Chevron Environmental Health Center, Inc.

FILE COPY

Richmond, California
November 14, 1985

CHEMICAL INVOLVEMENT/PARKINSON'S DISEASE

105.3 PARAQUAT TECH

81.0

J. N. SULLIVAN
Chevron Corporation

Attached please find the Environmental Health Center's response on Parkinson's Disease for transmittal to Mr. Follis. If you have any further questions, please feel free to contact me.

J. N. OSPENSON

KDM-1/NBI

Attachment

cc: R. D. Cavalli
J. A. MacGregor
Files - w/attachment

Plf EXHIBIT 14
WITNESS: Patterson
DATE: 3-4-20
Anrae Wimberley, CSR 7778

CHEMICAL INVOLVEMENT/PARKINSON'S DISEASE

The article in the July 19, 1985 issue of Science raised the general allegation that environmental factors, primarily pesticides, may be implicated in causing Parkinson's Disease. Paraquat was specifically named in the article because of it's structural similarity to a chemical known to cause Parkinson's Disease, MPTP. There is no scientific evidence to support a cause and effect relationship between exposure to paraquat and development of Parkinson's Disease. In fact, considerable evidence is available to refute such a claim. Several important facts are summarized below:

1. Entry of paraquat into the nerve cells of the portion of brain effected by MPTP is impeded by two mechanisms. First, positively charged chemicals like paraquat are excluded from most regions of the brain by a specialized layer of cells called colloquially, the "blood-brain barrier". On the contrary, a neutral molecule like MPTP passes easily through this "barrier" into the brain.

   Secondly, after entering the brain, MPTP is metabolized to a chemical which can be selectively accumulated by the brain cells through a monoamine uptake system. Because paraquat is a diamine compound it cannot be selectively accumulated by that cell type.

2. Lifetime feeding studies with paraquat in rats and mice have not illicited any clinical signs of Parkinson's Disease in the test animals. A one-year feeding study in dogs also failed to induce Parkinson-like behavioral changes so easily seen in MPTP treated animals.

3. In epidemiology studies of people occupationally exposed to paraquat, no Parkinson-like syndrome has ever been reported.

4. Ingestion of paraquat by individuals in quantities sufficient to cause renal and pulmonary toxicity has not illicited any signs of Parkinson's Disease.

5. The distribution of Parkinson's Disease in Canada is thought to not be coincident with the pattern of paraquat usage. Currently, further work is being funded by ICI in this area. ICI will map paraquat usage in Canada and compare this usage pattern to that reported for Parkinson's Disease.

Several investigators are doing further experiments with paraquat in animal systems which are known to be able to produce Parkinson's Disease from MPTP. Chevron will continue to track this research.

JAM/kdm-1/NBI
sullivan
11/14/85

FILE COPY

Memorandum

San Francisco, California
October 14, 1985

CHEVRON
ENVIRONMENTAL HEALTH CENTER
OCT 21 '85

MS. JUDY MacGREGOR:

As discussed, after the ICI Meeting in early November, please prepare a response for me to Mr. Keller that would be a suitable transmittal to Mr. Follis regarding his concern.

J. N. SULLIVAN
10-18-85

105.3 PARAQUAT TECH-GEN
81.0

SITE	NAME	INIT	HOLD	CC
	J. N. OSPENSON			
	R. D. CAVALLI			
	J. T. [illegible]			
	J. K. [illegible]			
	J. A. MacGREGOR			
	J. [illegible]			
	J. C. SINCLAIR			
RETURN		CIRC.		FILE

cc: Mr. J. N. Ospenson

MR. G. M. KELLER:

Dear George:

I read the article in Chevron World that outlines our distribution of paraquat and the great care which is used to guard against poisoning by those handling this product. The attached outlines an aspect of the problem which differs from the normal dangers in dealing with poisons--namely, long-term effects that might not become apparent except after many years.

Since we don't want to take any chance of facing an asbestos situation down the road, I am sure your people are following this aspect of the matter most closely. However, I thought I would pass this on to you as I cannot think of anything more horrible for us to bequeath to our successors than an asbestos problem.

Regards,

R. GWIN FOLLIS

Attach.

Memorandum

Chevron's Paraquat and Parkinson's Disease

October 8, 1985

Attached are an article from the July 19 issue of Science, discussing recent evidence of environmental causes of Parkinson's and portions of an article from Chevron World's summer 1985 edition focused on the important economic and ecological advantages of conservation tillage using the herbicide, Paraquat. Chevron holds sole U.S. marketing rights for the product which is produced by ICI. Conservation tillage is expected to become the major tillage method in the country.

The article raises concern that Paraquat may be implicated because:

Paraquat is chemically very similar to the by-product of synthetic heroin manufacture, MTPT, which produces almost instant Parkinson's, by killing dopaminergic neurons in the brain, and

Paraquat is among the agricultural chemicals used in the area of Canada in which an extraordinarily high correlation of .967 was found between levels of pesticide use and Parkinson's cases. The incidence of the disease in the area was about 7 times the rate in areas where use was low.

The bankruptcy of the asbestos manufacturer, The Manville Corporation, has highlighted the especially severe financial risks involved in selling a product which contributes to a chronic disease. Parkinson's can go on for decades.

For the present, we can hope that another chemical or cause will explain the correlation found in the Barbeau study, but I trust that Chevron is watching this closely, and, perhaps, doing a little testing, for the sake of its customers and stockholders.

JGF