

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.,
Plaintiffs,

Case No.: 17-L-517

v.

SYNGENTA CROP PROTECTION, LLC, et al.,
Defendants.

February 26, 2020
9:13 a.m.

CONTINUED VIDEO DEPOSITION of DR. PHILIP BOTHAM,
held at the offices of Kirkland & Ellis LLP, located
at 30 St. Mary Axe, London EC3A 8AF, United Kingdom,
before Laura Evans, Accredited Court Reporter of the
United Kingdom and Europe.

C O N F I D E N T I A L

1 refute findings that you made in your own laboratories that
2 duplicated what was done in the public literature, right?

3 A. I would not put it that way. What the intent here
4 was to say if the finding that we are talking about here was
5 indeed repeatable, as would always be the case with any
6 toxicological finding, you don't simply say you have that
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
9 seeing that finding? You go down the dose levels --

10 Q. Okay.

11 A. -- to find a "no effect" level.

12 Q. Have you seen this before?

13 A. I have may have done. I don't today recall whether
14 I have or not.

15 Q. Okay. So -- and you don't remember being here,
16 right, at this meeting?

17 A. Because I don't exactly know which meeting this was.

18 Q. Okay. Let's go to the last point that Dr. Sturgess
19 made, which says:

20 "Avoided measuring PQ levels in the brain ..."

21 So Syngenta was avoiding measuring PQ levels in the
22 brain, right? That's what he says?

23 A. At that point clearly that was what some people felt
24 was the right thing to do.

25 Q. Right. And to, in other words, when you do

1 Did Syngenta publish any of Dr. Marks' studies
2 anywhere?

3 MR. NARESH: Objection to form.

4 A. I don't believe that Dr. Marks' studies specifically
5 were ever published.

6 BY MR. TILLERY:

7 Q. Okay. Now, let us go to next exhibit number 98,
8 please, our internal number 98.

9 Next exhibit is 24, counsel.

10 (Exhibit 24 marked for identification).

11 A. Thank you.

12 MR. NARESH: Is this the first page of the
13 document?

14 BY MR. TILLERY:

15 Q. It is.

16 Is this another presentation so far as you can tell,
17 sir?

18 A. This looks like it is another paraquat
19 presentation -- PowerPoint presentation, yes.

20 Q. PowerPoint?

21 A. A PowerPoint presentation.

22 Q. And this has a date of -- can you see a date on it?
23 We may see one.

24 A. I don't immediately see one.

25 Q. It discusses work to be done at CTL with paraquat in

1 "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:

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

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?

1 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 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
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

1 "... to Charles River male C57Bl6J mice."

2 Is that correct?

3 A. That is correct, and that part of the purpose is the
4 same as the purpose of the same previous experiment.

5 Q. It is exactly the same, isn't it?

6 A. Yes.

7 Q. Okay. And continuing on, she says:

8 "This study was conducted in order to determine the
9 reproducibility of findings from an earlier CTL study ...
10 where no apparent effect of [paraquat] was observed at these
11 toxicity endpoints. The stereology methodology used in the
12 present study has been modified from that detailed in ..."

13 The study that she reports as XM7229. Is that the
14 first study?

15 A. That's what we were talking about previously.

16 Q. And continuing on, she says:

17 "This was as a result of information obtained
18 following a lab visit to the Parkinson's Institute,
19 California, and discussions with Dino Di Monte's research
20 group."

21 Correct?

22 A. Indeed, as I have indicated.

23 Q. And she was educated in the use of an automated
24 stereology technique, correct?

25 A. That's right, as used in his laboratory.

1 Q. Look on page 6808:

2 "With respect to the apparent cell loss ..."

3 A. Yes.

4 Q. Okay. And Dr. Marks -- would you take a minute to
5 read that, please?

6 A. Yes, I would like to do that, please.

7 Q. Yes. And, sir, that whole page or at least the last
8 two paragraphs. Take your time.

9 A. Okay.

10 Q. Have you read it?

11 A. Yes.

12 Q. Dr. Marks attributes the failure to detect neuronal
13 cell loss in study XM7229 to differences in the stereology
14 methodology, software and hardware used in that study;
15 correct?

16 A. She does.

17 Q. And she also reports that in the study that you have
18 in front of you, the newer one or the more recent one,
19 XM7258, she:

20 "... used one of the most widely used and accurate
21 stereology systems currently available and the methodology
22 was refined to further improve the accuracy of the cell
23 count data."

24 Correct?

25 A. Indeed.

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
20 that it be reported?

21 A. I saw your letter, yes.

22 Q. You saw my -- I'm sorry, strike that.

23 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.

1 A. Within that timescale, it did not reverse.

2 Q. The last paragraph, okay -- and that is 2792 --

3 Dr. Marks says:

4 "These results support the findings of two previous
5 CTL studies XM7258 and XM7371 ... and demonstrate that
6 paraquat, when administered to C57Bl6J mice ... would appear
7 to be capable of inducing nigral but not striatal toxicity."

8 Right?

9 A. Yes.

10 Q. And nigral toxicity is a form of neurotoxicity
11 again?

12 A. Nigral is meant to be the substantia nigra.

13 Q. The substantia nigra, yes, okay. The studies
14 suggest -- support -- the findings that paraquat is
15 neurotoxic, don't they?

16 A. They support that, that finding yes.

17 Q. Yes. This is the third Syngenta CTL study that
18 found that paraquat causes loss of dopaminergic neurons;
19 correct?

20 A. Correct.

21 Q. And the third Syngenta CTL study where Dr. Marks
22 found the loss of dopaminergic neurons were comparable to
23 the loss reported by independent researchers in published
24 scientific literature; correct?

25 A. Correct.

1 Q. The third Syngenta study to repeat the results of
2 independent researchers' finding that paraquat is
3 neurotoxic?

4 A. As specifically defined by the loss of dopaminergic
5 cells. There were other findings that were not seen. Like
6 the loss of dopamine has not been seen consistently in the
7 studies --

8 Q. But in the limited context in which I asked the
9 question, to repeat the findings means replicate the
10 findings?

11 A. In that area, that is correct --

12 Q. So this is the third one in a row to replicate the
13 work by independent researchers?

14 A. Can you just say that again?

15 Q. By independent researchers?

16 A. Yes.

17 Q. And it also means, for these purposes, that these
18 studies reproduce the findings of the independent
19 researchers?

20 A. They do.

21 Q. If you look at 2807, the first full paragraph, sir,
22 tell me when you are there.

23 Dr. Marks says:

24 "Our data would appear to be supportive of the
25 hypothesis that a sensitive subpopulation of dopaminergic

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.

10 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

1 A. Yes, I can neither confirm nor deny that.

2 Q. Who is -- strike that.

3 Who owns Syngenta?

4 MR. NARESH: Objection, scope.

5 A. ChemChina.

6 BY MR. TILLERY:

7 Q. Where is Syngenta headquartered?

8 A. Basel.

9 Q. Okay.

10 Was paraquat banned by any country because of its
11 neurotoxicity, or its potential to be neurotoxic?

12 A. I don't believe so. But I would -- again a detail
13 that I would need to check. My understanding is most of the
14 bans have been associated with its acute toxicity.

15 Q. Has paraquat been banned by any country because
16 Syngenta could not establish that it was not neurotoxic?

17 A. I'm not aware of that, but again I would need to
18 check the detail.

19 Q. Has any country banned paraquat because of a risk of
20 brain injury?

21 A. I am not aware of that.

22 Q. But you can't deny --

23 A. I would need to check that.

24 Q. Has Syngenta been asked by any country considering
25 the registration and permission to continue to sell it to

1 Marks's work, wasn't it, with respect to her
2 studies 2 and 3?

3 MR. NARESH: Objection to form.

4 THE WITNESS: Yes, we agree that
5 the earlier Marks studies were not
6 directly communicated to regulatory
7 agencies.

8 BY MR. TILLERY:

9 Q. And they weren't published either,
10 were they?

11 A. The first study was presented at
12 an external scientific meeting but not
13 published.

14 Q. The second one was not published,
15 right?

16 A. That's correct.

17 Q. The third study was not published?

18 A. That's correct.

19 Q. And those studies were never sent on
20 to relevant regulatory agencies, correct?

21 A. That's right. It was the fourth
22 study that was communicated to the EPA.

23 Q. And only part of the fourth study;
24 would you agree with me? Or should we go back
25 through that? Only a part of it, only one

1 A. They did. As measured in that
2 study, yes, that is correct.

3 Q. And you indicated I think yesterday
4 that the reason that you did this was because
5 there was a great weight of authority, or the
6 weight of the evidence, scientific evidence,
7 was against her studies. I think that's the
8 reason you said you were able to say these
9 things on your website. Remember?

10 A. No, I --

11 MR. NARESH: Objection to form.

12 THE WITNESS: Just to clarify, what
13 I said is that --

14 THE STENOGRAPHER: Sorry, I didn't
15 get the objection.

16 MR. NARESH: It was an objection
17 to form.

18 THE STENOGRAPHER: Thank you.

19 THE WITNESS: Sorry, Ragan, you'll
20 have to shout up again.

21 So, yes, the -- no, the reason why
22 the statement is as it appears here on
23 paraquat.com is because, in taking the
24 totality of the weight of evidence, so
25 when we include the studies that were