have to be very careful.	19	level, and that's the more recent analysis
20	Q. This sounds like a product that's	20	that we've been doing and have confirmed that
21	just incredibly dangerous, doesn't it?	21	what Dr. Heylings has proposed is not
22	MR. NARESH: Objection to form.	22	necessarily a way in which you can make
23	BY MR. TILLERY:	23	paraquat an awful lot safer.
24		24	MR. TILLERY: I move to strike the
25	to you, Dr. Botham? Doesn't it make you	25	answer as unresponsive.

		1	
	Page 1353		Page 1355
1	BY MR. TILLERY:	1	A. Yes.
2	Q. Have you added the amount of emetic	2	Q. Okay. And:
3	that Dr. Heylings said you should add	3	"[The] clinical studies (Bayliss,
4	A. No	4	1973) have indicated that man is more sensitive
5	Q can you tell me yes all right,	5	to the emetic effects of PP 796 than the
6	thank you.	6	experimental animal studied, emesis being seen
7	I move to the next page, past	7	with doses in the range of 0.03-0.11mg of
8	Summary, and that's 959, if you look at that.	8	PP 796 per kilogram body weight (equivalent to
9	Do you see the paragraph:	9	total doses in the range 2-8mg)."
10	"When PP 796 is included in	10	Do you see that?
11	a paraquat formulation in the amounts that will	11	A. Yes.
12	cause emesis within 1 hour in dogs and monkeys,	12	Q. And you see the rest of that
13	the toxicity of the formulation in these	13	paragraph, to the bottom of the page. Do you
14	species is reduced In order to reduce the	14	see that?
15	toxicity of the paraquat formulation in man,	15	A. Yes.
16	therefore, it would be necessary to add	16	Q. I want you to read it and tell me
17	sufficient PP 796 to cause emesis, in a volume	17	when you're finished.
18	of paraquat concentrate that would normally	18	A. Yes.
19	be lethal if ingested. A volume of 10ml of the	19	MR. TILLERY: Now give him the next
20	20% paraquat concentrate is considered to	20	page, put the next page on the screen.
21	be the smallest amount containing a possible	21	BY MR. TILLERY:
22	lethal [dose] of paraquat to man"	22	Q. Now I want you to read that page and
23	Is that all correct? Do you agree	23	tell me if that's all correct information as
24	with	24	well, and that which Syngenta stands behind
25	A. That's all	25	today, after conducting all of this
	Page 1354		Page 1356
1	Q that, sir?	1	investigation into the allegations made by
2	A. Yes, that's correct.	2	Dr. Heylings.
3	Q. And the next paragraph:	3	A. Yes. So we've looked at those
4	"An emetic dose in dogs, monkeys and	4	clinical trials' data again, as you indicate,
5	pigs has been obtained in PP 796 over dose	5	and as I mentioned earlier on, and those data,
6	range of 0.1-1.0 mg/kg body weight. On this	6	whilst not being great data to try to come
7	basis a dose of 2 mg/kg was chosen as one that	7	to an accurate conclusion on this, certainly
8	would clearly ensure vomiting in dogs and	8	not by modern-day standards of clinical trial
9	monkeys, and this dose was, therefore, used for	9	data, we were not able to say that well,
10	studying the effect of emesis on paraquat	10	what we putting it another way, we were
11	toxicity in these species"	11	able to say that Dr. Rose's interpretation
12	Do you stand behind the accuracy	12	was not unreasonable.
13	of that statement today, sir?	13	Q. Okay. To answer my question
14	A. Yes, we do.	14	directly, you stand behind these words by
15	Q. Okay. And after you're doing all	15	Dr. Rose, right, today, and his analysis of the
16	your research and all your analysis of	16	Bayliss data and all of the information he had?
17	Dr. Rose's work and his analysis of the Bayliss	17	You stand behind it?
18	study, correct?	18	A. We are saying that it was not
19	A. Here we're talking about	19	unreasonable but we equally say, because of
20	Q. You stand behind that?	20	the nature of those data, we can understand
21	A. Yeah, yeah, we're talking here	21	why Dr. Heylings, for example, said, well,
22	about the study in dogs and monkeys.	22	you could interpret it a little bit
23	Q. Okay. And I'm talking about all	23	differently
24	of the information he referenced that included	24	But, you know, this is because the
25	this, you're standing behind it today, right?	25	data was essentially a little weak.

	Page 1357		Page 1359
1	Q. Okay. What I'm saying to you is	1	This is Plaintiff's Exhibit 124 and
2	strike that.	2	it is SYNG-PQ-13098668.
3	I'm asking you, do you or don't you	3	MR. NARESH: Steve, we have been
4	as a corporation you're speaking for	4	going for about an hour and 20. I would
5	Syngenta stand behind these statements of	5	like to take at least one well, one
6	Dr. Rose in his calculation? Do you or don't	6	more break before we end the deposition
7	you?	7	in about an hour. So I don't know if now
8	A. Yes, I do	8	is a good time or if you want to ask
9	Q. All right. Thank you. Let's move	وا	questions about this document but I would
10	on. You said you did. Let's move on.	10	like to take I don't want to power
11	Let's go to the next page.	11	through for 2.5 hours.
12	(Stenographer interruption.)	12	MR. TILLERY: Here's what I've got.
13	MR. NARESH: I wanted to note for	13	I would like to get through this today,
14	the record my standing objection on scope	14	if we can, so we can, before we move on,
15	to this line of questioning.	15	finish this topic area. It's not much,
16	THE STENOGRAPHER: Thank you very	16	okay. So let me get through it
17	much.	17	MR. NARESH: I don't want the
18	BY MR. TILLERY:	18	witness to go two and a half hours
19	Q. Your answer was "Yes, I do," wasn't	19	without a break.
20	it, sir?	20	MR. TILLERY: Yeah.
21	A. Yes, we can stand behind that data	21	MR. NARESH: We've been going for
22	after our recent analysis.	22	an hour and 20 without a break so we
23	THE STENOGRAPHER: Thank you.	23	could break now or we could break in ten
24	BY MR. TILLERY:	24	minutes
25	Q. Let's go to the next page. It's	25	MR. TILLERY: We can break right
	Page 1358		Page 1360
1	before you, Table 1. The same question to you.	1	now but I'd like to get through this
2	Do you stand behind that data and those numbers	2	today. So we'll break very quickly,
3	that were submitted by Dr. Rose? The emetic	3	okay, thank you.
4	action of PP796, do you stand behind those	4	THE VIDEOGRAPHER: We are going off
5	today after conducting this evaluation?	5	the record. The time is 4:56.
6	A. Well, yes, we did a check to make	6	(Off the record.)
7	sure that the accuracy of those data these	7	THE VIDEOGRAPHER: We are back on
8	are not interpreted data, these are	8	the record. The time is 5:04.
9	essentially raw data, so they appear to be	9	BY MR. TILLERY:
10	sound.	10	Q. Dr. Botham, I'd like to direct your
11	Q. I'm sorry? So you stand behind	11	attention to Exhibit 124.
12	those? I'm just asking you, you stand	12	(Botham Exhibit 124 marked for
13	A. Yeah, yeah.	13	identification.)
14	Q. And you conducted	14	MR. TILLERY: This is
15	A. I mean, these are the data that	15	SYNG-PQ-13098668.
16	were generated so they've not been manipulated	16	BY MR. TILLERY:
17	or interpreted in any way.	17	Q. And, just very briefly, if you look
18	Q. Okay. And who did this analysis at	18	at this, it's from it's an ICI document, if
19	Syngenta?	19	you can verify that, from the business area, P. Slade.
20 21	A. It was led by my colleague,	20 21	
22	Dr. Kim Travis.	22	Do you see that? A. I do.
23	Q. Okay. MR. TILLERY: All right. We're	23	Q. Okay. And the date of this is what?
24	moving to what page what paragraph?	24	A. 30 June 1976.
25	124? I'm sorry, what exhibit? 124.	25	Q. 1976. If you'd go to the second
25	12-7: THI SOLLY, WHAT CAMOU! 12-7.	رع	Q. 1770. II YOU U KO IO HIE SECOND

1 A. Yes, I can see that. 2 Q. All right. Am I reading this 3 correctly when I say: 4 "We believe that we should plan for 5 a worldwide introduction as soon as possible. 6 It is hoped that supplies of the emetic 7 formulation will not be limited beyond 1977 but 8 we should in any case establish which countries 9 have priority for its introduction. In some 10 cases, of course, delay in registration may be 11 the limiting factor, [but] we shall need to 12 know what is required for registration country 13 by country." 14 And then here is the key sentence 15 I want you to focus on: 16 "Needless to say, registration of an emetic formulation as the only permitted 15 I want you to focus on: 16 "Needless to say, registration of an emetic formulation as the only permitted 18 paraquat product would be highly desirable and 19 we need to determine in which countries this 20 might be achieved." 21 Do you see that? 22 A. I do. 21 Do you see that? 22 A. Jon Heylings was an investigative		Page 1361		Page 1363
2 with it. I want to make sure you understand 3 what it's about. It's talking about an emetic 4 formulation, isn't it's about. It's talking about an emetic 5	1	page actually, just familiarize yourself	1	BY MR. TILLERY:
what it's about. It's talking about an emetic formulation, isn't it? A. Yes. Q. If you look at the second paragraph, it says: "The planned rate of addition of the emetic agent should ensure that 80% or more of the people who ingest [it] will vomit. The addition will add approximately 6.5p"  What is that? A. It's a UK pence, so it's .65 of -  O.65 of a pound.  Q. " to the cost of a litre of "Gramoxone""  Q. All right. Then let's go to the second page, first paragraph. Look at the last sentence. Read it, take your time, but I want sentence ty your attention to the first full paragraph, where it says "We believe" Do you see that?  A. Yes, I can see that. Q. All right. Am I reading this correctly when I say:  "We believe that we should plan for a worldwide introduction as soon as possible. It is hoped that supplies of the emetic formulation will not be limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some cases, of course, delay in registration of an emetic formulation as the only permitted, paraguat product would be a type significant business achievement, correct? A. Yeah, I think: THE WITINESS: I think — I think we agreed that I couldn't disagree with we wat greed that I couldn't disagree with you.  BY MR. TILLERY: Q. All right. A. No, I don't think I did know that. Q. You wouldn't disagree with that, we agreed that I couldn't disagree with you.  BY MR. TILLERY: Q. All right. A. No, I don't think I did know that. Q. You wouldn't disagree with you.  A. Again, no, I'm happy to take your world for that. Q. So that was about two years after Mr. Slade made these statements, right? A. Yes. Q. So that would mean that by adding  Page 1362  This hoped that supplies of the emetic formulation as soon as possible. It is hoped that supplies of the emetic formulation as soon as possible. It is hoped that supplies of the emetic formulation as soon as possible. It is hoped that supplies of the emetic formulation as a correctly when I say:  A. Yes, Q. So			_	
formulation, isn't it?  A. Yes. Q. If you look at the second paragraph, it says: "The planned rate of addition of the emetic agent should ensure that 80% or more of the emetic agent should ensure that 80% or more of the people who ingest [it] will yomit. The 10 of the people who ingest [it] will yomit. The 11 present indication is that this rate of 11 addition will add approximately 6.5p" 12 addition will add approximately 6.5p" 12 b. 0.065 of a pound. 15 0.065 of apound. 15 0.065 of a			1	
5 A. Yes. 6 Q. If you look at the second paragraph, 7 it says: 8 "The planned rate of addition of 9 the emetic agent should ensure that 80% or more 10 of the people who ingest [if] will vomit. The 11 present indication is that this rate of 12 addition will add approximately 6.5p" 13 What is that? 14 A. It's a UK pence, so it's .65 of — 15 0.065 of a pound. 15 Q. " to the cost of a litre of 16 Q. " to the cost of a litre of 17 'Gramoxone'" 18 Okay? Do you see that? 19 A. Yes. 19 A. Yes. 20 Q. All right. Then let's go to the 21 secuence. Read it, take your time, but I want 22 sentence. Read it, take your time, but I want 23 to direct your attention to the first full 24 paragraph, where it says "We believe" 25 Do you see that? 2 Q. All right. Am I reading this 2 correctly when I say: 3 correctly when I say: 4 "We believe that we should plan for 5 a worldwide introduction as soon as possible. 6 It is hoped that supplies of the emetic 6 formulation will not be limited beyond 1977 but 8 we should in any case establish which countries have priority for its introduction. In some 5 have priority for its introduction. In some 6 have priority for its introduction. In some 7 years, right? 8 A. Yes, I can see that. 9 Q. All right. Am I reading this 9 correctly when I say: 10 cases, of course, delay in registration ocuntry 11 by country." 12 know what is required for registration country 12 know what is required for registration country 13 by country." 14 A. And then here is the key sentence 15 I want you to focus on: 16 "Needless to say, registration of an emetic formulation as the only permitted 18 paraquat product would be highly desirable and we need to determine in which countries this 19 poyou see that? 20 poyou see that? 21 Do you see that? 22 A. I do. 23 to the two did approximately of course, Us regulators did indeed require that all paraquat product contain an emetic in the United States, right? 24 A. Yes, I can see that. 25 Cond paraguat product contain an emetic in the United States, right? 26 A			1	
6 Q. If you look at the second paragraph, 7 it says: 8 "The planned rate of addition of 9 the emetic agent should ensure that 80% or more 10 of the people who ingest [it] will yomit. 11 present indication is that this rate of 12 addition will add approximately 6.5p" 13 What is that? 14 A. If's a UK pence, so it's. 65 of 15 0.065 of a pound. 15 0.065 of a pound. 16 Q. " to the cost of a litre of 17 'Gramoxone'" 18 Okay? Do you see that? 19 A. Yes, 10 Q. All right. Then let's go to the 11 second page, first paragraph. Look at the last 12 sentence. Read it, take your time, but I want 12 to direct your attention to the first full 14 paragraph, where it says "We believe" 15 Do you see that? 1 A. Yes, I can see that. 2 Q. All right. Am I reading this 3 correctly when I say: 4 "We believe that we should plan for a worldwide introduction as soon as possible. 1 It is hoped that supplies of the emetic formulation the limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some 10 cases, of course, delay in registration may be the limiting factor, [but] we shall need to know that is required for registration of an emetic formulation as the only permitted 18 paraquat product would be highly desirable and we need to determine in which countries this might be achieved." 20 po you see that? 21 Do you see that? 22 A. A. Yes, Lan see that. 23 C. All right. Am I reading this correctly when I say: 24 We believe that we should plan for a worldwide introduction as soon as possible. 25 It is hoped that supplies of the emetic formulation as on any pastion of an emetic formulation as the only permitted paraquat product would be highly desirable and we need to determine in which countries this might be achieved." 26 Do you see that? 27 An No, I don't think I did know that. 28 Would you? 29 A. Yes, I oan see that. 29 A. Yes, I can see that. 20 C. So that would emetic in a formulated paraquat product, that it would extend the paraquat product would be well not the par			1	
it says:  "The planned rate of addition of the emetic agent should ensure that 80% or more of the people who ingest [it] will yomit. The present indication is that this rate of addition will add approximately 6.5p"  2				
8				
the emetic agent should ensure that 80% or more of the people who ingest [it] will vomit. The present indication is that this rate of addition will add approximately 6.5p"  What is that? 13 What is that? 15 0.065 of a pound. 15 0.065 of a pound. 15 0.065 of a pound. 16 0." to the cost of a litre of 16 0. Way? Do you see that? 17 18 0. A. Yes. 16 19 10 10 10 11 11 12 12 13 What is that? 15 15 15 16 0.065 of a pound. 15 17 18 0.0k3y? Do you see that? 18 18 0.0k3y? Do you see that? 19 19 10 11 12 12 13 14 15 16 17 17 18 18 19 19 10 11 18 19 20 19 20 20 21 21 21 21 22 23 24 24 25 26 27 28 28 29 29 20 20 21 21 20 20 21 21 20 20 21 21 20 20 21 21 20 20 21 21 20 20 20 21 21 20 20 21 21 20 20 20 20 20 20 21 21 20 20 20 20 20 20 21 21 20 20 20 20 20 21 21 21 20 20 20 20 20 21 21 21 22 23 24 24 25 26 27 27 28 28 29 29 20 20 21 21 20 20 20 21 21 21 21 22 23 24 24 25 26 27 28 28 28 29 29 20 20 20 21 21 21 21 22 23 24 24 24 25 26 27 28 28 28 28 29 29 29 20 20 20 21 21 21 21 22 23 24 24 24 25 26 27 28 28 28 28 29 28 29 29 29 20 20 20 21 21 21 21 21 22 23 24 24 24 25 26 27 28 28 28 28 28 29 29 29 20 20 20 21 21 21 21 21 22 23 24 24 24 24 24 24 24 24 24 24 24 24 24			8	
of the people who ingest [it] will vomit. The present indication is that this rate of 2 addition will add approximately 6.5p"  What is that?  A. It's a UKb pence, so it's .65 of 14 1				
present indication is that this rate of addition will add approximately 6.5p"  What is that?  A. It's a UK pence, so it's .65 of  14			1	
addition will add approximately 6.5p"  What is that?  A. It's a UK pence, so it's .65 of —  14  A. It's a UK pence, so it's .65 of —  15  0.065 of a pound.  Q. " to the cost of a litre of  'Gramoxone""  17  18  Okay? Do you see that?  Q. All right. Then let's go to the scond page, first paragraph. Look at the last sentence. Read it, take your time, but I want collected by a correctly when I say:  Do you see that?  A. Yes, I can see that. Q. All right. Am I reading this correctly when I say:  "We believe that we should plan for a worldwide introduction as soon as possible. It is hoped that supplies of the emetic formulation will not be limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some cases, of course, delay in registration may be the limiting factor, [but] we shall need to know what is required for registration country by country."  And then here is the key sentence I want you to focus on:  "Needless to say, registration of an emetic formulation as the only permitted paraquat product would be highly desirable and we need to determine in which countries this might be achieved."  Do you see that?  A. Yes, I can see that.  Q. All right. Am I reading this correctly when I say:  "We believe that we should plan for a worldwide introduction as soon as possible. It is hoped that supplies of the emetic formulation will not be limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some cases, of course, delay in registration may be the limiting factor, [but] we shall need to know what is required for registration country by country."  And then here is the key sentence I want you to focus on:  "Needless to say, registration of an emetic formulation as the only permitted paraquat product would be highly desirable and we need to determine in which countries this might be achieved."  Do you see that?  A. Yes, that's my understanding.  Q. And have you seen any patented emetic other than the one				_
13				
14 A. It's a UK pence, so it's .65 of — 15 0.065 of a pound. 16 Q. " to the cost of a litre of 17 'Gramoxone'" 18 Okay? Do you see that? 19 A. Yes. 20 Q. All right. Then let's go to the 21 sectond page, first paragraph. Look at the last 22 sentence. Read it, take your time, but I want 23 to direct your attention to the first full 24 paragraph, where it says "We believe" 25 Do you see that? 2 Q. All right. Am I reading this 3 correctly when I say: 4 "We believe that we should plan for a worldwide introduction as soon as possible. 6 It is hoped that supplies of the emetic 7 formulation will not be limiting factor, [but] we should in any case establish which countries 9 have priority for its introduction. In some 10 cases, of course, delay in registration may be 11 the limiting factor, [but] we shall need to 12 know what is required for registration of an 13 emetic formulation as the only permitted 14 paraquat product would be highly desirable and 15 po you see that? 16				
15 0.065 of a pound.  Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. " to the cost of a litre of Q. You wouldn't disagree with that, would you?  A. A gain, no, I'm happy to take your word for that.  Q. So that was about two years after Wr. Slade made these statements, right?  A. Yes.  Do you see that?  A. Yes, I can see that.  Q. All right. Am I reading this a correctly when I say:  "We believe that we should plan for a worldwide introduction as soon as possible. It is hoped that supplies of the emetic formulation will not be limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some cases, of course, delay in registration may be the limiting factor, [but] we shall need to keep required for registration country by country."  And then here is the key sentence I want you to focus on:  "Needless to say, registration of an emetic formulation as the only permitted paraquat products contain an emetic in the United States, right?  A. Yes, I can see that.  Q. So that was about two years after Mr. Slade made these statements, right?  A. Yes, I can see that.  Q. So that was about two years after Mr. Slade made these statements, right?  A. Yes, I can see that.  Q. So that would mean that by adding  Page 1362  Page 1362  Page 1362  R. Nat, I would you?  A. Again, no, I'm happy to take your word for that.  Q. So that was about two years after Mr. Slade made these statements, right?  A. Yes, I as the only lawful emetic in a formulated paraquat product, that it would extend the paraquat product, that it would extend the paraquat product, that it would extend the material in the United States for 17 more years,			1	
16   Q. " to the cost of a litre of 'Gramoxone'"   17   A. No, I don't think I did know that.				
17   Gramoxone' "				
18 Okay? Do you see that? 19 A. Yes. 20 Q. All right. Then let's go to the second page, first paragraph. Look at the last sentence. Read it, take your time, but I want 22 to direct your attention to the first full 23 direct your attention to the first full 24 paragraph, where it says "We believe" 21 Do you see that? 22 Page 1362 23 A. Yes, I can see that. 24 Q. All right. Am I reading this correctly when I say: 35 Correctly when I say: 46 "We believe that we should plan for a worldwide introduction as soon as possible. It is hoped that supplies of the emetic formulation will not be limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some 10 cases, of course, delay in registration may be 11 the limiting factor, [but] we shall need to 12 know what is required for registration of an 21 cases, of course, delay in registration of an 22 manual product would be highly desirable and 32 might be achieved." 36 Page 1362 37 Page 1362 4 A. Yes, I can see that. 4 Q. So that was about two years after Mr. Slade made these statements, right? 4 A. Yes. 4 Q. So that was about two years after Mr. Slade made these statements, right? 4 A. Yes. 4 Q. So that was about two years after Mr. Slade made these statements, right? 4 A. Yes. 4 Do you see that?  1 this as the only lawful emetic in a formulated paraquat product, that it would extend the patent protection and the monopoly of the sale of paraquat in the United States for 17 more years, right?  1 MR. NARESH: Objection; form, foundation.  1 THE WITNESS: Again, I'm not an expert in the detail of this, so but what you say does not sound unreasonable. BY MR. TILLERY:  2 Q. Okay. And eventually, of course, US regulators did indeed require that all paraquat products contain an emetic in the United States, right?  A. Yes.  Q. Okay. And eventually, of course, US regulators did indeed require that all paraquat product would be highly desirable and we need to determine in which countries this might be achieved."  10 Do you se				
A. Yes.  Q. All right. Then let's go to the second page, first paragraph. Look at the last sentence. Read it, take your time, but I want to direct your attention to the first full paragraph, where it says "We believe"  Do you see that?  Page 1362  Page 1362  A. Yes, I can see that.  Q. All right. Am I reading this correctly when I say:  "We believe that we should plan for a worldwide introduction as soon as possible. It is hoped that supplies of the emetic formulation will not be limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some cases, of course, delay in registration may be the limiting factor, [but] we shall need to limit to focus on:  I want you to focus on:  "Needless to say, registration of an emetic formulation as the only permitted paraquat product, that it would extend the patent protection and the monopoly of the sale of paraquat in the United States for 17 more years, right?  MR. NARESH: Objection; form, foundation.  THE WITNESS: Again, I'm not an expert in the detail of this, so — but what you say does not sound unreasonable. BY MR. TILLERY:  Q. Okay. And eventually, of course, US regulators did indeed require that all paraquat product scontain an emetic in the United States, right?  A. Yes.  Q. So that was about two years after Mr. Slade made these statements, right?  A. Yes.  Q. So that would mean that by adding  Page 1362  **MR. NARESH: Objection; form, foundation.  THE WITNESS: Again, I'm not an expert in the detail of this, so — but what you say does not sound unreasonable. BY MR. TILLERY:  Q. Okay. And eventually, of course, US regulators did indeed require that all paraquat product scontain an emetic in the United States, right?  A. Yes.  Q. Okay. And eventually, of course, US regulators did indeed require that all paraquat product scontain an emetic in the United States, right?  A. Yes, that's my understanding.  Q. And have you seen any patented emetic often than the one that you have?  A. Not to my — in my experience, no.			1	
Q. All right. Then let's go to the second page, first paragraph. Look at the last sentence. Read it, take your time, but I want to direct your attention to the first full paragraph, where it says "We believe"  A. Yes, I can see that.  Q. All right. Am I reading this correctly when I say:  "We believe that we should plan for a worldwide introduction as soon as possible. It is hoped that supplies of the emetic formulation will not be limited beyond 1977 but we should in any case establish which countries have priority for its introduction. In some locases, of course, delay in registration may be the limiting factor, [but] we shall need to know what is required for registration country by country."  And then here is the key sentence I want you to focus on:  "Needless to say, registration of an emetic formulation as the only permitted paraquat product, that it would extend the patent protection and the monopoly of the sale of paraquat in the United States for 17 more years, right?  MR. NARESH: Objection; form, foundation.  THE WITNESS: Again, I'm not an expert in the detail of this, so — but what you say does not sound unreasonable.  BY MR. TILLERY:  Q. Okay. And eventually, of course, US regulators did indeed require that all paraquat products contain an emetic in the United States, right?  A. Yes,  Who is Jon Heylings?  A. Not to my — in my experience, no. Q. Okay.  Who is Jon Heylings was an investigative				
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Q. Is that a verification of what I was 23 toxicologist in the Central Toxicology	23	Q. Is that a verification of what I was	23	
24 asking you before, that 24 Laboratory.				
25 MR. NARESH: Object 25 Q. Has Dr do you pronounce				· ·

62 (Pages 1361 to 1364)

	Page 1365		Page 1367
1	it Hay-lings [phonetics], sir?	1	documentation showing this and we're going
2	A. It's Hay-lings [phonetics], yes.	2	to show it in a minute.
3	Q. I'm sorry. I was mispronouncing it.	3	He did that after Dr. Lewis Smith
4	Has Dr. Heylings reported to Syngenta	4	had recommended in 1984 that the concentration
5	management that he believed the human trial	5	of the emetic in paraquat products be
6	data ICI and Chevron used to substantiate the	6	increased, didn't he?
7	effective dose of ICI 63197 and PP796 was	7	A. Yes. There was an interchange of
8	fabricated?	8	views at that time, we've seen those
9	MR. NARESH: And just for an	9	Q. And Dr. Smith recommended that it be
10	abundance of caution, I'll have	10	increased, didn't he?
11	a standing scope objection to this line	11	A. Yes, that was one thing at that
12	of questioning as well.	12	time there was certainly a consideration from
13	MR. TILLERY: Yes. Again,	13	Dr. Smith that that could be that could be
14	my response stands the same: It's very	14	taken into account, yes.
15	clearly formulated products in his	15	Q. And the recommendation was never
16	outline, in his topics. But, anyway,	16	acted on by ICI, was it?
17	I'll give you the objection.	17	
18	MR. NARESH: If you're going to	18	A. No, it was not. MR. TILLERY: Now, let's look at
19	make that record, I will respond that	19	number 125, Plaintiff's Exhibit 125,
20		20	which is SYNG-PQ-26134258 - 4265.
21	in the 70 or so topics you have	21	(Botham Exhibit 125 marked for
22	identified, the word "emetic" does not	22	identification.)
23	show up once.	23	BY MR. TILLERY:
24	MR. TILLERY: Yeah, though "formulated" does.	24	
25	THE WITNESS: Could you ask the	25	Q. Now, we're going to give you this document to look at because of its length.
25		23	
	Page 1366		Page 1368
1	question again, please, Mr. Tillery.	1	My question is not going to be specific to the
2	BY MR. TILLERY:	2	document. I'm reasonably sure you've seen this
3	Q. Absolutely, yes, I will, sir.	3	in your investigation of this matter, but you
4	Has Dr. Heylings reported to	4	take a look and see if it looks familiar.
5	Syngenta management that he believed the human	5	A. Yes, this is familiar.
6	trial data ICI and Chevron used to substantiate	6	Q. All right. You've seen this. All
7	the effective dose of ICI 63197/PP796 was	7	I want to do is to say this for the record:
8	fabricated?	8	This is the document from J.R. Heylings,
9	A. No, that's not entirely accurate.	9	biochemical toxicology, to Dr. Smith, isn't it?
10	He believes that a small section of the data	10	A. It is.
11	was in some way fabricated or manipulated.	11	Q. And they were both ICI employees
12	Not the whole study or the whole data set.	12	at the time, correct?
13	Q. And he said some of it was, right,	13	A. Correct.
14	would you agree with that?	14	Q. And it's at ICI Central Toxicology
15	A. Yeah, some datapoints, correct.	15	Laboratory, Alderley Park, and in Cheshire,
16	Q. And by whom was it does he say	16	right?
17	it was fabricated?	17	A. That's correct.
18	A. He believes that Dr. Rose	18	Q. And it's dated 19 January, 1990,
19	manipulated some of those data.	19	so about 30 and a half years ago, right?
20	Q. And he originally brought this issue	20	A. That's correct.
21	to the attention of ICI's paraquat product	21	Q. And it's entitled "Emetic
22	manager in September 1990, 30 years ago, didn't	22	Concentration in Paraquat Formulations."
23	he?	23	Do you see that?
24	A. That's what he claimed, yes.	24	A. I do.
25	Q. Actually, you know, there's	25	Q. So we can go through and study

Г	Page 1369		Page 1371
1	it entirely, but if you look at the second	1	pages. If you'd take your time and look at it.
2	paragraph, towards the end, "My conclusion"	2	A. Yes, okay. Again, I had relatively
3	do you see that? Towards the end, the third	3	recently seen this document so please go
4	line from the end in the second paragraph.	4	ahead.
5	A. I think you have control of this,	5	Q. You're familiar with this one,
6	so	6	I think, aren't you?
7	Q. Yeah, you can see it on the screen:	7	A. Yes, yes.
8	"My conclusion from studying the	8	Q. All right. Now, if we go to the
9	scientific evidence"	9	first page and if you look where he says,
10	A. I can't see that at the moment.	10	"I would like to point out" It's the
11	I can only see page 1.	11	fourth paragraph, under "Human data with
12	Q. That's what I mean. That's what	12	paraquat emetic."
13	I'm looking at. It's page 1, the second	13	Do you see that?
14	paragraph. Do you see that?	14	A. Yes.
15			
16	A. The second paragraph, sorry.	15	Q. He says:
17	Q. Yes. "My conclusion"	16	"I would like to point out that the
	A. Yes. I'm sorry, yes, I can see	17	human data presented in Report CTL/R/390(R) is
18	that. Yes, thank you.	18	very misleading. In the attached table, I have
19	Q. Yeah.	19	presented two sets of data. Data presented by
20	"My conclusion from studying the	20	Rose in CTL/R/390(R) is shown at the top. The
21	scientific evidence from clinical studies with	21	actual data presented by Bayliss in PH20992C is
22	the emetic is that the concentration of PP796	22	shown at the bottom. There are three important
23	recommended in 1976 is probably well below an	23	differences between the data from CTL/R/390(R)
24	effective emetic dose in man."	24	and PH20992C."
25	That's what he says, right?	25	Do you see that?
	Page 1370		Page 1372
1	A. That is correct.	1	A. I do.
2	Q. They were saying this over 30 years	2	Q. And he then sets out those specific
3	ago.	3	distinctions, doesn't he?
4	Now, would it be an accurate summary	4	A. He does.
5	of the document to say that Dr. Heylings	5	Q. All right. And did you look at
6	reports to Lewis Smith that he has reviewed	6	the data to verify whether these comments were
7	the scientific data underlying the original	7	correct?
8	conclusion to set the emetic level at	8	A. Yes. We've in our more recent
9	0.05 percent and determined the data did not	9	analysis, we've been back to the original
10	support the conclusion, that the level was too	10	Bayliss data and done our own analysis
11	low to be an effective emetic in humans and	11	of those data.
12	that the amount should be increased tenfold.	12	Q. Oh, so you redid the study of
13	Would that be an accurate assessment	13	Dr. Bayliss, right?
14	of this report?	14	A. No, we didn't redo the study.
15	A. It would be accurate, yes.	15	We went back and we looked we made sure
16	Q. All right.	16	we didn't rely just on the Rose data in R390.
17	MR. TILLERY: Then let's move on.	17	We went back to the original data to see
18	This is Exhibit 126. And this is	18	whether there was any substance which we
19	SYNG-PQ-26134270 - 4272.	19	in terms of Dr. Heylings's interpretation
20	(Botham Exhibit 126 marked for	20	which might mean that a different
21	identification.)	21	interpretation could be reached.
22	BY MR. TILLERY:	22	Q. What I'm wondering is did you go
	LIVIN, IILLINI.		
	O We'll give you this to look at	23	hack and redo or re-analyze the Royling date or
23 24	Q. We'll give you this to look at yourself. It's another Jon Heylings letter,	23 24	back and redo or re-analyze the Bayliss data or did you stick with the Bayliss conclusions and

	Page 1373		Page 1375
1	A. No, we looked again at the Bayliss	1	It was not made-up data, first of all. The
2	data. This is what Dr. Travis did.	2	accusation was that at some a small number
3	Q. Oh, so you you redid a study 46,	3	of the data points he queried, and he believed
4	47 years after the fact. Is that what you're	4	that the way in which you use those data to
5	saying?	5	calculate an effective emetic dose was not
6	A. Well, I think the way you've put	6	correct. We have looked at those same data,
7	that is not quite right. We didn't redo the	7	absolutely not changed the data, and we have
8	study; we simply took the data from that study	8	come to a conclusion that that effective dose
9	and we tried to do our best with, again, some	9	calculation that was done all those years ago
10	relatively weak data, as we've been saying	10	was not unreasonable.
11	throughout this, to see what Dr. Travis's	11	Q. Okay. Let me ask you this: Did you
12	calculation would look like with regard to the	12	calculate the Bayliss data and come up with
13	dose response, if you like, in an effective	13	different conclusions than Dr. Bayliss did of
14	dose.	14	his own study 47 years later?
15	Q. So the scientist you assigned, your	15	A. No. We said Dr. Travis's
16	predecessors assigned to do this, who wrote a	16	analysis suggested that Dr. Bayliss had not
17	report in 1973, which was undisturbed until Jon	17	Dr. Bayliss's conclusion was not unreasonable,
18	Heylings raised this with you, what, recently,	18	but there are because the data was so weak,
19	the last couple of years, right?	19	there is some margin of error in that, but
20	A. Correct.	20	it wasn't fundamentally wrong.
21	Q. Was perfectly fine, reliable,	21	Q. Did you adjust any of the underlying
22	sufficient to submit to the United States	22	facts of Dr. Bayliss's analysis of anything you
23	Environmental Protection Agency, absolutely	23	relied upon, or assign different weights
24	fine in every other respect, and then when	24	to that information?
25	he raises this in let's see, let's just do	25	A. No. All we simply did was and
	Page 1374		Page 1376
1	the calculus here. It would have been 30	1	we did get the support of a professional
2	was it 36? 47 46, 47 45 years after the	2	statistician, who has experience of clinical
3	fact, you decided maybe it would be a good idea	3	trial data as well, to work with Dr. Travis;
4	to re-look at the data. Right?	4	so we were simply using the expertise of
5	MR. NARESH: Objection to form.	5	a statistician, alongside Dr. Travis, to see
6	THE WITNESS: Well, we had	6	what conclusion that brought us to.
7	BY MR. TILLERY:	7	And, as I say, it does not take us
8	Q. Is that right?	8	to a conclusion that is very far removed from
9	A. We had received Dr. Heylings's	9	what Dr. Rose concluded.
10	communications about it and we thought that,	10	Q. You've read Dr. Bayliss's report,
11	again, being a science-based organization,	11	haven't you?
12	we should take another a fresh look at it.	12	A. Yes.
13	Q. Oh, so instead of relying on what	13	Q. You're aware that he didn't do
14	Dr. Rose relied on, what the United States	14	calculations or draw a conclusion?
15	Government relied on, what the European Union	15	Did you know that?
16	relied upon, what the UK relied upon, when	16	A. Yeah, which is why I just said
17	Dr. Heylings told you this was made-up data,	17	it was Dr. Rose's conclusion that we
18	you went back and redid the study? Is that	18	were not I said we didn't
19	what you're telling us?	19	Q. So you you went back after
20	A. No, I'm not telling you that.	20	Dr. Rose's, right?
21	That's	21	A. We took the Bayliss data, we looked
22	MR. NARESH: Objection; form.	22	at them with in modern-day with
23	BY MR. TILLERY:	23	modern-day expertise and said that the
24	Q. Okay.	24	Rose calculations from the Bayliss data
25	A. That's really a misrepresentation.	25	were not unreasonable.

	Page 1377		Page 1379
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1 2	Q. Okay. Let's go on with this letter, and this is Exhibit 126. Let's move on and	1 2	Exhibit 127. And this is
2 3	let's go to the next page. If you'd look at	3	SYNG-PQ-02639780. (Botham Exhibit 127 marked for
4	the second paragraph, Dr. Heylings says:	4	identification.)
5	"However, on examination of the full	5	BY MR. TILLERY:
6	data there is no such response. The	6	Q. And we're going to give this
7	minimal effects observed at 4 and 8mg PP796	7	document to you to look at. I'm going to
8	suggest that 4-8mg doses are probably nearer	8	direct you to a few pages, page 6 and page 32.
9	threshold in man not maximal. [Therefore], the	9	Since it is 45 pages, I'd like to move quickly
10	dose response curves in pig, dog and monkey are	10	because I've got just a few more questions for
11	all very similar across the same dose range.	11	this deposition first a few more documents
12	I would suggest that the emetic dose response	12	and we'll be finished.
13	curve of PP796 in man is similar to these other	13	A. Okay. Yes, I'm pretty familiar
14	species. Thus, I disagree with the conclusions	14	with the background to this.
15	in [the] report CTL/R/390(R), which suggest	15	Q. All right. You're familiar with
16	that the emetic is 10 times more potent in	16	this document, okay. Can I do this because
17	man."	17	of our time sequence here, can I say this, with
18	Is that what he says?	18	respect to and I'll direct all counsel's
19	A. That's what he said.	19	attention to SYNG-PQ-02639785, and that's
20	Q. All right. And now this was when	20	page 6 of this document if anybody wants to
21	he was a full-time employee in the at a	21	look at it.
22	biochemical toxicological section of ICI,	22	Is it an accurate summary of this
23	correct?	23	document that Syngenta knew that increasing
24	A. Correct.	24	the amount of the emetic in its paraquat
25	Q. He came to you as an employee who	25	products would increase their safety by two-
	Page 1378		Page 1380
١,		١.	
1 2	was concerned, based upon his own personal	1	to threefold but that introducing a product
2	analysis as a scientist, of what he had seen,	2	with such level of emetic would not be possible
3	correct?	3	in all markets proactively due to, quote,
4	A. Yes.	4	"price erosion"?
5	Q. Okay. He wasn't making public	5	And if you want to go to page 6 to
7	statements or doing anything else. He was just very concerned about this and he wanted	7	verify that statement, please do so.
8		8	A. Maybe I can respond to that. The two-to-threefold safety factor was
9	to bring it to the company's attention, correct?	9	estimated from the results of further animal
10	A. Yes, indeed	10	studies/experiments that were being conducted.
11	Q. All right, and	11	So this is different to the issue we've been
12	A which is very laudable.	12	talking about previously.
13	Q. And that's what he did? And you	13	Q. Well, why don't you look at 9785,
14	understand	14	okay. Do you see that? You're looking at the
15	A. Yes, and that's very laudable, yes,	15	screen there.
16	yes.	16	"During the course of this work
17	Q. And you understand him to be	17	important conclusions have been reached
18	a respected scientist and a respected	18	regarding the role of emetic (PP 796).
19	gentleman, don't you?	19	It has been found that increasing the
20	A. We do, absolutely. He's a long	20	concentration of emetic in 'Gramoxone' by a
21	Q. All right.	21	factor of 5 resulted in 2-3 fold safety
22	A. He's a long-standing colleague of	22	factor over standard 'Gramoxone'."
23	mine.	23	Did you see that?
24	Q. All right.	24	A. I do.
25	MR. TILLERY: Now, let's go to	25	Q. All right.
_	THE PARTY OF THE P		Z) con copper

Now let's go to the next exhibit, which is on page — it's page 26 of the document and it's found at SYNG-2639811 under "Strategy."  Do you see, under "Strategy." first 5 Do you see, under "Strategy." first 6 paragraph?  A. Yes. Q. Read that into the record. A. "A proactive approach would demand promotion of the safer formulation in all markets." Price crosion has ensured that this is income to have a safer because you'd lose the market. You can't add that much emetic. You can't make it two to three times safer because you'd lose market share.  A. No.— Q. Is that a fair statement? A. It is. Q. Gramoxone Inteon." A. It is. Q. That's exactly what you're talking about. You added this, you made it a little safer but because of the cost you took it off? A. It is. Q. That's exactly what you're talking about. You added this, you made it a little safer but because of the tosst you took it off? A. No.— the cost It was able to be cost in the cost in the safer but because of the cost you took the indivision in all intended about. You added this, you made it a little safer but because of the cost you took the most	Г	Page 1381		Page 1383
which is on page—it's page 26 of the document and it's found at SYNG-2639811 under "Strategy." Do you see, under "Strategy," first paragraph? A. Yes. Q. Read that into the record. A. "A proactive approach would demand promotion of the safer formulation in all markets. Price erosion has ensured that this is incompossible for the multiple emulsion formulations without loss of significant markets." Q. Costs too much? Surprise, supprise, you'd lose the market, You can't add that much emetic. You can't make it two to three times safer because you'd lose market share. A. No.— Q. Is that a fair statement? A. H is. Q. That's exactly what you're talking about, isn't it? A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about, son't it's A. It is. Q. That's exactly what you're talking about. You added this, you made it butted in the safe for but count it is set be cause of the cost you took it off? A. No, incorrect. It wasn't because of the cost you took it off? A. No, incorrect. It wasn't because of the cost you took it off? A. No, incorrect. It wasn't because of the cost you took it off? A. No, incorrect. It wasn't because of the cost you took it off? A. No, incorrect. It wasn't because of the cost you took it off? A. No, incorrect. It wasn't you were getting about. You added this, you made to this, you make it butte in the ladies and gentlemen of the juty and the judge, okay—"a proactive approach would demand promotion of the safer formulation in all markets."  So we don't kill as many people. We save	١,		1	
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4 under "Strategy."  Do you see, under "Strategy," first  paragraph?  A. Yes.  Q. Read that into the record.  A. You are about this is not now possible for the multiple emulsion formulations without loss of significant markets."  Costs too much? Surprise, surprise, you'd lose the market. You can't add that much emultiple emulsion for emetic. You can't make it two to three times safer because you'd lose market share.  A. No				
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6 Paragraph? 7 A. Yes. 8 Q. Read that into the record. 9 A. "A proactive approach would demand promotion of the safer formulation in all markets. Price erosion has ensured that this is in now possible for the multiple emulsion in all markets." 13 formulations without loss of significant markets. 14 markets. 15 Q. Costs too much? Surprise, surprise, you'd lose the market. You can't add that much emetic. You can't make it two to three times safer because you'd lose market share. 18 safer because you'd lose market share. 19 A. No 20 Q. Is that a fair statement? 21 A. I don't think that's entirely 21 Q. Is that orect 22 Q. Is that a fair statement? 23 MR. NARESH: Objection, form. 24 THE WITNESS. I don't think that's entirely accurate. I think this is  Page 1382  Page 1382  Page 1382  Page 1382  Page 1384  MR. NARESH: Objection to form. 14 Level of emetic, it was adding other saferning factors 25 Q. Coxy, well, either one, however you ocunt it, you weren't going to make it two to three times safer because of the cost you took it off?  A. No, incorrect. It wasn't suse. Q. As of the day this subre. written let's make sure we're clear for the ladies and gentlemen of the jury and the judge, okay "a proactive approach would demand promotion of the safer formulation in all markets."  So we don't kill as many people. We save thousands of lives.  "Price erosion has ensured that this is not now possible for the multiple emulsion formulations without loss of significant markets."  That's what it says. Those are the words, aren't they, sir?  Page 1382  Page 1382  Page 1382  A. What was trying to be developed here was a new type of formulation, so it wasn't just it wasn't simply increasing the level of emetic, it was adding other safening factors 24 Level of emetic, it was adding other safening factors 25 Q. O. Cay, well, either one, however you oweren't going to make it two to three times safer because of the money, right?  A. Well, that's what this said here words are those the words I read co				`
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8 Q. Read that into the record. A. "A proactive approach would demand promotion of the safer formulation in all markets. Price erosion has ensured that this is not now possible for the multiple emulsion formulations without loss of significant markets." Q. Costs too much? Surprise, surprise, you'd lose the market. You can't add that much emultic. You can't make it two to three times safer because you'd lose market share. 18 safer because you'd lose market share. 19 Q. Is that a fair statement? 20 Q. Is that cornect - 21 A. I don't think that's entirely - 22 Q. Is that cornect - 23 MR. NARESH: Objection, form. 24 entirely accurate. I think this is 25 Page 1382  1 what was trying to be developed here was a new type of formulation, so it wasn't just it wasn't simply increasing the safering factors 25 Safening factors 26 BY MR. TILLERY: Q. Okay, well, either one, however you count it, you weren't going to do it you weren't going to make it two to three times safer because of the cost you took it off? A. No, incorrect. It wasn't sus on the alaites and gentlemen of the jury and the judge, okay "a proactive approach would demand promotion of the safer formulation in all markets."  So we don't kill as many people. We save thousands of lives.  "Price erosion has ensured that this is not now possible for the multiple emulsion formulations without loss of significant markets."  The WITNESS: I don't think that's entirely 22 Q. Okay, well, either one, however you count it, you weren't going to do it you weren't going to make it two to three times safer because of the money, right?  A. Well, that's what this said here but, as the record will also show, this research program with safer formulations continued for many years and we did bring formulations based on some of this technology to the market.  Q. And then you got rid of them, and then you took them off 24 Q because they continued to cost 25 Q because they continued to cost 26 Q because they continued to cost 27 Q beca				
A. "A proactive approach would demand promotion of the safer formulation in all markets. Price rosion has ensured that this is not now possible for the multiple emulsion formulations without loss of significant markets."  Q. Costs too much? Surprise, surprise, you'd lose the market Nou can't add that much emetic. You can't make it two to three times safer because you'd lose market share.  A. No Q. Is that a fair statement?  A. I don't think that's entirely Q. Is that a fair statement?  A. I don't think that's entirely Q. Is that correct Q. Is that correct Year of the cost. It was the cost were getting some technical problems with its use.  Q. As of the day this we're clear for the ladies and gentlemen of the jury and the judge, okay -" a proactive approach would demand promotion of the safer formulation in all markets."  So we don't kill as many people. We save thousands of lives.  "Price erosion has ensured that this is not now possible for the multiple emulsion formulations without loss of significant markets."  That's what it says. Those are the words, aren't they, sir?  Page 1382  Page 1382  Page 1382  Page 1384  MR. NARESH: Objection to form.  THE WITNESS: That's right, but I would say that that has to be read within the safering factors Q. Okay, well, either one, however you count it, you weren't going to do it you weren't going to make it two to three times safer because of the money, right?  A. Well, that's what this said here but, as the record will also show, this research program with safer formulations to the market.  Q. And then you got rid of them, and the pour took them off A. Unfortunately, in some Q because they continued to cost Q because they continued to cost Q because they dhad technical issues, nothing to the market were clear for the ladies and gentlemen of the jury and the judge, okay "a proactive approach would demand promotion of the safer formulation in all markets."  So we don't kill as many people. We save thousands of lives.  "Price			1	
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12   Is not now possible for the multiple emulsion formulations without loss of significant markets."				
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A. Well, that's what this said here but, as the record will also show, this research program with safer formulations continued for many years and we did bring formulations based on some of this technology to the market.  Q. And then you got rid of them, and then you took them off  A. Unfortunately, in some  Q because they continued to cost  A. Unfortunately, in some of the cases because they'd had technical issues, nothing  20	9	weren't going to make it two to three times	9	
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research program with safer formulations continued for many years and we did bring formulations based on some of this technology to the market.  Q. And then you got rid of them, and then you took them off Q because they continued to cost A. Unfortunately, in some of the cases because they'd had technical issues, nothing continued for many years and we did bring (Botham Exhibit 128 marked for identification.)  BY MR. TILLERY: Q. It's a one-page document. It shouldn't take long to read. Have you seen this document, too? A. Yes. Q. You're familiar with it, aren't you? A. Yes. Q. All right. Who is Dr. Jaggers, the	11	A. Well, that's what this said here		
research program with safer formulations continued for many years and we did bring formulations based on some of this technology to the market.  Q. And then you got rid of them, and then you took them off Q. A. Unfortunately, in some Q because they continued to cost A. Unfortunately, in some of the cases because they'd had technical issues, nothing  23 next document. This is Exhibit 128.  (Botham Exhibit 128 marked for identification.)  BY MR. TILLERY: Q. It's a one-page document.  It shouldn't take long to read. Have you seen this document, too? A. Yes. Q. You're familiar with it, aren't you? A. Yes. Q. All right. Who is Dr. Jaggers, the	12	but, as the record will also show, this		
15 formulations based on some of this technology 16 to the market. 17 Q. And then you got rid of them, and 18 then you took them off 19 A. Unfortunately, in some 20 Q because they continued to cost 21 A. Unfortunately, in some of the cases 22 because they'd had technical issues, nothing 23 to do with the  15 identification.) 16 BY MR. TILLERY: 17 Q. It's a one-page document. 18 It shouldn't take long to read. 19 Have you seen this document, too? 20 A. Yes. 21 Q. You're familiar with it, aren't you? 22 A. Yes. 23 Q. All right. Who is Dr. Jaggers, the	13		13	
to the market.  Q. And then you got rid of them, and then you took them off  BY MR. TILLERY:  Q. It's a one-page document.  It shouldn't take long to read.  Have you seen this document, too?  Q because they continued to cost  Q. You're familiar with it, aren't you?  A. Yes.  Let MR. TILLERY:  Q. It's a one-page document.  A. Unfortunately, in some  Q. You're familiar with it, aren't you?  A. Yes.  Let MR. TILLERY:  Q. It's a one-page document.  Let Market In the Interval of the cases  A. Yes.	14	continued for many years and we did bring	1	
to the market.  Q. And then you got rid of them, and then you took them off  A. Unfortunately, in some  Q because they continued to cost  A. Unfortunately, in some of the cases  Leave you seen this document, too?  A. Yes.  Q. You're familiar with it, aren't you?  A. Yes.	15	formulations based on some of this technology		
then you took them off  18 It shouldn't take long to read.  19 A. Unfortunately, in some  20 Q because they continued to cost  21 A. Unfortunately, in some of the cases  22 because they'd had technical issues, nothing  23 to do with the  18 It shouldn't take long to read.  19 Have you seen this document, too?  20 A. Yes.  21 Q. You're familiar with it, aren't you?  22 A. Yes.  23 Q. All right. Who is Dr. Jaggers, the	16	to the market.		
then you took them off  A. Unfortunately, in some  Q because they continued to cost  A. Unfortunately, in some of the cases  A. Unfortunately, in some of the cases  because they'd had technical issues, nothing  then you took them off  18 It shouldn't take long to read.  Have you seen this document, too?  A. Yes.  Q. You're familiar with it, aren't you?  A. Yes.	17	Q. And then you got rid of them, and	17	
20 Q because they continued to cost 21 A. Unfortunately, in some of the cases 22 because they'd had technical issues, nothing 23 to do with the 20 A. Yes. 21 Q. You're familiar with it, aren't you? 22 A. Yes. 23 Q. All right. Who is Dr. Jaggers, the	18		18	
A. Unfortunately, in some of the cases because they'd had technical issues, nothing to do with the  A. Unfortunately, in some of the cases A. Yes.  Q. You're familiar with it, aren't you?  A. Yes.  Q. All right. Who is Dr. Jaggers, the	19	A. Unfortunately, in some		
because they'd had technical issues, nothing to do with the  22 A. Yes.  23 Q. All right. Who is Dr. Jaggers, the	20	Q because they continued to cost	20	
because they'd had technical issues, nothing to do with the  22 A. Yes.  Q. All right. Who is Dr. Jaggers, the	21			Q. You're familiar with it, aren't you?
23 to do with the 23 Q. All right. Who is Dr. Jaggers, the	22		22	
	23		23	Q. All right. Who is Dr. Jaggers, the
	24	Q. Yeah, you	24	recipient of this correspondence?
	25	• • •	25	A. He was one of the three members of

	Page 1385		Page 1387
1	the senior executive group of CTL.	1	MR, TILLERY: This is
2	Q. This is SYNG-04262621.	2	SYNG-04262618.
3	Dr. Smith tells Dr. Jaggers,	3	BY MR. TILLERY:
4	in response to the concerns that Dr. Heylings	4	Q. I think this is a three-page a
5	has been raising, that he, too, believes the	5	two-page document. This is from Dr. Smith
6	amount of emetic in the PQ formulations needs	6	to Dr. Heylings, if you would take a look at
7	to be increased paraquat formulations need	7	this, sir.
8	to be increased with emetic, correct?	8	A. Okay, I've seen the first page.
وا	That's what he's saying?	9	You have control. So do you want me to see
10	A. Yes.	10	the second page as well?
11	Q. In response to Dr. Heylings's	11	Q. I do. I want you to look at the
12	allegations that Dr. Rose "selected data	12	second page. There you go.
13	to arrive at a conclusion," Dr. Smith says	13	A. Thank you.
14	he thinks that "given the pressure at the time	14	Q. Go ahead and read that. I'm sure
15	to arrive at a decision the apparent omissions	15	you've read this recently as well.
16	in the arguments presented to the business were	16	A. Yes.
17	accidental."	17	Q. All right. This exhibit I may
18	That's what he says, right?	18	have read the number out. If I didn't,
19	A. That's what that says.	19	I'm repeating it again, 04262618 is a memo
20	Q. So Dr. Smith agrees with	20	from Dr. Smith to Dr. Heylings. It's dated
21	Dr. Heylings that Rose omitted data to reach	21	November 6, 1990, again ICI Central Toxicology.
22	his conclusion regarding the amount of emetic	22	Right?
23	needed to be effective in animals but believes	23	A. Yes.
24	it wasn't intentional, correct?	24	Q. And it's "Re: Human data with
25	MR. NARESH: Objection; form,	25	paraquat formulations containing PP796."
	Page 1386		Page 1388
1	foundation.	1	Right?
2	THE WITNESS: I mean, I can't put	2	A. Yes, yes.
3	words into Dr. Smith's mouth here, but	3	Q. Confidential letter. Dr. Smith
4	you're assuming that apparent omissions	4	
5	in the arguments might mean	5	states to Dr. Heylings: "It is clear from the data you
6	Dr. Heylings's accusation that there was	6	presented that there was probably some
7	falsification of data. I think it's not	7	misunderstanding or confusion in the way the
8	as simple as that.	8	case for the inclusion rate of 796 at 0.05% was
9	BY MR. TILLERY:	9	
10	Q. Well, I said that Dr. Smith	- 0	arrived at. However, I am sure you will appreciate that in attempting to reconsider the
11	interpreted as a mistake, that he omitted data	11	
12	to reach his conclusion, but because of the	12	thinking and knowledge in 1976 when this decision was taken is extremely difficult."
13	pressure at the time to arrive at a decision,	13	
14	this decision and this omission was not	14	So, again, Dr. Smith does not
15	intentional.	15	disagree with Dr. Heylings's conclusions, does he?
16		16	· ·
17	Would that be a fair interpretation?	16 17	A. No, he doesn't.
18	A. Yes. However you interpret that,		Q. Dr. Smith also indicates, after the
19	that's right, it was accidental rather than intentional, correct.	18 19	time required for an emetic to work, that in
20	Q. But he says, okay. That's	20	the mid 1970s, " we were still influenced by
21	Dr. Smith's evaluation.	21	the data in rat which has an entirely different plasma paraquat profile to that of man."
22	MR. TILLERY: Now let's go to	21 22	
23	Exhibit 129.	23	That's what he says, right?
24			A. Right.
2 <del>4</del> 25		24 25	Q. Dr. Smith must have been unaware of
22	iuchthication.)	∠3	the documents we have seen where ICI employees

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		_	
	Page 1389		Page 1391
1	said that in the late 1960s and 1970s, that	1	the lack of data supporting Dr. Rose's
2	a fatal dose of paraquat could be absorbed	2	conclusions and the fact that the level of
3	within as few as 15 minutes.	3	emetic in Syngenta's paraquat products needed
4	Do you agree with that?	4	to be raised considerably to save lives?
5	MR. NARESH: Objection; form,	5	How many times?
6	foundation.	6	A. Well, I can't give you an accurate
7	THE WITNESS: You're suggesting	7	number but what I can tell you is that from
8	that Dr. Smith was not aware of that?	8	that period onwards, when, as I've just said,
9	BY MR. TILLERY:	9	Dr. Heylings became, in part, a scientist
10	Q. I am.	10	leading our efforts to do exactly what it said
11	A. Well, I can't comment on that.	11	here, a combination of something that was
12	Q. Okay. Can you read Dr. Smith's	12	intrinsically less toxic and increased
13	conclusion on the next page into the record,	13	concentrations of emetic, he was involved in
14	please, for me.	14	that for 10, 15, 20 years and didn't, in my
15	A. "In conclusion, I do not intend	15	knowledge, raise again the arguments that
16	to pursue any further the reasons for the	16	we've been talking about now until about
17	inclusion of PP796 at 0.05% as decided in the	17	two years ago.
18	early part of 1976. Rather, I wish to	18	MR. TILLERY: Well, let me
19	concentrate our efforts in agreeing a strategy	19	let me move to strike your answer as
20	with the Business that will prompt us to	20	unresponsive.
21	evaluate formulations of paraquat that are	21	BY MR. TILLERY:
22	intrinsically less toxic and contain increased	22	Q. Since that time, since the time you
23	concentrations of emetic."	23	first raised this, how many times has
24	Q. So he was saying let's forget about	24	Dr. Heylings come to the management of Syngenta
25	the past and how this happened, whether it was	25	or ICI and brought this issue to the attention
	Page 1390		Page 1392
,	a mistake that was the result of business	1	of them, saying that people were unnecessarily
1 2	pressure or whether it was intentional, and	2	dying because Syngenta would not pay to put
3	let's get this product fixed to where it's not	3	the emetic at the proper level in the product?
		4	How many times did he say that to you? Over
4	toxic.	5	and
5	A. Absolutely.	6	MR. NARESH: Objection; form,
6	Q. Right?	7	foundation.
7	A. Absolutely, which is	8	THE WITNESS: Well
8	Q. That's what he was saying?	) °	BY MR. TILLERY:
9	A which is the same for the	-	Q. Would it be safe to say he said that
10	Q. That's what he was saying?	10 11	
11	A paraquat project. Yes, that's	12	many times?
12	correct.		A. No, it would not be safe to say
13	Q. Okay. All right.	13	that. In my experience, he has made that
14	Would you agree that a fair summary,	14	point in the emails and the discussions
15	then, would be that it would be fruitless	15	we have had with him over the last two years.
16	to try to determine the reasons but they should	16	So I wouldn't say that was many
17	focus on making paraquat safer in the future?	17	times. So we've had some discussions and some
18	A. I would agree, and Dr. Heylings	18	emails along that theme.
19	then became, actually, the project leader of	19	Q. He's actually made the point by
20	part of that effort that followed.	20	filing objections with the United States
21	Q. Right.	21	Environmental Protection Agency recently, too,
22	Since the original series of	22	hasn't he?
23	correspondence in 1990, how many times has	23	A. Yes, he has.
24	Dr. Heylings raised the issue of the lack of	24	Q. Last year?
25	effectiveness of the emetic in paraquat,	25	A. Yes, he has.

	Page 1393		Page 1395
1	Q. And he filed it with the World	1	people have died as a result of not increasing
2	Health Organization, telling them, too, right?	2	the level of emetic in the product to the level
3	A. That's correct, yes.	3	he requested since he first requested it?
4	Q. He's filed it with other people	4	Do you know
5	because he thinks it's so dangerous and lives	5	MR. NARESH: Object
6	are being lost needlessly because Syngenta	6	BY MR. TILLERY:
1 7	keeps selling this product. That's what	7	Q how many people around the world
8	he says, doesn't he?	8	have died in all these databases you keep of
9	A. That's what he's been saying in the	9	people who die from ingesting this chemical?
10	last two years, yes.	10	How many?
11	Q. And this is a man who worked in this	11	MR. NARESH: Objection; form,
12	company for many, many years and directed this	12	foundation.
13	project, and he's brought this to your	13	THE WITNESS: I can't give you
14	attention and pleaded with you to either	14	a number off the top of my head, no,
15	withdraw the product or fix it so thousands of	15	so certainly specifically, you can't
16	people don't die unnecessarily.	16	make a calculation that says how many
17	Is that a fair statement?	17	people have died because we haven't taken
18	A. He has he worked with us for the	18	Dr. Heylings's view into consideration.
19	previous 20 years on trying to develop	19	BY MR. TILLERY:
20	formulations of paraquat which did just that.	20	Q. What do you think the regulators
21	Q. Well, let's look at this.	21	around the world would think if they knew that
22	MR. TILLERY: This would be 130,	22	a scientist in your organization had come
23	Plaintiff's Exhibit No. 130.	23	to you and literally pleaded with you
24	(Botham Exhibit 130 marked for	24	to increase the emetic formulation of your
25	identification.)	25	product, when they find this out? What do you
	Page 1394		Page 1396
1	BY MR. TILLERY:	1	think the reaction would be?
2	Q. And these are documents that are	2	MR. NARESH: Objection; form,
3	emails of Dr. Heylings to a Mr. Cook regarding	3	foundation.
4	the emetic, with attachments, and it's	4	THE WITNESS: Well, as you
5	SYNG-10783241. You've been copied with these,	5	indicate, we already know, for example,
6	haven't you?	6	that the US Environmental Protection
7	A. Yes, I've seen these emails.	7	Agency have been informed and one of the
8	Q. Many of these?	8	facts of the matter is that paraquat,
9	A. I've seen these emails.	9	with the levels of emetic that are
10	Q. And right. And there's numbers	10	present, has met the requirements of the
11	of them, and we the point is is that you	11	WHO, the other organization you describe,
12	he's made in the last several years he's	12	what's called the FAO specification.
13	made constant efforts. He actually asked for	13	So there are data which show that
14	a meeting with you, didn't he?	14	it has resulted in emesis/vomiting within
15	A. Yeah, and we have met with him.	15	the prescribed period of time in the
16	Q. And you met with him and he made	16	specification of paraguat.
17	a presentation to you, didn't he?	17	BY MR. TILLERY:
18	A. He did.	18	Q. Let me ask you something. How do
19	Q. And the purpose of the presentation	19	you know how do you know that the US EPA's
20	was to once again ask you to fix the product,	20	been informed?
21	wasn't it?	21	A. Because our US regulatory manager
22	A. It was to lay out the reasons why	22	has been informed.
23	he felt that there was a case in his mind	23	Q. By whom?
24	to increase the level of emetic in paraquat.	24	A. I can't give you a name. I've not
25		25	been involved in those discussions.
45			

	Dags 1207		Dama 1200
	Page 1397		Page 1399
1	Q. Well, I find it interesting that you	1	person, that Dr. Heylings had been
2	knew this fact. You know why I find that	2	had actually been in communication.
3	interesting? Because it's never been made	3	BY MR. TILLERY:
4	public.	4	Q. So somebody in the EPA called
5	So how is it that you got	5	Syngenta and told them that a report had been
6	information from the United States EPA that	6	filed, right?
7	isn't on the public docket	7	A. I don't know if I don't believe
8	A. No, I'm not saying	8	it happened that way. I think it came up in
9	Q about Dr. Heylings's objection?	9	a regular conversation that it had between our
10	How did you find that out? Who told you?	10	regulatory manager and the person responsible
11	MR. NARESH: Objection; foundation,	11	for paraquat at the EPA. Part of the regular
12	form, scope.	12	calls that they have.
13	THE WITNESS: We found out first of	13	Q. I'm trying to understand how these
14	all from Dr. Heylings, first	14	communications take place when everybody else
15	BY MR, TILLERY:	15	in America who looks at the US EPA docket
16	Q. Where did you see that? It's not in	16	is unable to see this communication. How is it
17	any of his emails.	17	that you knew that? Somebody called you and
18	A. No	18	told you.
19	Q. When did he tell you that?	19	And let me ask you: Is it odd that
20	A. Dr. Heylings told us that verbally.	20	it's never been placed in a public docket?
21	Q. So there's no record now you know	21	A. All right, two points
22	that he told you, right?	22	MR. NARESH: Object to the form,
23	It wasn't the regulatory person	23	foundation and scope.
24	in the United States who told you. The story	24	BY MR. TILLERY:
25	drifts a little bit. Now it was Dr. Heylings	25	Q. Let me ask you this, sir. Let me
	Page 1398		Page 1400
1	who told you, right?	1	just ask you this
2	A. No, no	2	A. Can I answer the question, please?
3	Q. Is that right?	3	Q. Sure.
4	MR. NARESH: Objection to form and	4	A. Just, first of all, to say it's not
5	foundation.	5	accurate, as far as I understand, that we were
6	THE WITNESS: Give me a chance	6	called by the EPA to tell us that. By all
7	to answer this properly. We were first	7	means check this. My understanding is that
8	told by	8	in a regular call between our regulatory
9	THE STENOGRAPHER: Sorry,	9	manager and the EPA person, that that subject
10	Dr. Botham.	10	was mentioned.
11	I didn't get the objection.	11	Q. Let me ask you, did you or anybody
12	MR. NARESH: Objection to form and	12	working for Syngenta tell the EPA not to post
13	foundation.	13	Jon Heylings's objection about this chemical
14	THE STENOGRAPHER: Thank you.	14	product and the emetic? Did you suggest that
15	Sorry, Dr. Botham.	15	not be publicly filed and posted?
16	THE WITNESS: So, yeah, let me	16	MR. NARESH: Objection; form,
17	answer this fully. We were first told by	17	foundation and scope.
18	Dr. Heylings verbally about his intention	18	THE WITNESS: Having had a number
19	to communicate to the EPA and	19	of discussions with my colleagues in the
20	actually, he gave us a name. I can't	20	United States, including the regulatory
21	remember the name of the person but	21	manager, I am almost as certain as I can
22	he gave us a name.	22	be as I can be that no such
23	Subsequently, our North American	23	conversation has been had because our
24	regulatory manager received verbal	24	regulatory manager has been regularly
2 <del>4</del> 25	confirmation, I think from the same	25	monitoring the public docket of the EPA,
45	COMMINATION, 1 HIMK HOM HIC SAME	2.3	monitoring the public docket of the EFA,

	Page 140	1	Page 1403
1	expecting to see that communication from	1	defining a dose-response. There are no dose
2	Professor Heylings.	2	groups of any significant size for which half
3	BY MR. TILLERY:	3	or more of the people vomited. This is
4	Q. And it has never appeared, has it?	4	reflected in the very wide confidence
5	A. It has never appeared and, as far	5	intervals for the dose resulting in a 50%
6	as I am concerned and aware, that lack of	- 6	probability of vomiting at any time. At the
7	appearance is not due to any action that	7	second highest dose one out of two people
8	Syngenta has taken.	8	vomited and"
9	Q. Okay.	9	Sorry, I can't see the rest.
10	MR. TILLERY: Now let's go to 795,	10	Q. Yes. We'll get you the rest.
11	please. Actually, let's go to 497.	11	There you go.
12	I'm trying to get finished here in	12	A. "and" sorry.
13	the last two exhibits, sir, so we get it	13	" at the highest dose one out of
14	concluded today, on this topic at least.	14	one vomited. These datapoints are suggestive
15	This is exhibit number what?	15	of a steep dose response (see figure above),
16	MS. BRUMITT: 131.	16	but the tiny numbers of people involved mean
17	MR. TILLERY: 131.	17	that these datapoints are highly uncertain and
18	(Botham Exhibit 131 marked for	18	the fitted dose response is therefore also
19	identification.)	19	highly uncertain. The data for vomiting
20	BY MR. TILLERY:	20	within an hour or within 30 minutes are weaker
21	Q. If you pull this up.	21	still, and do not support the fitting of a
22	Okay. Are you familiar with this	22	dose-response relationship."
23	document?	23	Q. So Dr. Kim Travis also agrees with
24	A. I am.	24	Dr. Heylings that the human data available
25	Q. What is this document?	25	to Rose at the time, at best, weakly supported
	Page 140	2	Page 1404
1	A. Well, this is a report of the	1	Rose's conclusion as to the proper
2	analysis that I was telling you about	2	concentration of the emetic at 0.05 percent,
3	previously where Dr. Travis, with support from	3	correct'?
4	statisticians, has looked again at the	4	A. I think I've said all along that
5	original clinical data on the emetic	5	we agree the data are weak.
6	properties of PP796.	6	Q. Okay. So you agree with the
7	<ul> <li>Q. And this is where you reported that</li> </ul>	7	statement I just said, right?
8	Dr. Travis strike that.	8	A. I said that the data are weak and
9	This is where you referenced	9	therefore you can understand why the
10	Dr. Travis's conclusions or statements,	10	conclusions reached by Rose were made in terms
11	correct?	11	of the best endeavors to try and interpret it.
12	A. That's right.	12	Q. Now why don't you read the next
13	Q. All right. If you go to the	13	paragraph to yourself.
14	discussions page at	14	A. Yes, and the key bit there is
15	MR. TILLERY: If we could pull it	15	to this extent, "despite the many differences
16	up for him, please, he's familiar with	16	in approach, the two analyses produce a
17	it, 976, which is this page of the	17	similar best estimate of the effective PP796
18	document.	18	emetic dose."
19	BY MR. TILLERY:	19	MR. TILLERY: I move to strike the
20	Q. Under "Discussion." Can you read	20	question or the answer. There was
21	the discussion, that paragraph and the next one	21	no question on the table.
22	as it continues on to the next page, into the	22	BY MR. TILLERY:
23	record.	23	Q. I asked you to read the document
24	A. "The human clinical data for the	24	to yourself. Remember.
25	emesis caused by PP796 alone are not ideal for	25	Now, here's my question. Do you

72 (Pages 1401 to 1404)

	Page 1405		Page 1407
1	agree that a fair summary of this paragraph	1	Exhibit No. 132. It's SYNG-PQ-04262400.
2	is that while the data at the time was	2	(Botham Exhibit 132 marked for
3	"incapable of supporting a confident	3	identification.)
4	conclusion," that the inclusion of a	4	BY MR. TILLERY:
5	0.05 percent emetic would be effective, by luck	5	Q. I think this is a document that
6	or whatever you want to call it, experience has	6	you've seen recently, sir, probably, as well
7	proven that Rose was correct	7	in your investigation. Have you seen this?
8	A. Well	8	A. I'm not sure I have seen this
9	Q was incorrect.	9	particular one recently, but let's take
10	A. Yeah, would you like to restate	10	a look. It may become more apparent as
11	that. I don't think you	11	we look at it.
12	Q. Yeah, I think experience has	12	Q. Absolutely. It's a February 20,
13	shown that Rose was incorrect?	13	1986 document, and this is SYNG-PQ-04262400.
14	A. No, I don't think this is not	14	A. Okay. Is there a particular part
15	saying that Rose was incorrect. This whole	15	of the document you would like me to focus on?
16	document is saying that there is so much	16	Q. There is, sir. If you could go
17	uncertainty in the data that the judgment that	17	to 2409. And this is an analysis of ICI Japan
18	he made is not necessarily wrong.	18	Limited referencing the emetic, talking about
19	Q. Okay. There was so much	19	survival rates, people who have been sick by
20	uncertainty, yet there was no indication of	20	ingesting it, correct?
21	that when it was filed with the United States	21	A. Okay, yes.
22	Environmental Protection Agency	22	Q. Okay. Why don't you now go towards
23	A. No, because at the time the view	23	the end of this, and the value of emetic in the
24	was that they had made their best effort	24	product they sold in Japan, this Gramoxone
25	or Rose had made the best effort to estimate	25	product. And if you go to page 2409.
	Page 1406		Page 1408
1	that effective dose.	1	A. Okay. Yes, I'm reading this now.
2	Q. Did ICI, Zeneca, Syngenta	2	Q. All right. What's the first
3	conduct hospital surveys of paraquat-poisoning	3	sentence say? And this is Dr. Smith speaking,
4	incidents in the United Kingdom and	4	if you want to verify that. The same
5	THE STENOGRAPHER: Sorry,	5	Dr. Smith, okay.
6	Mr. Tillery. Could you start that one	6	Actually I believe it is. Maybe
7	again, sorry, please?	7	it's Dr. Calderbank.
8	MR. TILLERY: Absolutely, Leah.	8	A. I
9	BY MR. TILLERY:	9	Q. Can you verify, before you speak,
10	Q. Did ICI, Zeneca and Syngenta conduct	10	whether this is Smith or Calderbank speaking?
11	hospital surveys of paraquat-poisoning	11	A. Well, could you go you need
12	incidents in the UK and Asia in the 1980s?	12	to go to the top of the document again.
13	A. Yes, we did.	13	Q. It may be yes, it's Calderbank,
14	Q. Did those surveys show any	14	sir. It is Calderbank.
15	improvement in terms of survival following	15	A. Yes.
16	paraquat ingestion after the emetic being	16	Q. So if you look at this document,
17	included?	17	"Value of emetic in"
18	A. Yes. The analyses showed, for	18	What is that word?
19	example in the United Kingdom, that the emetic	19	A. " in Preeglox."
20	was effective in terms of the FAO	20	Q. Preeglox, is that what you called
21	specification.	21	a
22	MR. TILLERY: Okay. Let's go	22	A. Preeglox. Yes, it was the trade
23	to the next exhibit. What is it? 132.	23	name.
24	Let's look at Exhibit 132.	24	Q. Trade name. For Gramoxone, right?
25	This is Plaintiff's	25	A. Yes, yes.

	Page 1409		Page 1411
1	Q. All right. And let's see what the	1	"As a consequence of our recent
2	conclusion here is:	2	findings with paraquat formulations containing
3	"There is no good evidence that the	3	a higher level emetic PP796, we have examined
4	presence of emetic in Gramoxone-100 (20%	4	the effect of the French formulation in the
	paraquat ion) has helped to improve survival of	5	dog."
	those ingesting the product."	6	A. Yes.
7	This is 1986, right?	7	Q. "This formulation contains 100g/L of
8	A. Yes.	8	paraquat and was supplied by ICI Sopra,
9	Q. Ten years ten years after you	9	France.
10	started putting it in, correct?	10	"This formulation was registered in
11	A. Yes.	11	France following CTL studies in 1986/7. These
12	Q. This is your own doctor.	12	studies demonstrated that the acute oral LD50
13	MR. TILLERY: Now, finally, let's	13	in rats was similar to Gramoxone. However, as
14	go to 133.	14	far as I'm aware no dog studies were carried
15	(Botham Exhibit 133 marked for	15	out Since we have identified that 1.5g/L
16	identification.)	16	PP796 effectively reduces the toxicity of
17	MR. TILLERY: This is	17	Gramoxone in dogs by virtue of causing emesis
18	SYNG-PQ-03709695-9697.	18	within 30 minutes, we have now examine the
19	BY MR, TILLERY:	19	safening potential of the French formulation in
20	Q. Please take a look at this document.	20	six dogs.
21	A. Yes, okay. I can see that and	21	" The time to first emesis for
22	I'm reasonably familiar with the messages	22	the French formulation was 15 +/- 6 minutes at
	here.	23	32mg/kg and 14 +/- 2 minutes at 64mg/kg. The
24	Q. And you knew that the French had had	24	data fits very well with the predicted paraquat
25	a problem with ingestion of this chemical and	25	AUC versus time to emesis This is based on a
	Page 1410		Page 1412
1	had a lot of deaths, and they demanded a change	1	curve fit of more than 100 Gramoxone/
	in the product and one was done.	2	Magnoxone"
3	You knew that, right?	3	How do you pronounce that?
4	A. Yes.	4	Magnoxone?
5	Q. Do you remember that?	5	A. Magnoxone. Magnoxone.
6	A. Yes, I do.	6	Q. " Magnoxone experiments with
7	Q. And you remember that it made	7	various levels of emetic."
8	a dramatic change in the number of deaths,	8	Then on this next page, he says:
	percentage change, correct?	9	"I would suggest that a 200g/L
10	A. Well, if you go to the second	10	version of this French paraquat formulation
11	page I'm not sure that we yeah, here	11	containing the same concentration of PP796
	we go. If you just go up a little bit,	12	would be equally as safe in dogs and provide a
	it says here:	13	safer concentration to Gramoxone.
14	"I am unable to find evidence that	14	Then the last sentence, he says:
	paraquat poisoning in France has had	15	"If increasing the level of PP796 by
	no effect on reported poisonings or reported	16	3 fold in France has reduced the number of
	deaths"	17	fatal poisonings, this information would help
18	So	18	in resolving some of the technical, regulatory
19	Q. Well	19	and toxicological issues we [could] face in the
20	A I think there was some	20	development of a Gramoxone or Magnoxone
	uncertainty about what the actual clinical	21	formulation containing 1.5g/L PP796."
	data were. I think that's what I understood	22	Is that what he said to you?
	from this.	23	A. Yes, that's right, and I think
24	Q. Well, let's look at the front page,	24	he was indicating that it was not possible,
	the very first page. The first paragraph:	25	for whatever reason, to find direct evidence
25	the very first page. The first paragraph:	25	for whatever reason, to find direct evidence

	Page 1413		Page 1415
1	that the number of fatal poisonings had	1	changing? You've not looked at how many
2	reduced.	2	people have died?
3	MR. TILLERY: Move to strike your	3	A. There have been a number of
4	answer as unresponsive.	4	estimates made of that figure, not just by us
5	BY MR. TILLERY:	5	but by independent people.
6	Q. Is that what he was reporting	6	MR. TILLERY: Let's go off the
7	to you, what I read?	7	record for a moment.
8	A. Yeah, and I'm trying to tell you	8	THE VIDEOGRAPHER: We are going off
9	in my response what I think he was saying	و ا	the record. The time is 6:10.
10	there, yes.	10	(Off the record.)
11	Q. Right. Yeah, and what I was trying	11	THE VIDEOGRAPHER: We are back on
12	to do was get a straight answer.	12	the record. The time is 6:12.
13	Is that what he told you in this	13	MR. TILLERY: What's our exhibit
14	letter? Did I read that correctly?	14	number at this point? 134.
15	A. You read it correctly, yes.	15	MR. NARESH: Can we go off the
16	O. All right. And do you agree that	16	record for one moment, please.
17	a combination of dilution prior to sale and	17	MR. TILLERY: Absolutely.
18	higher emetic content would produce a much	18	THE VIDEOGRAPHER: We are going off
19	safer paraquat product and save lives?	19	the record. The time is 6:12.
20		20	(Off the record.)
21	A. Clearly, diluting paraquat would make it less toxic. I think the case for how	21	THE VIDEOGRAPHER: We are back on
22	effective changing the emetic is is not as	22	the record. The time is 6:14.
23		23	(Technical difficulties.)
24	clear, and there's lots of other evidence we could talk about which shows that.	24	THE WITNESS: We can't hear you,
25		25	Ragan. We can't hear you too well.
25	Q. So you don't agree that increasing	23	
	Page 1414		Page 1416
1	the emetic would make it safer, even after this	1	MR. NARESH: Can you hear me now?
2	time, correct?	2	THE WITNESS: That's better.
3	A. It really isn't	3	MR. TILLERY: We can.
4	Q. Is that	4	MR. NARESH: Okay.
5	A. It really is not as clear as that.	5	So to confirm what we said off the
6	We have increased the level of emetic in other	6	record, plaintiffs are ending for the day
7	formulations around the world and it's not	7	but intend to hold the deposition open.
8	very obvious that it makes the same degree of	8	As I mentioned at the end of Dr. Botham's
9	safening in human beings as it appears to do	9	two days previously, we do have some
10	in some of these animal models.	10	redirect examination for this witness and
11	BY MR. TILLERY:	11	Syngenta does object to the use of any or
12	Q. How many people have died from	12	all of this deposition until we have had
13	intentionally or accidentally ingesting	13	an adequate opportunity to do redirect,
14	paraquat since you've put it on the market?	14	which I understand my opportunity is not
15	MR. NARESH: Objection; foundation.	15	now.
16	THE WITNESS: You've asked me that	16	I just wanted to say that on the
17	several times and I can't give you	17	record.
18	a number, I'm afraid.	18	MR. TILLERY: And Dr. Botham, just
19	BY MR. TILLERY:	19	so we're just abundantly clear, you
20	Q. You have a database, don't you?	20	will you fully intend to maintain your
21	A. We have our databases, yes.	21	employment through into the early fall,
22	Q. And are you saying that's not	22	so that if we got something set up in
23	something you've looked at when you've	23	July, that would be compatible with your
24	investigated this issue, this issue that this	24	schedule at Syngenta, correct?
25	man has pleaded with you about doing	25	THE WITNESS: That will be okay,

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yes, that's correct.  MR. TILLERY: All right. Thank you wery much. Yes, thank you. We can close the record. And we have people here to remain to help Leah if she needs help with any of the terms or letters, records, documents necessary to complete the record. Thank you very much, and thank you, D. Dr. Botham. THE WITNESS: Thank you. THE WITNESS: Thank you. THE VIDEOGRAPHER: This concludes the deposition. We are going off the record. The time is 6:16. (The deposition concluded.)  Page 1418  CERTIFICATE OF WITNESS  II, PHILIP BOTHAM, declare that I have read the entire transcript of Volume V of my deposition testimony, or the same has been read to me, and certify that it is a fue, correct and complete record of my testimony given on Firday, June 19, 2020, save and except for changes and/or corrections, if any, as indicated by me on the attached Earnat Sheet, with the understanding that under oath.  CERTIFICATE OF WITNESS Sangued.  Page 1428  REPORTIBE CERTIFICATE  REPORTIBE CERTIFICATE REPORTIBE CERTIFICATE LILBAH WILLERSDORF, Accredited Verbatian Reporter, Member of the British Institute of Verbatian Reporter, Clevel 2), International Participating Member NCRA.  Morary Public  REPORTIBE CERTIFICATE of with the statched Earnat Sheet, with the understanding that offer these changes and/or corrections as if still under oath.  Signed Philip Botham  This with the understanding that offer these changes and/or corrections as if still under oath.  Signed Philip Botham  The WITNESS WEREROF I have hereunto set my hand this July 1, 2020.  LEAH M. WILLERSDORF Accredited Verbatian Reporter, Member of the British Institute of Verbatian Reporter (Level 2), International Participating Member NCRA.  Signed  Philip Botham  The Witness was taken and reduced to stenotype writing before me with 3 contours to the best of said witness was taken and reduced to stenotype writing before me with 3 contours to the eation in white the species was taken and reduced to stenotype writing before me with 3 contours of the stenoty of said witness		Page 1417		Page 1419
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