

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS

-----

|                             |   |               |
|-----------------------------|---|---------------|
| UNITED STATES OF AMERICA,   | ) |               |
|                             | ) |               |
| Plaintiff,                  | ) |               |
|                             | ) |               |
| vs.                         | ) | No. 78-C-1004 |
|                             | ) |               |
| OUTBOARD MARINE CORPORATION | ) |               |
| and MONSANTO COMPANY,       | ) |               |
|                             | ) |               |
| Defendants.                 | ) |               |

-----

Deposition

of

R. Emmet Kelly

Taken on behalf of Plaintiff

March 26 and 27, 1981

*Susan M. Rick*  
Stenotype Reporter  
4144 Taft Avenue  
St. Louis, Missouri 63116

EXHIBITS (Continued):

| <u>Number</u> | <u>Description</u>                                                                       | <u>Marked for Identification</u> |
|---------------|------------------------------------------------------------------------------------------|----------------------------------|
| 7             | Diphenyl. Description of Properties                                                      | 232                              |
| 8             | Younger Laboratories, Toxicological Investigation of Pydraul F-9, dated November 9, 1966 | 237                              |
| 9             | Data Sheet for Toxicological and Safe Handling Information                               | 241                              |
| 10            | Memo to R. Emmet Kelly from Gene Wilde, dated 2/13/67                                    | 245                              |

-----

# INDEX

March 26, 1981:

WITNESS: R. Emmet Kelly PAGE

Direct Examination ( By Mr. Hynes). . . . . 3

-----

March 27, 1981:

WITNESS: R. Emmet Kelly

Direct Examination Continued (By Mr. Hynes) 159

Cross-Examination (By Mr. John) . . . . . 161

Cross-Examination (By Mr. Featherstone) . . 266

Redirect Examination (By Mr. Hynes) . . . . 291

Recross Examination (By Mr. John) . . . . . 293

## EXHIBITS:

| <u>Number</u> | <u>Description</u>                                      | <u>Marked for Identification</u> |
|---------------|---------------------------------------------------------|----------------------------------|
| 1             | Letter dated 2/3/71 to Griffith E. Quinby, M.D.         | 209                              |
| 2             | Letter dated 2/14/50 to Dr. Louis Spolyar               | 221                              |
| 3             | Memo dated 12/11/58 to Mr. H.S. Litzsinger              | 224                              |
| 4             | Report on 4465                                          | 229                              |
| 5             | Cecil Drinker report dated 9/15/38 to Monsanto Company  | 229                              |
| 6             | Swann Chemical Company report on properties of Aroclors | 232                              |

1 UNITED STATES DISTRICT COURT  
2 NORTHERN DISTRICT OF ILLINOIS  
3 -----

4 UNITED STATES OF AMERICA, )  
5 )  
6 Plaintiff, )  
7 )  
8 vs. ) No. 78-C-1004  
9 )  
10 OUTBOARD MARINE CORPORATION )  
11 and MONSANTO COMPANY, )  
12 )  
13 Defendants. )  
14 -----

15 BE IT REMEMBERED that, pursuant to the Federal Rules  
16 of Civil Procedure, and on the twenty-sixth and twenty-seventh  
17 days of March, 1981, commencing at the hour of nine a.m.  
18 thereof, at the office of the United States Attorney,  
19 1114 Market Street, Room 431, Saint Louis, Missouri, before  
20 me, Susan M. Rick, Certified Shorthand Reporter and  
21 Notary Public in and for the City of Saint Louis, State  
22 of Missouri, personally appeared

23 R. EMMET KELLY,  
24 a witness, called as a witness by the Plaintiff, who, being  
25 by me first duly sworn, was thereupon examined and  
interrogated as hereinafter set forth.  
-----

A p p e a r a n c e s

For the Plaintiff:

DEPARTMENT OF JUSTICE  
Chicago, Illinois

BY: James T. Hynes

-and-

Elizabeth Stein

For the Defendant:  
(Outboard Marine)

PHELAN, POPE & JOHN  
30 North La Salle Street  
Chicago, Illinois 60602

BY: Peter C. John

-and-

Roseann Oliver

For the Defendant:  
(Monsanto Company)

KIRKLAND & ELLIS  
200 East Randolph Drive  
Chicago, Illinois 60601  
BY: Bruce A. Featherstone

- - - - -

R. EMMET KELLY,

of lawful age being first duly sworn to tell the truth,  
the whole truth and nothing but the truth, deposes and says  
on behalf of the Plaintiff, as follows:

DIRECT EXAMINATION

QUESTIONS BY MR. HYNES:

Q This deposition is being taken pursuant to agreement  
between the parties and the Federal Rules of Civil Procedure.

Would you please state your full name and spell  
your last name, please.

A R for Robert Emmet Kelly, K-e-l-l-y.

Q What is your address?

A 665 South Skinker, S-k-i-n-k-e-r, Saint Louis,  
Missouri 63105.

1 Q Doctor Kelly, before we begin, either Mr. Featherstone  
2 or one of his associates said that you won't be able to  
3 go the full day today.

4 Do you know how long, approximately, you will be  
5 able to be deposed here today?

6 A I think I will be able to do a part of the day.  
7 If I show signs of weakening, fine, let me know.

8 Q But you don't have any --

9 A No set time, no.

10 MR. FEATHERSTONE: Mr. Hynes, we will see what will  
11 happen. I can't tell you in advance what will happen to  
12 the witness in terms of endurance and stamina.

13 Q (By Mr. Hynes) What is your profession, Doctor?

14 A I am a physician.

15 Q Would you briefly trace your educational background  
16 beginning in college?

17 A Yes, I received a Bachelor of Science in medicine  
18 from Saint Louis University in 1930 and an M.D. degree in  
19 1932.

20 I spent three years at City Hospital as an intern,  
21 resident, and assistant resident.

22 I have taken various postgraduate courses at the  
23 University of Missouri -- University of Michigan -- Mayo  
24 Clinic, and the College of Physicians courses.

25 Q Your internship, you said, was for three years?

1 A The internship was one year; assistant resident  
2 was one year; and resident in internal medicine was a  
3 third year.

4 Q What was the concentration in your internship and  
5 residency, what branch of medicine?

6 A The first two years were what was termed "rotating  
7 internships" in which you had med surgery, obstetrics, and  
8 the various specialties. The third year was entirely  
9 medicine.

10 Q Internal medicine?

11 A Internal medicine.

12 Q Subsequent to that training, you said you had  
13 postgraduate courses at various facilities.

14 Would you state which ones they were, the time,  
15 and the specialty that you studied in?

16 MR. FEATHERSTONE: Doctor Kelly, as a reminder,  
17 please wait until Mr. Hynes completes his question.

18 THE WITNESS: Yes. Thank you.

19 Would you repeat the question?

20 Q (By Mr. Hynes) You stated that you had certain  
21 postgraduate work.

22 Would you please state where that was taken and  
23 what field you took the work in.

24 A They were at various institutions. I remember  
25 Harvard. I remember the Mayo Clinic. I remember the

1 University of Michigan. I am sure there were others which  
2 I forget, and they were in either internal medicine or  
3 this occupational medicine.

4 Q Now, the three you remember were Harvard, the  
5 Mayo Clinic, and the University of Michigan.

6 At Harvard, what did you study?

7 A These were all two-week courses, and they were  
8 general medical courses.

9 Q Something like a continuing medical education type  
10 course?

11 A That's correct.

12 Q They were in the field of what?

13 A Internal medicine, and at least one was in  
14 occupational medicine. I believe that was at the University  
15 of Michigan, if I am correct.

16 Q Do you recall when these courses of study occurred?

17 A In the '40s some time.

18 Q Would you please explain what the field of internal  
19 medicine is?

20 A The field of internal medicine is that branch of  
21 medicine that relates to the illnesses of the entire body.  
22 It is the diagnosis of and treatment by nonsurgical means.  
23 It does not include the specialties of urology, ear nose  
24 and throat, dermatology, neurosurgery, or any of the  
25 surgical things.

1 Q You said you took at least one two-week course,  
2 you thought, in occupational medicine.

3 A That's correct.

4 Q Could you explain what occupational medicine is  
5 and what the course concerned?

6 A Occupational medicine is that branch of medicine  
7 that relates to the response of the human to products in  
8 the environment, either work environment -- the work  
9 environment.

10 Q What do you understand the work environment to  
11 mean?

12 A The neighborhood and the atmosphere in which the  
13 man spends eight hours a day working.

14 MR. FEATHERSTONE: In a plant?

15 THE WITNESS: In a plant or outside. If he is in  
16 outside construction, he works in the street.

17 Q (By Mr. Hynes) Are you Board Certified in any  
18 specialty?

19 A I am Board Certified in internal medicine,  
20 recertified in 1974, and Board Certified in preventive  
21 medicine in a sub specialty of occupational diseases.

22 Q When were you Board Certified in internal medicine,  
23 initially?

24 A Probably 1948 or 1949.

25 Q And you say you were recertified in 1947.

1           Would you explain what recertification is?

2           A     Yes. This is an occurrence that is happening in  
3 medicine in all the specialties that under the theory that  
4 certification at one time does not give you a lifetime  
5 tenure like a judge or something like that so you have to  
6 recertify yourself to show that you are still a specialist.

7           Q     How does the process of recertification work?

8           MR. FEATHERSTONE: You can describe it generally,  
9 Doctor.

10          A     It's an examination procedure. They look at what  
11 papers you may have written, and an examination.

12          Q     (By Mr. Hynes) A written examination?

13          A     A written examination.

14          Q     And you say you are also Board Certified in  
15 preventive medicine?

16          A     Preventive medicine, yes.

17          Q     What does that specialty entail?

18          A     As the name implies, it's the part of medicine  
19 that is supposed to prevent diseases. There are various  
20 specialties -- one is public health, one is aviation  
21 medicine, and one is occupational medicine, and there may  
22 be tropical medicine, but I have a subspecialty in  
23 occupational medicine.

24          Q     What does that entail?

25          A     Occupational medicine is that branch of medicine that

1 relates to the worker and his work environment.

2 Q When were you certified in preventive medicine  
3 with the subspecialty in occupational medicine?

4 A I think some time around 1950 or 1952.

5 Q Have you gone through the process of recertification  
6 in occupational medicine?

7 A No. They do not, as yet, have a recertification  
8 program for occupational medicine.

9 Q Are you licensed to practice medicine in any state?

10 A Yes, at present, in Missouri. I was in Illinois,  
11 and I was in Arizona, but I dropped those.

12 Q When were you licensed to practice in Missouri?

13 A In 1933.

14 Q When were you licensed to practice in Illinois and  
15 Arizona?

16 A 1935 or 1936 in Illinois, and 1947 or 1948 in Arizona.

17 Q And am I correct in assuming you just voluntarily  
18 dropped from the rolls of practicing medicine in Illinois  
19 and Arizona?

20 A Yes, I voluntarily dropped Arizona because I thought  
21 if I ever had a coronary I would go out and practice in  
22 Arizona; and after I didn't have a coronary, I decided to  
23 drop it a few years ago.

24 And in Illinois, after I retired from Monsanto,  
25 I had no reason to go over to the hospitals in Illinois so

1 I dropped my registration there.

2 Q About what year was that?

3 MR. FEATHERSTONE: When he retired.

4 A 1975 or 1976.

5 Q (By Mr. Hynes) That's when you withdrew from  
6 Illinois, 1975 or 1976?

7 A Yes.

8 Q Are you a member of any professional organizations  
9 currently?

10 A Yes.

11 Q Which?

12 A The American College of Physicians, the American  
13 Occupational Medical Association, the American Academy of  
14 Occupational Medicine, the American Heart Association, the  
15 Saint Louis Medical Society, the Missouri Medical Society,  
16 the American Society for Therapeutics and Experimental  
17 Pharmacology.

18 There may be a couple more.

19 Q The last professional organization -- Therapeutics  
20 and what?

21 A Experimental Pharmacology.

22 Q Would you explain what that organization is, the  
23 goals?

24 A The goals, the society is devoted to the spread of  
25 knowledge about therapeutics which means the branch of

1 medicine which treats -- the medicine you give to people  
2 to make people well, pharmacology is the study of chemicals  
3 used in medicine. Experimental refers to the type of study  
4 done before the product is generally used.

5 It may be clinical pharmacology rather than  
6 experimental pharmacology. It's one of the two words.

7 Clinical would be the use of drugs in medicine, licit drugs --

8 Q What type of drugs?

9 A Legal.

10 Q Were you or are you currently an officer in any of  
11 these societies?

12 A No. I am a lifetime member of the Board of the  
13 Saint Louis Heart Association, and I am not an officer in  
14 any of the others.

15 Q Were you previously an officer in any of these  
16 organizations?

17 A When the Society of American -- the American  
18 Therapeutics Society was on its own before it joined  
19 with The Society for Clinical Pharmacology, I was  
20 Vice-President of the Council for the American Therapeutics  
21 Society.

22 Q When was that?

23 A Some time in the late '40s or early '50s.

24 Q Are there any particular qualifications for  
25 membership in any of these societies other than having an M.D.,

1 let's say?

2 A Yes. They all have their own qualifications.

3 The American College of Physicians requires that  
4 you are accepted by your peers as an internist in one of  
5 the specialty fields in internal medicine or in general  
6 internal medicine. You are required to have passed the  
7 Board of Internal Medicine or a similar board, and you are  
8 supposed to have had a certain amount of publications,  
9 and I think that is all. I don't know what it is now.  
10 That's when I went in.

11 The American Heart Association, I think, is much  
12 less demanding. All you have to have is an M.D. degree  
13 and an interest in heart diseases.

14 The American Academy of Occupational Medicine,  
15 you have to be full time in occupational medicine.

16 The American Occupational Medical Association,  
17 you have to have an interest in occupational medicine.

18 Q Have you ever published any articles in professional  
19 publications?

20 A Yes, I have.

21 Q Offhand, do you recall how many you have published?

22 A Four or five.

23 Q Do you recall the subject matter of each and where  
24 they were published and when?

25 A The last one was on the subject of bladder cytology

1 in workers in a publication of the National Cancer  
2 Institute about five -- the Journal of the National Cancer  
3 Institute -- about five or seven years ago.

4 There was another article on roughly the same topic  
5 in the New England Journal of Medicine ten years ago.

6 Then, I had two or three on general occupational  
7 medicine published in journals of like the Missouri Medical  
8 Association and the American Journal of Public Health.

9 Q The subject matter of those two articles you spoke  
10 of dealing with bladder cytology, could you briefly explain  
11 what bladder cytology is?

12 A Bladder cytology is the microscopic study of cells  
13 that are shed by the bladder similar to the Pap stain in  
14 women -- or the Pap stain anyplace, but it's most popular  
15 in women.

16 Q Doctor Kelly, subsequent to your internship and  
17 residency training, where did you begin working?

18 A I started practicing in Saint Louis in July of 1935.  
19 I started part-time working with the Monsanto Company as  
20 a plant physician in January of 1936.

21 I went in service and continued that dual role --

22 MR. FEATHERSTONE: I think all Mr. Hynes wanted to  
23 know was where your first job was.

24 Q (By Mr. Hynes) Your first private practice of  
25 medicine was in July of 1935; is that correct?

1 A That's correct.

2 Q Am I correct that approximately the same time you  
3 started doing part-time work for Monsanto?

4 A Six months later.

5 Q Six months later, part-time work for Monsanto.

6 And how long did your private practice and your  
7 part-time work continue from January of 1936?

8 A Until March of -- when was Pearl Harbor?

9 Q December of 1941.

10 A March of 1942, then.

11 Q What occurred in March of 1942?

12 A I was called up by the Army.

13 Q Am I correct that, at that time, your part-time  
14 work for Monsanto terminated together with your private  
15 practice?

16 A Absolutely.

17 Q What were your duties in the Army?

18 A Well, I was in the medical corps. I was associated  
19 with the chemical warfare service both in the Pine Bluff  
20 arsenal in Arkansas and the Edgewood arsenal in Maryland.

21 Then, I had a couple of months at various Army  
22 hospitals and general hospitals, all in the United States.

23 Q What were your duties in the Army?

24 A It's pretty much like I did in the Service. I  
25 was responsible for the occupational care of the military and

1 civilian workers who worked at the chemical plants that  
2 were run by the chemical warfare service.

3 Q Were those substantially your same duties throughout  
4 your career in the Army?

5 A Yes, with the exception of a hospital at the  
6 beginning of my service and at the end of the service  
7 when I was doing general internal medicine in the hospitals.

8 Q When did you leave the Service?

9 A February of 1946.

10 Q Beginning in February of 1946, what was your next  
11 employment?

12 A I went practically full time with Monsanto. I  
13 used the word "practically" because I still did a very  
14 occasional consult for other people, but I was geographically  
15 full time with Monsanto.

16 Q Where were you working for Monsanto at that time?

17 A In the Saint Louis headquarters.

18 Q When did you stop doing this occasional consulting  
19 work?

20 A I still do it.

21 Q So, beginning in February of 1946, you were a full-  
22 time employee for Monsanto; is that correct?

23 A Yes.

24 Q When did you retire?

25 A From Monsanto?

1 Q Yes.

2 A December 1, 1975.

3 Q From February of 1946 through December of 1975,  
4 you continually worked for Monsanto; is that correct?

5 A That's correct.

6 Q Now, beginning in January of 1936, when you started  
7 working part time for Monsanto, what were your duties at  
8 that time?

9 A At that time, my duties consisted of the treatment,  
10 diagnosis and treatment of occupational conditions at the  
11 Queeny Plant, which was a plant in Saint Louis, together  
12 with the preemployment and periodic examinations of the  
13 workers at that plant.

14 Q Basically, you were the plant physician --  
15 would that be a fair interpretation?

16 A Yes, that's correct.

17 Q Did those duties change prior to your going into  
18 the Army in March of 1942?

19 A Yes.

20 Q When did those duties change, and what were the  
21 changes?

22 A They changed approximately in 1938 or 1939. They  
23 changed in the sense that other duties were added. Questions  
24 would come up --

25 Q You say other duties were added.

1 Would you explain what those duties were?

2 A That's what I was going to say.

3 Questions would come up of medical practice in  
4 various Monsanto plants at that time. There was no central  
5 Medical Department; and in as much as I was the only  
6 physician, even part time, associated with Monsanto in  
7 the area, I would be asked to resolve these particular  
8 problems which may come up.

9 Q Now, would these be health problems of workers  
10 at other Monsanto plants other than the Queensy Plant?

11 A Either health problems or questions as to what  
12 examination program or what facilities should be installed  
13 at various Monsanto plants which were either changing their  
14 type of manufacturing, having different products, or entirely  
15 new plants that were being built.

16 Q What would the general subject matter of these  
17 questions relate to?

18 MR. FEATHERSTONE: He already testified to that,  
19 Mr. Hynes. He just told you concerning health problems  
20 and medical procedures.

21 Q (By Mr. Hynes) What type of health problems and  
22 medical procedures?

23 MR. FEATHERSTONE: You can describe that generally.

24 A It would vary all over the place. For example,  
25 if we were building a phosphorus plant, we would have to

1 check the people to see if there was any particular  
2 treatment needed for phosphorus burns. We would have to  
3 decide whether or not a particular type of X-rays would  
4 have to be carried on because of the people working  
5 in the phosphorus plants.

6 If we were building a plastics plant, we would have  
7 to worry about solvents and plasticizers; and at that  
8 point in time, in 1938 or 1939, the knowledge of the  
9 toxicological properties of chemicals was very primitive  
10 so that I would have to scurry through the literature to  
11 see if there was anything known about these particular things.

12 Q Now, you say those duties were added to your other  
13 duties beginning around 1938, 1939.

14 A That's correct.

15 Q Subsequent to that time, were other duties added  
16 to your responsibilities, or were duties taken away from  
17 your responsibilities?

18 MR. FEATHERSTONE: Before he went into the Army?

19 A No.

20 Q (By Mr. Hynes) Between 1938 and 1939, you were both,  
21 as I characterize it, the plant physician for the Queeny  
22 Plant and you gave advice as to problems that came up in  
23 other Monsanto plants?

24 A It could be characterized as a medical director  
25 without a portfolio.

1 Q You did the work, but they didn't give you the  
2 title or the money?

3 A Correct.

4 Q Prior to your going in the Army in 1942, to your  
5 knowledge, did Monsanto have any programs for testing  
6 chemicals which were being formulated -- or research being  
7 done on them -- at Monsanto to check for toxicity or health  
8 problems with workers or customers?

9 A Yes.

10 Q Do you know how that was done or how you best recall  
11 that was done?

12 MR. FEATHERSTONE: What period of time are we  
13 talking about, Mr. Hynes?

14 MR. HYNES: Prior to his going into the Army while  
15 he was working at Monsanto.

16 MR. FEATHERSTONE: You mean in the late 1930s?

17 MR. HYNES: Yes.

18 MR. FEATHERSTONE: How is that germane in the  
19 lawsuit?

20 MR. HYNES: How isn't it germane? I want to find  
21 out what Monsanto's procedures were at that time, if they  
22 had any, to see how they changed and how they came up to  
23 date when he became medical director. I want to see what  
24 their procedures were.

25 MR. FEATEHRSTONE: Doctor, you can describe that

1 generally; and we will see where he goes with that.

2 THE WITNESS: Would you repeat the question, please.

3 (Whereupon, the court reporter read back the  
4 following question:

5 ANSWER: "Do you know how that was done or how you  
6 best recall that was done?")

7 Q (By Mr. Hynes) You stated that in the time you  
8 were working at Monsanto, before you went into the Army,  
9 Monsanto did have some processes for testing chemicals.

10 My question was, Do you recall what the processes  
11 were for testing chemicals for toxicity problems, worker  
12 exposure, and the like?

13 A Yes.

14 Q Could you just briefly state what you recall that  
15 procedure to be?

16 A Yes. As I say, the state of the art of toxicology  
17 before I came with Monsanto -- and certainly, if we are  
18 talking now in the time frame when I went into the Service --  
19 was quite primitive. We would respond in one of two ways.

20 By looking at a product and its intended use, we  
21 might decide if there was sufficient exposure to run what  
22 would be called acute screening testing on this particular  
23 compound.

24 If word were brought to us that the compound -- that  
25 some of our customers or if some of our workers were

1 developing ill effects that were alleged to be caused by  
2 our chemicals, we would do toxicological work.

3 Q Now, you say "we".

4 Were you involved in that?

5 A I would arrange for it to be done at outside  
6 consulting laboratories.

7 Q Was there a procedure set up within Monsanto to  
8 submit to you for your review research data, intended-use  
9 data, on products before they were marketed by Monsanto?

10 A Not in those early days.

11 Q When these outside laboratories did this screening  
12 for Monsanto, did the results come back to you for  
13 evaluation?

14 A Yes.

15 Q What authority did you have to make decisions once  
16 the data came back from the lab in terms of further  
17 marketing the product or making changes in the workplace  
18 and the like?

19 MR. FEATHERSTONE: Why don't you ask the specific  
20 question.

21 Q (By Mr. Hynes) Did you have any authority to  
22 compel Monsanto not to market a product, to make changes  
23 in the workplace?

24 A As far as the workplace in the Queeny Plant was  
25 concerned, I had what you could call absolute authority.

1 I was the plant manager there.

2 In my role as acting medical director, I had also  
3 almost unlimited authority to apply safe work -- rules for  
4 safe working in all plants.

5 As far as the use of our products is concerned, it  
6 was my duty to issue information to the development people  
7 about what I thought were the hazards involved.

8 I can not recall whether or not in 1938, 1939, 1940,  
9 or 1942 I had the authority to say don't make this or stop  
10 making it. I can't answer that.

11 Q You just said you were plant manager.

12 A Plant physician.

13 Q I thought that was a misstatement.

14 MR. FEATHERSTONE: It was.

15 THE WITNESS: Did I say manager?

16 MR. FEATHERSTONE: Yes.

17 Q (By Mr. Hynes) Did anyone assist you at Monsanto  
18 with regard to the evaluation process you just described?

19 MR. FEATHERSTONE: Other than the outside laboratories?

20 MR. HYNES: Yes, other than the outside laboratories.

21 A Yes. I probably had some contact with government  
22 agencies at that time.

23 Q What I mean are other Monsanto employees.

24 A Well, I would talk to research chemists about what  
25 their experience has been with the product in the research

1 departments, yes.

2 I would talk to the development people to find out  
3 what kindred products were being used by -- used or  
4 manufactured by -- other companies; and I would inquire from  
5 the other medical directors of other companies what their  
6 experiences with the particular products might have been.

7 Q Now, subsequent to your leaving Monsanto to go  
8 into the Army, when you were discharged from the Army,  
9 did you come right back to Monsanto as an employee?

10 A Yes.

11 Q When was that again -- March of 1946?

12 A March of 1946.

13 Q When you came back to Monsanto, what were your  
14 duties at that time in March of 1946?

15 A At that time, I was a formal medical director.

16 Q You were given the title; is that correct.

17 A That's correct.

18 Q Did your duties change at that point from what  
19 they were when you left Monsanto in 1942?

20 A I think so because before '42 I would probably  
21 respond to calls from various plants; and after '46, I would  
22 then, on my own volition, go around to these plants and  
23 check them out.

24 Q So, would you explain what this change was?  
25 You say the plant used to call you and now you went out to

1 the plants in '46. Would you explain what the difference  
2 in duties were, specifically?

3 MR. FEATHERSTONE: Again, generally, Doctor.

4 A Generally, the duties were the same. I think it's  
5 a question of who initiated the process.

6 Prior to 1942, I would wait for the plants to call  
7 me. After 1946, I would go out and see if there were any  
8 problems that had existed before the plants knew about it.

9 Q Were there any other duties that changed at that  
10 point?

11 A You mean right in 1946 or --

12 Q No. When you began formally as the medical director  
13 in March of 1946, that first year, were there any other  
14 changes in duties?

15 A I don't have a job description that was given to  
16 me in 1946, so I can not say what was written down. I  
17 feel --

18 MR. FEATHERSTONE: All he wants is to the best  
19 of your recollection.

20 A (Continuing) Well, with the exception that I would  
21 be available for answering customer inquiries about the  
22 safe use of our products in a more formal manner -- in  
23 other words, the development people and the sales personnel  
24 would know at least that there was a Doctor Kelly in the  
25 general office who had an office and a secretary and a

1 telephone, whereas when I was the part-time physician at  
2 the Queeny Plant these people wouldn't know I existed.

3 Q (By Mr. Hynes) Now, after your first year back  
4 at Monsanto in 1946, what subsequent changes occurred  
5 in your job and your duties?

6 A From then until 1975?

7 Q From then until the next change that you can recall  
8 in your duties.

9 MR. FEATHERSTONE: Now, that doesn't make any  
10 sense, Mr. Hynes.

11 If there was no change until the next change, how  
12 is he going to answer the question?

13 Q (By Mr. Hynes) What was the next change?

14 MR. FEATHERSTONE: Okay.

15 A I can't be specific about it because the job expands.

16 Q (By Mr. Hynes) This is just to the best of your  
17 recollection, the change in your job, your duties, that  
18 you felt was a significant change and when that occurred.

19 A I don't know that what I think is significant  
20 is what you think is significant, and I don't know if I  
21 can put a particular mark on the spot in time.

22 MR. FEATHERSTONE: Doctor, I would advise you to do  
23 the following: Hit for him the highlights of the changes,  
24 if any, in your duties as medical director from 1946 until  
25 the time you retired in 1975; and let's see if that doesn't

1 advance the ball a little bit. Don't worry about the  
2 significance to him or the lack of it.

3 A Okay. During the course of my time from 1946  
4 until 1979, the duties were expanded --

5 MR. FEATHERSTONE: 1975.

6 A (Continuing) -- 1975, the duties were expanded  
7 there. The contact with research people, the contact  
8 with development people, the contact with sales people  
9 and the contact with customer inquiries was expanded.

10 The field of industrial hygiene was just starting,  
11 at that time; and along about 1952 or something -- I am  
12 not sure about that date -- we engaged an industrial hygienist.  
13 And subsequently, then, by the time I left in 1975, we had  
14 four industrial hygienists.

15 Some time along about 1960 or 1962, we engaged a  
16 toxicologist in our department.

17 The duties extended, of course, with the demand  
18 of the government in those later years for more exhaustive  
19 testing -- by "later years", I mean the late sixties, all  
20 through the seventies, up to 1975 -- so that our contacts  
21 with the government, rather than being on a sporadic basis,  
22 were almost all on a routine basis.

23 The duties of our department in the toxicity field  
24 was expanded quite markedly. Prior to 1942 and at the  
25 start of the year in 1946, all our testing was done in small

1 laboratories in acute types of testing; and later, we began  
2 using rather exhaustive and sophisticated tests at three  
3 or four major consulting laboratories.

4 Q Now, Doctor, one area of the expansion of your  
5 duties related to more contact with research and development  
6 people, sales people and customers.

7 Beginning in 1946, what was your contact, the form  
8 of your contact, with the research and development people?

9 A It was much the same, but it was limited in scope.  
10 We changed from a seventy million company to a four billion  
11 dollar company in those years so that the number of compounds  
12 that we had were enormously more when we were selling  
13 four billion dollars than when we were selling seventy  
14 million. It was more frequent, and it was more intent as  
15 to the sophistication of toxicological techniques and  
16 toxicological demands that occurred down the road.

17 Q Now, what form did this contact take with the  
18 research and development people? Did they formally refer  
19 a compound under research to you? Was it informal? How  
20 would you characterize it?

21 A It was informal at first and formal later on.

22 Q When you say it was informal at first, would you  
23 explain what you mean by that?

24 A They knew we were there -- "they" being the research  
25 people -- and would have a product, and they would come

1 over and say here is a product we think is going to be good  
2 as a plasticizer, degreaser, adhesive, something like that --  
3 what do you think of it? That was the informal way.

4 Later on -- I don't know exactly when, I think it  
5 was in about either the late sixties or early seventies --  
6 we started a formal procedure in which compounds that reached  
7 a certain stage in either their developments or their  
8 being sent out to customers was subjected to a more formal  
9 type of evaluation by me.

10 Q Now, to the best of your recollection, this informal  
11 process occurred up to somewhere in the late sixties and  
12 early seventies?

13 A I could be wrong on that. That's twenty-five years  
14 ago.

15 Q To the best of your recollection?

16 MR. FEATHERSTONE: He already testified he is not  
17 sure.

18 Q (By Mr. Hynes) You say it was an informal process.

19 Were there any formal procedures set up within the  
20 company which required research and development people to  
21 bring a compound to you for evaluation at any time?

22 MR. FEATHERSTONE: What do you mean "at any time"?

23 Q (By Mr. Hynes) At any time during this what you  
24 characterize as an informal process.

25 A I can't remember that; I can't answer that.

1 Q Do you recall if it was a standard procedure or  
2 routine procedure for the research and development people  
3 to bring these compounds to you for evaluation?

4 A It was a standard procedure if the research people  
5 were located in Saint Louis.

6 If the people were located in Springfield, Massachu-  
7 setts, it might not quite be that standard.

8 Q Now, we are talking about prior to, say, the late  
9 sixties.

10 A I am not sure if it was the late sixties.

11 Q That's fine.

12 MR. FEATHERSTONE: The doctor said repeatedly he  
13 can't recall that specifically, Mr. Hynes.

14 Q (By Mr. Hynes) Now, to your knowledge, if the  
15 research people were in the Massachusetts plant, do you know  
16 if they had any evaluations done?

17 MR. FEATHERSTONE: What does that have to do with  
18 anything in this lawsuit, Mr. Hynes?

19 MR. HYNES: This is a product liability case, and  
20 I want to find out what research, what review of the products  
21 if any with the chemicals, occurred.

22 MR. FEATHERSTONE: Which chemicals?

23 MR. HYNES: We are talking about their general  
24 procedures, their general practice.

25 MR. FEATHERSTONE: You do not have a lawsuit,

1 Mr. Hynes, that involves chemicals out of some plant in  
2 Springfield, Massachusetts. You have a specific lawsuit  
3 relating to a specific product and at best a specific chemical.  
4 Now, that's what we are here for. We have been here fifty  
5 minutes. I suggest you get on to issues germane to that.

6 MR. HYNES: I would like to if you would stop  
7 interrupting.

8 MR. FEATHERSTONE: He is not going to answer about  
9 the Springfield, Massachusetts plant.

10 Q (By Mr. Hynes) Doctor Kelly, was there any difference  
11 in the procedure in the Springfield, Massachusetts plant  
12 and that of Saint Louis in the evaluation of research  
13 of chemicals in the research plant?

14 A My lawyer told me not to answer --

15 Q Are you represented by Mr. Featherstone?

16 MR. FEATHERSTONE: Yes, he is.

17 MR. HYNES: I am not asking you.

18 A Yes, I am.

19 Q (By Mr. Hynes) Have you retained him?

20 MR. FEATHERSTONE: Yes, he has.

21 A Yes.

22 MR. HYNES: I am not asking you.

23 A Yes, I have.

24 MR. FEATHERSTONE: Now, are you done playing games?  
25 Get on to the questions.

1 MR. HYNES: Now, if anyone is playing games --

2 MR. FEATHERSTONE: It's what? Why don't you say it?

3 MR. HYNES: It's you.

4 MR. FEATHERSTONE: Now go on.

5 Q (By Mr. Hynes) Doctor Kelly, the research which  
6 was done in the research and development, who would  
7 refer compounds to you for evaluation in Saint Louis?  
8 How would that be done on a routine basis, the normal way  
9 this occurred?

10 A To the best of my recollection, if people in  
11 research or development had a product that was going to  
12 be distributed either in a development phase or even  
13 preliminary sales phase or an application phase, they would  
14 come over to me and ask for information concerning the  
15 safe handling of the material and whether or not there were  
16 toxic properties that might need to be investigated depending  
17 upon the use for which the compound was intended.

18 Q And would it be their initial review of the compound,  
19 their own experience, as to whether or not they would  
20 refer it to you --

21 MR. FEATHERSTONE: How does he know that?

22 MR. HYNES: I am asking if he does know it.

23 MR. FEATHERSTONE: That's a different question.

24 MR. HYNES: I wasn't through with the question.

25 Or would it be they were required to refer all

1 compounds to you?

2 A I can not remember how this occurred before we  
3 started the actual procedure in which we gave a form to  
4 people and said if these occurrences are going to occur  
5 with a product, bring it over to the Medical Department.

6 I am sure there were instructions from the directors  
7 of the various segments of research as to what they should  
8 do to get them over to the Medical Department if there  
9 were, prior to the formalization of the Medical Department's  
10 part.

11 Q Now, you say there was a form developed with different  
12 criterion and when you should refer a compound to the  
13 Medical Department.

14 Do you recall when that form was developed?

15 MR. FEATHERSTONE: Objection as to the form of  
16 the question. That's not what his testimony was, Mr. Hynes.

17 THE WITNESS: What do you do, Mr. Lawyer?

18 MR. FEATHERSTONE: The question is, When was that  
19 form that you testified to, whatever it contained,  
20 developed?

21 A I think it was some time in the sixties. It could  
22 be the late sixties. It could be the middle sixties. I  
23 am not sure.

24 Q Once you received a referral of a compound from  
25 Research and Development, what would be the normal procedure

1 you would follow in evaluating that product?

2 A First, I would look at the compound. Second,  
3 I would look at the use of the compound. Third, I would  
4 look at whether or not this compound was already in the  
5 trade, was manufactured by someone else or used by someone  
6 else. Then, I would look to see if there were toxicological  
7 data on this product. Then, I would look to see if there  
8 were toxicological data needed for shipping, freight  
9 classification, et cetera.

10 Then, I would make an evaluation as to whether or  
11 not the data were sufficient that we could put on adequate  
12 safe warning labels and adequate freight classifications;  
13 and if they weren't, we would get it.

14 Q All right, now, you say, first of all, you looked  
15 at the compound itself.

16 Is this the basic chemical structure of the compound?

17 A Yes.

18 Q And the intended use of the compound, that  
19 information would be given to you by Research and Development  
20 or whoever referred it to you?

21 A That's correct.

22 Q Where would you get the information regarding  
23 similar products that may be used by competitors or being  
24 marketed by competitors?

25 A I would ask these people, Does Du Pont make it? Does

1 Dow make it? They would say yes.

2 Q They would refer that information to you.

3 Now, you also said you looked at any available  
4 toxicity data.

5 What were the sources for that data that you would  
6 refer to?

7 MR. FEATHERSTONE: I think you can give him general  
8 sources, Doctor.

9 A The general sources are the literature and medical  
10 directors in my acquaintance.

11 Q (By Mr. Hynes) Medical directors of other organiza-  
12 tions that --

13 A Yes. I would call the medical director of Du Pont  
14 and say George, what do you know about this.

15 Q Would you also have available toxicity data that  
16 Monsanto had generated on similar compounds that they had  
17 marketed previously?

18 A If there were any toxicity data on Monsanto compounds,  
19 it would be in the Medical Department files.

20 MR. FEATHERSTONE: Your answer is yes?

21 THE WITNESS: Yes.

22 Q (By Mr. Hynes) Now, you said that you also would  
23 look at the data needed for shipping and labeling.

24 What would the sources of that data be, in general?

25 A That's confusing, Mr. Hynes. The sources of the data

1 or the sources of the requirements?

2 Q The requirements, I am sorry.

3 A The sources of the requirements would be railroad  
4 regulations or government regulations.

5 Q And then, you said after you evaluated the data  
6 you would make a determination yourself if the data was  
7 sufficient for you to make a decision on the product.

8 If it wasn't sufficient, then what would you do?

9 A I would say we need to get this information.

10 Q What type of information would you generally be  
11 looking for? Toxicity data?

12 A Toxicity data.

13 Q Is there anything else that you can think of?

14 A Conceivably explosives, but I wouldn't get that  
15 myself.

16 Q As to the toxicity data, how would you go about  
17 getting that data?

18 MR. FEATHERSTONE: If it's not in the literature?

19 Q (By Mr. Hynes) Yes, or if the literature is  
20 insufficient for you to make a decision.

21 A It would then be tested at consulting laboratories.

22 Q How would you yourself go about having these tests  
23 made by consulting laboratories in terms of -- first of  
24 all, in terms of setting up the protocols?

25 A I would, first of all, call the development people

1 and say send me a sample. They would say how much. I  
2 would say give me two hundred liters or two hundred cc's  
3 or a half liter or something.

4 Then, I would go to the toxicological laboratory  
5 and say here is a product that we are going to have to test --  
6 and at that particular time, I recall in the forties after  
7 I came back from the Service, the testing that was done,  
8 the state of the art at that particular time, was the testing  
9 for acute exposures. Here, we are talking about an  
10 industrial chemical.

11 If we are talking about an industrial chemical,  
12 we would then have -- I would set up a protocol in which we  
13 subjected the animal to dropping the material in its eyes  
14 to see what would happen if a worker got acute contact  
15 in the eyes. We would drop it on the rabbit's skin to see  
16 if it were a skin irritant. We would leave it on the  
17 rabbit, a moist cloth, to see -- covered over -- to see  
18 if it were acutely toxic by skin absorption. We would feed  
19 it to the rabbit to determine what is called an acute  
20 lethal dose or LD<sub>50</sub>, which is a standard term; and we may  
21 or may not have run inhalation studies, acute inhalation  
22 studies.

23 Q Were those various acute tests which you just  
24 mentioned, were they a standard battery you always ran, or  
25 did you pick and choose between them depending upon the

1 compound?

2 MR. FEATHERSTONE: Or the exposure.

3 A It depended on the compound, the type of compound.  
4 For example, if you had a powder, you wouldn't use -- you  
5 wouldn't worry about inhalation of the material. You  
6 wouldn't worry about skin absorption, because powders, as  
7 a rule, are not absorbed through the intact skin.

8 If it were a compound that would be used in a method  
9 in which there was no great likelihood, no appreciable  
10 likelihood, of worker exposure, we may or may not have run  
11 the same types of tests.

12 Q Were there any other types of toxicity tests which  
13 you ran other than those mentioned which you ran on a normal,  
14 routine basis?

15 MR. FEATHERSTONE: On industrial chemicals, Mr. Hynes?

16 MR. HYNES: Yes.

17 MR. FEATHERSTONE: In the 1940s, which is the time  
18 period of his previous answer, is that correct, Mr. Hynes?

19 MR. HYNES: Yes.

20 A In the 1940s, on industrial chemicals, a routine  
21 we had was that which I have described to you.

22 Q I know this is going back a long way.

23 Do you recall any other types of tests which you  
24 routinely ran in the forties at all other than the acute  
25 screening test you just referred to?

1 MR. FEATHERSTONE: On industrial chemicals?

2 MR. HYNES: On industrial chemicals.

3 A Not routinely, no.

4 Q (By Mr. Hynes) Nonroutinely, do you recall running  
5 any other types of tests on industrial chemicals?

6 A Which years?

7 Q In the 1940s.

8 A I find it hard to be sure about your time. For  
9 example, I know that some time in either the 1940s or the  
10 early 1950s we had a compound that was going to go into  
11 baking powder so we ran what was, at that time, the usual  
12 tests for an intended food additive. That was what would  
13 now be called a very meager test. It consisted of feeding  
14 the material for thirty or sixty days to a group of  
15 animals. We would run that.

16 There may have been other instances where what  
17 was considered a sophisticated test at that time was run  
18 on compounds. I can't think of any one except the baking  
19 powder incident.

20 Q Fine.

21 Now, in the 1950s, to the best of your recollection,  
22 did your procedures change in terms of evaluating these  
23 chemicals?

24 MR. FEATHERSTONE: Now, do you mean the protocols  
25 as he described the acute testing protocols?

1 MR. HYNES: Yes.

2 MR. FEATHERSTONE: Why don't you rephrase the  
3 question that way, then?

4 MR. HYNES: You just did.

5 MR. FEATHERSTONE: Doctor, the question is,  
6 In the 1950s, were there any changes in the acute testing  
7 procedures or protocols that you have just described in  
8 the 1940s.

9 A We tested things the same in the '50s as we tested  
10 them in the '40s.

11 Q (By Mr. Hynes) The same general acute tests?

12 A That's correct.

13 Q Did you do any other types of toxicity tests on  
14 a routine basis in the fifties that you did not do in the  
15 forties?

16 MR. FEATHERSTONE: On industrial chemicals?

17 MR. HYNES: Yes.

18 A No.

19 Q (By Mr. Hynes) In terms of setting up the protocols  
20 in the 1940s with these outside laboratories, were you  
21 the person who made the decision as to the type of protocol  
22 to follow?

23 A I made the decision, after consulting with the  
24 toxicologists at these various laboratories. The person  
25 at Monsanto who made the decision was myself, yes.

1 Q You said earlier, I believe, that early on in the  
2 testing, the acute testing of the products -- the forties,  
3 maybe the fifties, I am not clear on that -- you said you  
4 used smaller labs; and subsequently, in later years, you  
5 used larger, more sophisticated labs.

6 A More sophisticated techniques, and the labs were  
7 larger, too; but even the smaller labs were getting more  
8 sophisticated.

9 Q Can you say about what the time frame would be  
10 when you were into working with the larger rather than the  
11 smaller laboratories?

12 A No, I can't.

13 Q Can you put it in a decade? Would it be in the  
14 fifties versus the sixties?

15 MR. FEATHERSTONE: For industrial chemicals?

16 MR. HYNES: I am talking industrial chemicals.

17 A I can't be sure of that. Are you talking about  
18 routine testing or nonroutine, more sophisticated testing?

19 Q (By Mr. Hynes) I am talking about the routine  
20 testing.

21 A We didn't need to go to the larger laboratories  
22 with the routine testing.

23 MR. FEATHERSTONE: That answers the question, sir.

24 Q (By Mr. Hynes) Now, in selecting these laboratories,  
25 did you have the authority at Monsanto to choose whatever

1 laboratory you felt was appropriate for the testing?

2 A Yes.

3 Q In your selection of these laboratories, did you  
4 make it a routine practice, yourself, to visit the  
5 laboratories, inspect their processes, their procedures  
6 and equipment and the like?

7 A Yes.

8 Q Doctor, we have been talking about industrial  
9 chemicals.

10 Would you please state what your understanding of  
11 an industrial chemical is.

12 A An industrial chemical is a chemical that is used  
13 in industrial processes. It is not a chemical that is  
14 intended to be taken by the human organism. It is also  
15 not a compound -- you want my interpretation?

16 Q What you understand it to be.

17 A It is a compound used in industry, and it is not  
18 a compound that is routinely used in agriculture, and it  
19 is not a compound that is used in the pharmaceutical  
20 industry, and it is not a compound that is for human  
21 ingestion either as a food or food additive.

22 Q Would DDT or any pesticide be considered an  
23 industrial chemical, in your opinion?

24 A It could be considered either an industrial chemical  
25 or an agricultural chemical.

1 Q You stated earlier that you hired an industrial  
2 hygienist, I believe, some time in 1952, somewhere around  
3 that year.

4 A (Witness nods.)

5 Q Prior to that time, were you the only professional  
6 in the Medical Department?

7 A If by "professional" you exclude nurses and  
8 laboratory technicians, yes, I was.

9 Q Were you the only person doing the evaluation of  
10 the chemicals referred from the Research and Development  
11 Department?

12 A That's correct.

13 MR. FEATHERSTONE: You mean other than the outside  
14 laboratories?

15 MR. HYNES: Again, just inside Monsanto.

16 Q (By Mr. Hynes) And who was the industrial  
17 hygienist hired in 1952, as you recall?

18 A Again, I am not sure on the date. The first  
19 industrial hygienist we hired was Elmer Wheeler.

20 Q And when he was hired, am I correct that the two  
21 of you would be the people working and evaluating these  
22 chemicals referred from Research and Development?

23 A No.

24 Q You were still the only person that was working  
25 on it?

1 A I was still the only one.

2 Q Now, prior to Mr. Wheeler's being hired, can you  
3 give an estimate of how many compounds you would have  
4 evaluated a year prior to Mr. Wheeler's being hired and  
5 subsequent to when you came back from the Army?

6 A I haven't the foggiest idea.

7 Q Do you recall, prior to Mr. Wheeler's being hired,  
8 ever evaluating a compound and sending it back to Research  
9 and Development saying it should never be marketed because  
10 it's too dangerous?

11 A I am sure I sent it back and said it's too dangerous  
12 for this application.

13 Q And by "this application", you mean the intended  
14 use that they told you was the intended use of the product?

15 A That's correct.

16 MR. FEATHERSTONE: Again, Doctor, wait until he  
17 completes his question, no matter how long it takes him  
18 to get it out.

19 Q (By Mr. Hynes) And again, I am talking the period  
20 prior to when Mr. Wheeler was hired, between March of 1946  
21 until he was hired in the early fifties.

22 What was the focus of your evaluation of these  
23 chemicals? Was there any main focus to your evaluation --  
24 and what I mean, for example, problems with Monsanto  
25 employees in manufacturing it or problems with customers

1 using it, problems of it being exposed to the food chain.

2 A You have asked me three questions.

3 Do you want to break those down one at a time?

4 Q I mean, what was your focus at the time in your  
5 evaluation?

6 MR. FEATHERSTONE: Do you understand that?

7 Q (By Mr. Hynes) Your main focus of evaluating these  
8 chemicals.

9 A I honestly do not understand the question.

10 Q When you evaluated these chemicals prior to  
11 Mr. Wheeler being hired, did you evaluate the toxicological  
12 problems for Monsanto employees?

13 A Yes.

14 Q Did you also evaluate the toxicological problems  
15 to customers?

16 A Probably toxicological problems, yes.

17 Q Did you also evaluate the product in terms of  
18 any exposure to the food chain?

19 A What year was this?

20 Q This is prior to Mr. Wheeler being hired, between '46  
21 and '52, roughly.

22 MR. FEATHERSTONE: Are we on industrial chemicals,  
23 Mr. Hynes?

24 MR. HYNES: Yes.

25 A First of all, Mr. Hynes, nobody talked about food

1 chains in 1942 and 1945 so I really couldn't evaluate that  
2 as far as the food chain was concerned.

3 Q (By Mr. Hynes) I am talking between '46 and '52.

4 A Even '46 and '52, nobody was talking about food  
5 chains.

6 Secondly, our industrial products were not supposed  
7 to be used as a food so you did not evaluate them as far  
8 as being used as a food.

9 Q So, based upon the intended-use information you  
10 received from the research and development people, the  
11 main focus would be on the exposure to a worker in a plant --  
12 either Monsanto's or a customer's plant -- is that correct?

13 A Yes.

14 Q Do you recall any industrial chemicals where the  
15 intended use, where you were given information on the  
16 intended use, where you were led to believe it would get  
17 outside the plant, either Monsanto's or the customer's?

18 MR. FEATHERSTONE: Any product manufactured by  
19 Monsanto and shipped to a customer got outside of Monsanto's  
20 plants.

21 What are you talking about?

22 THE WITNESS: Would you rephrase the question or  
23 repeat it?

24 MR. FEATHERSTONE: Rephrase it.

25 Q (By Mr. Hynes) Do you ever recall receiving any

1 information where, other than transportation, the intended  
2 use of the industrial product would get outside of the  
3 workplace?

4 A Yes.

5 Q An industrial chemical?

6 A Yes.

7 Q Do you recall in what situations that would be?

8 A Yes. Suppose you had an antioxidant that you put  
9 in a rubber tire. It would be on every automobile in  
10 the United States.

11 Q In a situation like that, I take it there wouldn't  
12 be any toxicity problems on rubber tires outside of the  
13 workplace?

14 A If you talk about 1942, yes. If you talk about  
15 1975, I am sure some government person would say there is  
16 a toxicity problem.

17 Q We are just talking '46 to '52.

18 A Okay, then.

19 Could I have a five-minute break?

20 (Short recess.)

21 Q (By Mr. Hynes) Now, when Mr. Wheeler was hired  
22 in the early fifties, what were his duties when he began?

23 A Industrial hygiene evaluation of our plant atmosphere.

24 Q That was at all the plants?

25 A Yes.

1 Q Would you briefly explain what those duties  
2 entailed?

3 A He would walk in there and see if there were  
4 hazards of chemicals or physical hazards -- in other words,  
5 whether there was noise, whether there was adequate lighting,  
6 excessive noise, adequate lighting, excessive dust, any  
7 toxic fumes or any kind of fumes, chlorine, God knows what --  
8 and he would make evaluations and/or analyses of the  
9 amount.

10 Q Was that part of your duties, also?

11 A No. I was not trained in industrial hygiene.

12 Q But he reported to you and --

13 A That's correct.

14 Q -- and if he had any recommendations, he would go  
15 through you?

16 A Correct.

17 Q When he began in the early fifties as the industrial  
18 hygienist, did he have any duties in evaluating compounds  
19 from research and development as you were discussing you did?

20 A No.

21 Q Did he subsequently take on any duties of that nature?

22 A I don't know what you mean by "of that nature".

23 He took on duties of an administrative type. He saw that  
24 the people's bills were paid and that the samples got  
25 there, but he did not set up the protocols or evaluate the

1 protocols.

2 Q Now, you evaluated the protocols; and subsequent to  
3 the test being run by the outside laboratories, you would  
4 evaluate the results?

5 A Which time are we talking about, now?

6 Q Right after Mr. Wheeler began.

7 A Yes.

8 Q Did he subsequently take on any duties of evaluating  
9 the results from outside labs?

10 A No.

11 Q And his duties as to the outside labs were as you  
12 characterized them -- administrative -- making sure they  
13 got all they needed and the bills were paid and things of  
14 that nature; is that correct?

15 A Yes.

16 Q Did he have any other duties that you recall with  
17 regard to the outside laboratories' evaluations or testing?

18 A Well, he had some in a sense that he would be in  
19 a position to discuss Monsanto's findings, my evaluations,  
20 with the industrial hygienists of other companies.

21 Q Now, in your evaluation of the compounds we just  
22 discussed in the period, say, 1946 to 1952, in the period subse-  
23 quent to when Mr. Wheeler was hired through the date, I  
24 think you said, in the early sixties when you hired a  
25 toxicologist, during that period of time prior to hiring

1 the toxicologist, did the procedure that you used in  
2 evaluating these compounds change in any manner?

3 A I am sure I got smarter. I mean, I don't know  
4 what you mean by "the procedure".

5 Q Well, the procedure you used to evaluate -- other  
6 than your, obviously, acquiring more knowledge of the  
7 toxicological properties of chemicals and testing -- the  
8 procedure for evaluating it, that you discussed previously.

9 MR. FEATHERSTONE: You mean how the product was  
10 tested and by whom and the fact that he had responsibility  
11 for the protocols and the analysis of the results?  
12 Is that what you are talking about, Mr. Hynes?

13 MR. HYNES: Right.

14 A No, it didn't.

15 Q (By Mr. Hynes) Did the types of tests -- the  
16 sophistication of the tests may have changed, but the  
17 procedure you used in evaluating the compounds remained  
18 the same?

19 A Correct.

20 Q Now, am I correct that the research and development  
21 group of Monsanto would develop what they thought was a  
22 good product for Monsanto, submit the information for  
23 intended use to you, and you would do your evaluation and  
24 make whatever recommendations you would make back to  
25 research and development.

1           Once your initial evaluation was completed, did  
2 you ever get that same compound referred back to you again  
3 for subsequent evaluation prior to it being marketed?

4           A     Yes.

5           Q     Was that a routine procedure up through 1960?

6           A     If there were an additional use for the compound,  
7 if it's intended use had changed, if information had occurred  
8 that I found out about it or the research people found out  
9 that there were additions to the toxicological information  
10 available, it would be reevaluated.

11           MR. JOHN: Read that answer back, please.

12           (Whereupon, the previous answer was read back  
13 by the court reporter.)

14           Q     (By Mr. Hynes) And what form would your reevaluation  
15 take if a situation like this occurred?

16                     First of all, did you have a routine manner of  
17 handling this subsequent referral?

18           A     Well, the routine manner is if something cropped  
19 up that I found about it -- or the research people found  
20 out or the sales people found out -- then we would get  
21 together and reevaluate it.

22           Q     And if you needed subsequent tests, you would  
23 contract out for them?

24           A     That's correct, or subsequent warnings.

25           Q     Warnings -- you mean warning labels on the product

1 or instruction manuals which would contain warnings that  
2 would go to the customers?

3 A Something of that sort.

4 Q Were the battery or the types of acute tests which  
5 you would routinely order from outside laboratories, were  
6 they the same general battery of tests in the fifties  
7 that you had, that you stated you had used in the forties?

8 MR. FEATHERSTONE: Would you read the question  
9 back, ma'am?

10 (Whereupon, the previous question was read back  
11 by the court reporter.)

12 MR. FEATHERSTONE: It's already been testified that  
13 the tests got more sophisticated.

14 MR. HYNES: I am not talking about the sophistication.  
15 The same general types of tests. The LD<sub>50</sub>s --

16 (Whereupon, there was a telephone interruption;  
17 and upon returning to the record, the following  
18 proceedings were had:)

19 Q (By Mr. Hynes) The question is, The types of acute  
20 testings which were routinely done on compounds, was there  
21 any difference in the generic types of the tests between  
22 the forties and the fifties?

23 MR. FEATHERSTONE: Putting aside any changes in  
24 sophistication?

25 MR. HYNES: Right.

1 A There were refinements in amounts of animals used.  
 2 There would be that change, but the basic protocol of testing  
 3 for acute oral dose, acute skin lethal dose, acute skin  
 4 irritation, acute ocular irritation or injury, and on  
 5 occasion acute vapor inhalation were basically the same.

6 Q And again, in the fifties, the focus of your  
 7 evaluation was the possible toxicity problems in the worker  
 8 place of the industrial chemicals; is that correct?

9 A In the worker place of ours and our customers.

10 Q Right. Were there any types of industrial  
 11 chemicals in which, in the fifties, routine subacute or  
 12 chronic type tests were ordered?

13 A In the fifties?

14 Q Yes.

15 MR. FEATHERSTONE: These are industrial chemicals?

16 MR. HYNES: Yes. I said industrial chemicals.

17 MR. FEATHERSTONE: I am sorry.

18 A I can't be sure of the date -- whether it's the  
 19 fifties or sixties -- but I know there were times when we  
 20 ran more than acute screening tests.

21 Q And do you recall what the circumstances would be  
 22 when you would run those other than acute screening tests?

23 MR. FEATHERSTONE: I think he is asking for general  
 24 circumstances.

25 A Yes. We would understand that there would be the

1 possibility for acute, for repeated exposure to a worker;  
2 and we would run a repeated test, either an inhalation  
3 test or a skin test.

4 Q What do you mean by a repeated inhalation or skin  
5 test?

6 A You would repeat the same procedure that you do  
7 in the acute test using a smaller dose either on the skin  
8 or a smaller dose inhaled and do that for a period of  
9 days or a couple of weeks.

10 Q Is there a general name for those types of tests?

11 A I guess you could call it subacute.

12 Q How would that information come to you that there  
13 was a possibility for repeated exposure to workers?

14 A Either from the development people, the sales  
15 people, or the customer if it's in regard to use with our  
16 customers or from Mr. Wheeler as far as our own workers  
17 would be concerned.

18 Q Would it be a proper characterization that these  
19 would be products which have already been in use for a  
20 while and additional information came in that exposure  
21 like this was occurring -- it wasn't anticipated originally --  
22 would that be a proper characterization?

23 A Not necessarily. Conceivably, although I can not  
24 think of an instance at the present time, we might be having  
25 a compound that we would envision repeated contact of a

1 worker and de novo, a new operation.

2 MR. FEATHERSTONE: Even before marketing?

3 THE WITNESS: Before marketing.

4 Q (By Mr. Hynes) In addition -- again, we are talking  
5 up through 1960 -- in addition to the industrial chemicals--

6 A Through 1960 or the sixties?

7 Q Through 1960.

8 A Nineteen six o?

9 Q Right.

10 MR. FEATHERSTONE: The decade of the 1960s.

11 THE WITNESS: All right.

12 Q (By Mr. Hynes) Did the Medical Department, did you  
13 also evaluate chemicals other than those which we  
14 characterized as industrial chemicals?

15 A Yes.

16 Q Would it be the same basic routine that you would  
17 follow in evaluating, other than industrial chemicals  
18 that you testified -- that you used for evaluating industrial  
19 chemicals?

20 A I don't know what you mean by "routine". Are you  
21 talking routine in the protocols of testing or my relationship  
22 with the product and the development people? Which are  
23 we talking about?

24 Q Your relationship with the product and research  
25 and development people.

1 A Yes. My answer is yes. It is the same evaluation --  
2 I mean, the same relationship between the Medical Department  
3 and the research and/or development or sales organization.

4 Q The main difference, again, would be the intended  
5 use of the product would lead you to require additional  
6 testing than those that you required in industrial  
7 chemicals?

8 A In addition, there are -- the answer is yes --  
9 but in addition, sometimes some government regulations  
10 came in at this time.

11 MR. FEATHERSTONE: That affected testing?

12 THE WITNESS: Yes. It would affect the demands  
13 that they would ask for.

14 Now, I am not sure if that was in the decade of  
15 the fifties, but I know it was in the decade of the sixties  
16 and much more in the seventies.

17 Q You testified previously that some time in the  
18 early sixties -- 1960, 1962 -- you thought you hired a  
19 toxicologist for your department; is that correct?

20 A That's correct. I know we hired one, but I do  
21 not know the date.

22 Q I understand that.

23 Who was the toxicologist?

24 A Doctor William Hunt.

25 Q Prior to Doctor Hunt being hired, were you and

1 Mr. Wheeler the professional people within the Medical  
2 Department other than, again, the nurses and the lab  
3 technicians that you would have?

4 A It all depends. We were professional, but we had  
5 different duties. I said Mr. Wheeler did not do the  
6 toxicological --

7 Q I understand.

8 A I think we may have had another industrial hygienist  
9 by 1960.

10 Q But other than that, you had no toxicologist prior  
11 to hiring Doctor Hunt?

12 A Doctor Hunt was the first toxicologist we hired,  
13 yes.

14 Q Am I correct in assuming that when he was hired he  
15 would assist you in evaluating these chemicals referred  
16 from research and development, the toxicity of them?

17 A That's correct.

18 Q And prior to that time, you had the sole responsi-  
19 bility for doing those evaluations?

20 A I still had the responsibility afterwards. The  
21 responsibility was mine, but Doctor Hunt helped me in  
22 evaluating it.

23 Q Do you recall what prompted you to hire a toxicologist  
24 at that time?

25 A Yes.

1 Q What were the reasons?

2 A There were two reasons -- one, the area of  
3 toxicology was becoming more sophisticated and I needed a  
4 specialist in that field; two, the demands of the government  
5 were becoming so much greater that I could not carry out  
6 the supervision of the outside laboratories in the way  
7 that I was doing it before. So, I needed somebody else to  
8 do that, to assist me in doing that, because I still did it  
9 at times.

10 Q And even after Doctor Hunt started work for you,  
11 you were the person responsible for making the final  
12 decision on the evaluations; is that correct?

13 A That's correct.

14 Q Do you recall at the time that you hired Doctor  
15 Hunt how many chemicals, on an average, you would be  
16 evaluating each year from research and development?

17 A No, I don't Mr. Hynes.

18 Q Did your procedures for evaluating the compounds  
19 in the sixties change in any way other than the sophistication  
20 of the tests?

21 A If I understand you correctly, you are saying,  
22 again, the relationship of myself to the approval of the  
23 intended use or the possible hazard of the intended use of  
24 a product and how that information was given back to the  
25 marketing or development people?

1 Q Yes.

2 A It did not change.

3 Q Did the normal or the routine battery of the tests  
4 which you would contract with the outside laboratories,  
5 did that change in the 1960s, again, other than the  
6 sophistication of the types of tests?

7 A In industrial chemicals?

8 Q Yes.

9 MR. FEATHERSTONE: May I hear that question again?

10 (Whereupon, the court reporter read back the  
11 following question and answer:

12 QUESTION: "Did the normal or the routine battery  
13 of tests which you would contract with the outside labor-  
14 atories, did that change in the 1960s, again, other than  
15 the sophistication of the types of tests?

16 ANSWER: "In industrial chemicals?

17 QUESTION: "Yes.")

18 MR. FEATHERSTONE: This is acute testing you are  
19 talking about?

20 MR. HYNES: Yes.

21 MR. FEATHERSTONE: Other than the sophistication  
22 of the tests, were those same types of tests run?

23 A Right.

24 Q (By Mr. Hynes) Did you add any additional types  
25 of tests in the routine battery you used for evaluation --

1 for example, add any subacute or chronic tests of a  
2 routine nature?

3 A Not routinely.

4 Q Again, when would a subacute or an acute toxicity  
5 study be run? In what situations?

6 MR. FEATHERSTONE: You mean subacute or chronic  
7 tests?

8 MR. HYNES: Yes.

9 MR. FEATHERSTONE: Would you rephrase it?

10 Q (By Mr. Hynes) When would you -- in what situations  
11 would you order a subacute or chronic toxicity test in  
12 your evaluation?

13 MR. FEATHERSTONE: On industrial chemicals?

14 THE WITNESS: On industrial chemicals?

15 Q (By Mr. Hynes) Right. And this is in the sixties,  
16 now.

17 A The whole decade of the sixties?

18 Q If there is any point in time in the sixties  
19 where there was a change, I would appreciate knowing  
20 when that change occurred.

21 MR. FEATHERSTONE: I believe his question is seeking  
22 the circumstances under which you would order a subacute  
23 or chronic test of an industrial chemical during the 1960s.

24 Is that fair, Mr. Hynes?

25 MR. HYNES: Right.

1       A     We would order a chronic inhalation test in the  
2     sixties if we thought individuals were exposed repeatedly  
3     to what could be potential, harmful concentrations of any  
4     of our products and they could not be controlled by ordinary  
5     means. We would have to find out whether or not any  
6     possible harm was existing.

7           As far as chronic toxicity tests on an industrial  
8     chemical, that was a relatively rare occurrence because,  
9     I am sure -- I believe you are referring to chronic oral  
10    tests -- because industrial chemicals, by their very nature,  
11    are not intended to be ingested repeatedly by humans -- or  
12    animals, for that matter -- and that is the reason, the  
13    only reason, to run a chronic feeding on an industrial  
14    chemical if it were not a food additive or a nonintentional  
15    food additive or a food itself.

16       Q     Did it ever become routine in the 1960s to order  
17    either subacute or chronic tests?

18       A     On industrial chemicals?

19       Q     Yes.

20       A     No.

21       Q     Subsequent to hiring Doctor Hunt in the early sixties,  
22    again during the decade of the sixties, were there any  
23    other professional people hired for your staff?

24       A     We hired a second toxicologist. Doctor Hunt died --  
25    and I am not sure of the year, I thought it was the late

1     sixties or early seventies, I am not sure -- and we hired  
2     another toxicologist either before or after he died, I  
3     don't know when. And I am not sure if we hired him in  
4     the sixties or in the first part of the seventies.

5             Q     But other than that?

6             A     In the sixties, you are talking about in the decade  
7     of the sixties?

8             Q     Right. Did you hire any other toxicologist other  
9     than this person you were referring to?

10            A     No.

11            Q     Did you hire any other industrial hygienist?

12            A     Yes. We hired, certainly, another one; and I  
13     would imagine that was in the 1960s. We hired a fourth  
14     industrial hygienist, but I am not sure if that was in  
15     the 1960s or the 1970s.

16            Q     And did any of these people, other than Doctor Hunt  
17     and this other toxicologist who may or may not have replaced  
18     him --

19            A     We did replace him.

20            Q     -- did anyone else assist you in evaluating the  
21     compounds from a toxicological standpoint?

22            A     Yes.

23            Q     Other than the outside labs?

24            A     Yes.

25            Q     Who were they?

1 A Government people.

2 Q And how did they assist you?

3 A I would go up and talk to some of the people in  
4 the Food and Drug Administration or the various other  
5 government agencies and say what do you know about this  
6 compound, here is what we know about it, and what do you  
7 know about it, and they would give me their thoughts.

8 Q They would assist you by giving you additional  
9 information that you might not have, by sharing information?

10 A Not only sharing information, but sharing expertise.

11 Q Did they ever assist you in establishing any  
12 protocol for testing?

13 A Industrial chemicals?

14 Q Yes.

15 A No.

16 Q So, the protocols were still your responsibility,  
17 working with the outside labs?

18 A Correct.

19 Q In your evaluation -- and again, we are talking --  
20 well, not again--at any time in the forties, fifties, or  
21 sixties, how would you characterize your evaluation;  
22 and I am thinking in terms of a risk-benefit type of analysis.  
23 Is that the type of analysis you would make?

24 A I don't know what you mean by "risk-benefit".

25 Q What I mean is: Here are the toxicological risks

1 in this product versus here are the benefits to either  
2 the public or Monsanto or Monsanto's customers; and then,  
3 you would evaluate is that risk worth taking if given  
4 certain precautions.

5 Was that the type of analysis you did?

6 A No, it was not.

7 I do not understand your phraseology.

8 Q Is your answer, then, that you don't understand  
9 the phraseology or that is not the type of analysis that  
10 you did?

11 A The answer is: I do not understand your  
12 phraseology.

13 Q What I mean by a risk-benefit is that you would  
14 determine what, if any, risk there is in marketing the  
15 product, given the intended use.

16 MR. FEATHERSTONE: Medical risk, you are talking  
17 about?

18 MR. HYNES: Right.

19 A Uh-huh.

20 Q (By Mr. Hynes) Would you also evaluate the  
21 potential benefit of that product to Monsanto or to the  
22 public prior to it being marketed, and then with that  
23 additional information --

24 MR. FEATHERSTONE: Why don't you stop the question  
25 there.

1 Q (By Mr. Hynes) Would you?

2 A Whether or not it was a benefit to Monsanto never  
3 entered into any thought as to how I would evaluate a  
4 product as far as risk was concerned. If it made Monsanto  
5 a million dollars and there was a risk entailed, I wouldn't  
6 approve it.

7 Q So, your evaluation was as to the risk --

8 A Correct.

9 Q -- and your responsibility was to inform research  
10 and development or commercial development, whoever would  
11 have referred the compound to you, these are the risks,  
12 and you would make the determination from a medical  
13 standpoint what the risks are, what precautions should be  
14 taken with the products; is that correct?

15 A That's correct, Mr. Hynes.

16 There are two areas of risk. One is the inherent  
17 properties of the compound, and the other is the way it is  
18 being used and what controls can be applied to the way it  
19 is being used.

20 Q And as to what controls can be --

21 A -- applied --

22 Q -- applied to the use --

23 A Correct.

24 Q --would you make a recommendation as to those controls?

25 MR. FEATHERSTONE: From a medical standpoint?

1 THE WITNESS: From a medical standpoint, yes.

2 Q (By Mr. Hynes) And it is essential or was  
3 essential for your being able to do a good medical  
4 evaluation of the product to know the intended use of  
5 the product; is that correct?

6 A That's correct.

7 Q After you determined a protocol for a particular  
8 test and selected a particular lab to run these tests,  
9 once the results came back to you for evaluation, what  
10 was your procedure in evaluating the accuracy of the work  
11 done by the outside labs?

12 A In the first place, Mr. Hynes, we did not wait  
13 until the report came back to us to evaluate the -- did you  
14 say the efficiency or the accuracy?

15 Q Accuracy.

16 A -- the accuracy of the laboratory.

17 Either Doctor Hunt -- in the sixties?

18 Q Right.

19 A Either Doctor Hunt or myself would visit the  
20 laboratories at various times during the course of the  
21 experiment and see what was going on and then get an  
22 appreciation of their facilities, their personnel; and  
23 we also had an appreciation of what their general relationship  
24 was as far as the other people who used them and as far as  
25 what the government did as far as accepting their reports.

1 Q So, it was a constant evaluation of the laboratory  
2 itself?

3 A Correct.

4 Q And this is the procedure you normally used in  
5 evaluating these outside laboratories and their work?

6 A All those factors come into play, yes.

7 (Whereupon, there was a short break; and upon  
8 returning, the court reporter read back the  
9 previous question and answer.)

10 Q (By Mr. Hynes) Doctor Kelly, are you familiar  
11 with the Aroclor products of Monsanto?

12 A Yes.

13 Q Pydraul is one of those Aroclor products; is that  
14 correct?

15 A I am not sure if that is a correct description of  
16 it.

17 Pydraul is an Aroclor based -- there are several  
18 Pydrauls, by the way. There could be a dozen, two dozen  
19 Pydrauls. They may have an Aroclor base. They may have  
20 other additives along with it. They may have other  
21 compounds in it.

22 Q What is your understanding of what the Aroclor  
23 compounds are?

24 A Aroclor compounds are chlorinated byphenyl.

25 Q Are the terms "chlorinated byphenyl" and "chlorinated

1       diphenyl" used synonymously?

2               MR. FEATHERSTONE: By whom?

3               MR. HYNES: By anyone.

4               MR. FEATHERSTONE: By anyone? How can he answer --

5       well --

6               A       Chlorinated diphenyl was, I believe, the term

7       used first; and it has been changed to byphenyl as a more

8       correct terminology. But I would say that anybody in

9       Monsanto, if it's a byphenyl or diphenyl, they meant the

10      same thing.

11              I must also say when you use the word "Aroclors",

12      there are other Aroclors that are not chlorinated byphenyls.

13              There are chlorinated terphenyls. There are a

14      bunch of chlorinated materials that are not byphenyls.

15              Q       What is the difference between a chlorinated byphenyl

16      and a chlorinated terphenyl?

17              A       One phenyl ring.

18              Q       You mean terphenyl has three and byphenyl has two?

19              A       It has two.

20              Q       Do you recall your first contact with any Aroclor

21      compounds in your position as Medical Director?

22              A       Yes.

23              Q       And about when was that?

24              A       It was probably -- you said Medical Director --

25      now, because if you want to change that to --

1 MR. FEATHERSTONE: He said Medical Director.

2 Q (By Mr. Hynes) I said Medical Director.

3 Since you have been working at Monsanto, beginning  
4 in 1936, I believe, what was your exposure professionally  
5 to Aroclors?

6 A Some time in the late 1930s -- 1936, 1937 and 1938 --  
7 when I was going over the files of various plants, I came  
8 across reports of toxicological studies done by a predecessor  
9 company of Monsanto and the history of some individuals who  
10 developed a skin rash from contact from Aroclors. The skin  
11 rash left, was cleared up.

12 Q Did you, at any point, evaluate the toxicity of any  
13 Aroclor?

14 A Yes.

15 Q When was the first time you recall doing such an  
16 evaluation?

17 A It probably was in 1937 or 1938.

18 Q Do you recall under what circumstances you were  
19 called upon to do that?

20 A Yes. There was quite a series of newspaper articles  
21 about the occurrence of chloracne in workers who were  
22 exposed to chlorinated naphthalene, and there was alleged  
23 to be a small, a certain percentage of Aroclor, chlorinated  
24 byphenyl, used at the same time.

25 Q What did you do with this information?

1 A Well, the information was that there was going to  
2 be a meeting on Aroclors -- not Aroclors -- on this problem.  
3 So, I went to the meeting.

4 Q Was it a problem in a Monsanto plant?

5 A No.

6 Q It was in some outside plant?

7 A That's right.

8 Q And the meeting was with Monsanto personnel?

9 A No. The meeting was with the people who sold them  
10 the product, who sold -- they took this company -- this  
11 company took our byphenyl, mixed it with their chlorinated  
12 napthalene, and sold it to another company; and the meeting  
13 was between all three of those people.

14 Q And do you recall what occurred at the meeting?

15 A Yes. It was discussed, and studies were decided  
16 to be done on it.

17 Q Did Monsanto commission any studies?

18 A Monsanto supported, in a small way, the studies  
19 that were decided upon at this time.

20 Q Do you recall what the results of those studies were?

21 MR. FEATHERSTONE: On what product, what compound?

22 MR. HYNES: He is just talking about the studies  
23 that came out of this meeting, and I want to know what the  
24 results of the studies were as best he recalls.

25 MR. FEATHERSTONE: I guess that includes the

1 chlorinated naphthalene.

2 THE WITNESS: Chlorinated naphthalene, chlorinated  
3 byphenyls of various chlorinations.

4 Q (By Mr. Hynes) Right.

5 A Yes. I recall what came out of that. It was  
6 reported in the literature.

7 Q Who did the study? Do you recall what laboratory?

8 A Professor Drinker at Harvard.

9 Q And this was published in the late thirties some time?

10 A '39, '40, around that time.

11 Q Do you recall if Monsanto did any subsequent  
12 toxicity tests of their Aroclors subsequent to that  
13 Drinker study?

14 A Yes.

15 Q Do you recall when that occurred?

16 A It occurred right afterwards with Drinker because  
17 in the first place, Professor Drinker --

18 MR. FEATHERSTONE: He just asked when it happened.

19 Q (By Mr. Hynes) Would you explain what the study  
20 was.

21 A Yes. It was a study of our chlorinated byphenyl.  
22 This was done because the previous study was not chlorinated  
23 byphenyl. It was given to Professor Drinker by a different  
24 company and said this is Monsanto's chlorinated byphenyl  
25 so we wanted to repeat the study with our chlorinated byphenyl,

1 and that's what we did.

2 Q Do you recall what the results of that study were?

3 A Yes.

4 Q What were they?

5 A Doctor Drinker was very surprised that our material  
6 was not nearly as toxic as the material he tested that was  
7 purported to be chlorinated byphenyl.

8 Q Do you recall which Aroclor it was that was the  
9 subject of Doctor Drinker's study?

10 MR. FEATHERSTONE: The second study, now?

11 MR. HYNES: The second study.

12 A One was sixty-five--one was twelve sixty-five, and  
13 one was twelve sixty-eight. I don't recall which was the  
14 first.

15 Q And the last two numbers would refer to a percent  
16 of chlorine?

17 A Chlorination.

18 Q In your position as Medical Director, beginning in  
19 1946, do you recall the first time that you commissioned  
20 any toxicity studies on any Aroclors?

21 A I don't recall the first time.

22 Q You do remember that studies were conducted; is  
23 that correct?

24 A Yes.

25 Q Do you recall if any were conducted in the forties?

1 A I can't remember, Mr. Hynes.

2 MR. FEATHERSTONE: When you say "studies", you  
3 are referring to laboratory studies, I take it?

4 MR. HYNES: Right.

5 Q (By Mr. Hynes) Do you recall evaluating any  
6 products or compounds referred to your department from  
7 research and development as to marketing new products  
8 which would contain Aroclors?

9 MR. FEATHERSTONE: Could you read that question  
10 back, please.

11 (Whereupon, the court reporter read back the  
12 previous question.)

13 A Yes.

14 Q (By Mr. Hynes) Do you recall Pydraul being one  
15 of those products?

16 A Yes. Remember, now, there are various Pydrauls  
17 that we are talking about.

18 Q I am talking about Pydrauls which contained Aroclors.

19 A Yes.

20 Q Do you recall what the Pydral fluids, what their  
21 intended use was?

22 A Pydraul fluids, yes.

23 Q What was their intended use?

24 A They were used as hydraulic fluids.

25 Q Do you recall approximately when you first received

1 a referral from research and development on a Pydraul  
2 product containing Aroclors?

3 A I can't be exact about the date, Mr. Hynes.

4 Q To the best of your recollection.

5 A Probably some time from 1955 to 1965. I am not  
6 sure. That's twenty-five years ago. I can't squeeze it  
7 down any closer. I am sure there are reports around when  
8 we did it.

9 Q I understand. I am looking for your best recollection.

10 Do you recall if there were more than one Pydraul  
11 product which you evaluated?

12 A I am sure there were.

13 Q To the best of your recollection, do you believe  
14 that you followed the normal routine that you followed in  
15 evaluating compounds referred from research and development?

16 A No.

17 Q I am not sure what the "no" means -- no, you don't  
18 recall; or no, you did not follow the normal routine.

19 A Yes, I do recall; and no, I did not follow the  
20 routine.

21 Q What routine did you follow?

22 A We added another test.

23 Q And what test was that?

24 A That was the inhalation of fumes of Pydraul dropped  
25 on a hot metal surface.

1 MR. FEATHERSTONE: Was that the only change?

2 THE WITNESS: That was the only change.

3 Q (By Mr. Hynes) Do you recall why that change in  
4 the testing occurred?

5 A Yes, because the hazard we envisioned with the  
6 hydraulic fluid was there could be a rupture of a line  
7 and these hydraulic fluids are used on the various machinery  
8 that are hot, and if this came out -- and we knew that at  
9 ambient temperatures the Pydraul was not particularly  
10 toxic from the acute point of view -- we did not know what  
11 would happen either to it or the decomposition products  
12 at elevated temperatures.

13 Q And where did you get the information regarding  
14 this potential hazard?

15 MR. FEATHERSTONE: You are talking about a rupture  
16 in a line?

17 MR. HYNES: Right.

18 A I am sure I got it from the development people.

19 Q (By Mr. Hynes) Did you, yourself, have any firsthand  
20 knowledge of hydraulic systems?

21 A Outside of brakes? I expect I might have seen  
22 pictures of them and things in our annual reports, but  
23 firsthand knowledge -- I did have firsthand knowledge of  
24 hydraulic fluids in an airplane, but these were not Pydraul.

25 Q So, it's fair to say you got most of the information

1 you needed from research and development rather than your  
2 own experience; is that correct?

3 A Yes.

4 Q And other than the inhalation tests, you conducted  
5 the normal evaluation you did on any other chemical products  
6 in the industrial chemicals area, as best you can recall?

7 A Yes. But as I recall, I think we had some longer-  
8 term inhalation studies on Aroclor compounds themselves,  
9 and I do not know -- I think that was in the time frame  
10 of 1955 to 1965 -- and we used our knowledge of that to  
11 evaluate a potential exposure to Pydraul.

12 Q To the best of your recollection, the Pydraul  
13 testing, your department's evaluation occurred in the  
14 1955-1965 time frame; is that correct?

15 A Yes, I think so.

16 Q Do you recall more than one product being evaluated,  
17 Pydraul products being evaluated, in that time frame?

18 A Yes.

19 Q Do you recall why you evaluated, the reasons for  
20 the evaluation of the different products?

21 A Different formulations.

22 Q And do you recall the types of different formulations--  
23 and what I mean, was it a higher chlorinated Aroclor, is  
24 that the type of differences, or was there some other  
25 difference?

1       A     I don't recall, but I thought that some of the  
2       Pydraul had phosphate esters in them along with the  
3       Aroclors. Now, I could be wrong on that, but I do remember  
4       that there were a half dozen Pydraul names, and I do not  
5       know whether they referred directly to changes in the  
6       chlorination of the Aroclors. It may be varying contents  
7       of Aroclors. It may be other things in the Pydrauls.

8       Q     But you do recall more than one evaluation?

9       A     That's correct.

10      Q     As best you can recall, what were the intended  
11      uses of Pydraul as you understood them from the Research  
12      and Development Department?

13      A     As a hydraulic fluid.

14      Q     As best you can recall, what would that entail?

15           MR. FEATHERSTONE: What do you mean "what would  
16      that entail"?

17      Q     (By Mr. Hynes) What uses are made of the hydraulic  
18      fluid?

19      A     Hydraulic fluid is intended to transmit pressure  
20      from one object to another object.

21      Q     Do you recall, at any time, receiving information  
22      from anyone within Monsanto that the Pydraul fluid had  
23      been getting out of the workplace into the environment?

24      A     What year?

25      Q     Any time.

1 Do you recall receiving information of that nature  
2 from anyone in Monsanto?

3 A Yes.

4 Q Do you recall approximately when you received  
5 that information?

6 A Well, the most recent was about six months ago.

7 Q Oh, no, the first time you received that information.

8 A I don't recall when the first time was, no.

9 You will also have to be more precise in getting  
10 outside into the environment. Do you mean by that in  
11 a landfill or going out a chimney or what do you mean?

12 Q In the broadest sense, initially, going out a  
13 chimney, a smokestack, getting into the sewer, going into  
14 a river, a stream or lake, or to a landfill or being just  
15 dumped onto land outside of a plant.

16 A I would say that that information, as best as I  
17 recall, was some time around 1969.

18 Q Do you recall how you received that information  
19 and what that information was?

20 A Yes.

21 Q Could you please state what your recollection is.

22 A This is going to be involved.

23 Q All right.

24 A Some time in the late 1960s, there was a report  
25 in the foreign newspapers, some foreign newspapers --

1 MR. FEATHERSTONE: Wait a minute, Doctor. Before  
2 you go on, the question asked for your knowledge about  
3 Pydraul getting out of a workplace through the various  
4 means that he described.

5 A Well, with that delineation, I may have to say that  
6 I received information at about that time that  
7 polychlorinated byphenyls were present, may be present,  
8 in certain environments outside the usual workplace, and  
9 I would say, at that time or subsequent to that, I  
10 believe, then that somebody -- that there were discussions  
11 as to what these polychlorinated byphenyls may be. And  
12 at that time, I think the question was brought up that it  
13 may have been Pydrauls.

14 Q Let's go back and talk, first of all, about PCBs --  
15 and if I may, I will use PCB rather than Aroclors.

16 A Rather than polychlorinated byphenyls?

17 Q Right.

18 A Because --

19 Q Fine, correct me.

20 MR. FEATHERSTONE: Wait a minute. You are using  
21 PCBs now in place of polychlorinated byphenyls. You have  
22 got an understanding of that.

23 Go ahead and answer.

24 Q (By Mr. Hynes) Now, as to the question on PCBs, I  
25 think you started to answer when was the first time you

1 learned that there were reports of PCBs being out in the  
2 environment beyond a workplace.

3 A PCB, polychlorinated byphenyls, not Monsanto's  
4 polychlorinated byphenyls.

5 It was some time, I believe, in 1968, give or take  
6 a year.

7 Q And what do you recall hearing or being informed of  
8 with regard to PCBs in the environment at that time?

9 A I was informed that a Swedish analytical chemist  
10 was reported in a Swedish newspaper to have used some new  
11 analytical techniques and discovered that PCBs were present  
12 in the ecosystem -- ecosystem meaning the environment.

13 Q Do you recall how you learned of that information?

14 A Yes, as I believe that somebody in one of our  
15 European installations wrote in to the headquarters in  
16 Saint Louis and said here is what this man alleges to have  
17 found.

18 Q Did you yourself take any action after receiving  
19 that report?

20 A Yes.

21 Q And what action did you take?

22 A I am sure we had a meeting -- I know we had a meeting --  
23 I don't know the time -- with analytical people, with our  
24 toxicologists, with our development people, with our  
25 marketing people to find out what is this man talking about

1 because the newspaper reports did not say PCBs,  
2 polychlorinated byphenyls. They had polychlorinated  
3 biphenols. That was what the newspaper clipping that we  
4 got said.

5 I said let's find out what this man is talking  
6 about, so I asked what do you know about this, and they  
7 said we don't know anything, let's find out.

8 Does that answer your question about what action  
9 I took?

10 Q And did you direct anyone to find out what he was  
11 talking about, or were you involved in someone being  
12 directed to do that?

13 A No and yes. I didn't direct anybody. I was  
14 involved.

15 This was an analytical problem.

16 Q What do you mean by an analytical problem?

17 A This man is saying he has found something which  
18 the newspaper called polychlorinated biphenols, but the  
19 assumption is also being made by other means that it's  
20 polychlorinated byphenyls -- that he is using a technique  
21 that is more sophisticated than the Monsanto people had.  
22 So, the problem was if he had really found this. It was  
23 an analytical problem to decide on the validity of his  
24 finding.

25 Q What subsequently occurred after this meeting where

1 someone was directed to get more information?

2 A They got more information.

3 Q And what information did you get?

4 A They -- meaning Monsanto?

5 Q Yes, Monsanto.

6 A They got some of his ideas about his analytical  
7 testing. It did not seem that this problem could be  
8 resolved by correspondence from the United States to Sweden  
9 so at some time in the late sixties, a delegation or --  
10 not a delegation -- some of our analytical people went  
11 over to talk to this particular individual.

12 Q Did Monsanto subsequently verify the findings of  
13 this Swedish person?

14 MR. FEATHERSTONE: What do you mean -- verify the  
15 particular samples that he analyzed?

16 MR. HYNES: No. Verify that there were PCBs  
17 in the ecosystem.

18 A Subsequently, Monsanto accepted the fact that there  
19 were PCBs in the ecosystem. I can't tell you at what  
20 particular date they accepted that -- whether that was  
21 done on the basis of other workers or whether that was  
22 done on the basis of refinement of the Swede's technique  
23 by our people. Our people finally, at some date -- I don't  
24 know when, whether that was 1969 or 1970 -- had developed  
25 an analytical technique that could pick up PCBs in quantities

1 that could not have been picked up previously.

2 Q (By Mr. Hynes) So, in other words, the analytical  
3 techniques for detecting PCBs was refined subsequently to  
4 where Monsanto felt that findings using these particular  
5 techniques were accurate?

6 A Subsequent to what?

7 Q Subsequent to the Swedish study.

8 A Yes.

9 Q Do you recall approximately what year that would  
10 have been?

11 A No, I don't. That's an analytical problem; that  
12 wasn't mine.

13 Q Do you recall at any point being informed by analytical  
14 people at Monsanto that they accepted the technique as  
15 being valid or a modification of that technique as being  
16 valid?

17 MR. FEATHERSTONE: You have a compound question.

18 Q (By Mr. Hynes) I assume that the analytical  
19 people modified the original techniques used by the  
20 Swedish scientist?

21 A Correct.

22 Q Were you informed subsequently that this modified  
23 technique was capable of detecting PCBs in the environment?

24 A I was informed that it was capable of picking up  
25 PCBs in animal tissue. I can not tell you whether they told

1 me that it was capable of being picked up in the environment.  
2 I don't know.

3 Q Subsequent to your first learning of this reported  
4 finding in Sweden, were you involved in any action by  
5 Monsanto to evaluate their products which contained PCBs  
6 to determine if those products were getting into the  
7 environment?

8 A Would you say that again?  
9 (Whereupon, the court reporter read back the  
10 previous question.)

11 A I lost you from the bottom line to where you  
12 started.

13 Q (By Mr. Hynes) Subsequent to your receiving  
14 knowledge of this reported finding by the Swedish scientist --

15 A How subsequent?

16 Q At any date subsequent -- did Monsanto take any  
17 actions to evaluate their PCB product lines to determine if  
18 these products were getting into the environment?

19 A That would have been a function of the analytical  
20 department. I do not believe that was a function of mine,  
21 to evaluate it.

22 Q Do you have any knowledge if that was done?

23 A I don't have direct knowledge of my own that it  
24 was done although -- the Medical Department was not the one  
25 responsible for finding out if this material was out there

1 in the ecosystem.

2 Q What department would have had that function?

3 A The analytical section of the research group of  
4 what was at that time called the organic division.

5 Q And did anyone in that division ever inform you  
6 of the results of any of these evaluations that they ran?

7 A I can't remember if they did or not.

8 Q Did you ever subsequently learn that PCBs were  
9 identified in the ecosystem in the United States?

10 A Yes.

11 Q How did you learn that and when?

12 A Well, I think I learned that by talking to members  
13 of the analytical group who said, I think, there are some  
14 PCBs out there or found out there.

15 MR. HYNES: Would you repeat that answer, please.

16 (Whereupon, the court reporter read back the  
17 previous answer.)

18 Q (By Mr. Hynes) Do you recall who told you that  
19 and/or in what circumstances you learned that?

20 MR. FEATHERSTONE: You mean learned that somebody  
21 in the analytical group thought there were PCBs out there?

22 MR. HYNES: Right.

23 A If anyone told me, it was Doctor Robert Keller  
24 who was head of the analytical group.

25 Q Do you have any recollection about when that

1 occurred?

2 MR. FEATHERSTONE: He already stated 1969,  
3 approximately.

4 A Give or take a year, 1969-1970.

5 Q (By Mr. Hynes) What did the Medical Department  
6 do with regard to this new information that PCBs were in  
7 the environment? Did the Medical Department take any action  
8 with regard to that?

9 MR. FEATHERSTONE: Are you basing this on what  
10 Doctor Keller stated to the witness, because the witness --

11 MR. HYNES: No. I don't want what Doctor Keller  
12 stated.

13 At some point, am I correct, at some point there  
14 was a concern within Monsanto that PCBs may be in the  
15 environment; is that correct?

16 A That's correct.

17 Q (By Mr. Hynes) With regard to that concern,  
18 did the Medical Department take any action with regard to  
19 PCBs?

20 A Yes.

21 Q Do you recall when the first action of any type  
22 occurred and what your department did?

23 A The first action was relatively shortly after  
24 we found out that it was true and validated that there  
25 were PCBs in the ecosystem. Then, we decided let's analyze

1 this and see if there is any harm to the presence of this  
2 PCB being in the ecosystem.

3 Q And how did you go about evaluating whether there  
4 was any harm?

5 A We evaluated it by trying to discover which PCBs  
6 there were, where in the ecosystem they were, and whether  
7 or not this would be a hazard in potable water or food  
8 for humans, drink for humans.

9 Q How did you go about doing that evaluation?

10 MR. FEATHERSTONE: Which one?

11 Q (By Mr. Hynes) All right, did the Medical  
12 Department have any involvement in determining what the  
13 PCBs were in the environment? I take that to mean the  
14 chemical structures of the PCBs found in the environment;  
15 is that correct?

16 A We had no involvement in finding out which  
17 PCBs were in the environment.

18 Q That would be the analytical department; is that  
19 correct?

20 A That's correct.

21 Q Did the Medical Department have any involvement  
22 in determining where in the ecosystem the PCBs were or  
23 would be found?

24 A No, sir. We had no analytical capability in our  
25 department.

1 Q Do you recall if anyone in Monsanto attempted  
2 to determine where in the ecosystem PCBs were or might be  
3 found?

4 A I can't recall whether they did or not.

5 Q Do you recall ever receiving any information  
6 regarding the location of the PCBs in the ecosystem -- to  
7 clarify that, inside Monsanto or outside sources?

8 MR. FEATHERSTONE: That's obviously compound.

9 Why don't you break it down, Mr. Hynes?

10 Q (By Mr. Hynes) Inside Monsanto.

11 A I don't know if Monsanto people, analytical  
12 people -- I do not recall whether they told me we found  
13 PCB samples in various places in the ecosystem. I can't  
14 recall that.

15 Q Do you recall if you ever received such information  
16 from any source?

17 A I can recall that Monsanto people who were  
18 analytical chemists and capable of analyzing reports told  
19 me that it appears that these PCBs are really present  
20 in the ecosystem, that enough people have found them and  
21 validated that is a true fact.

22 Q Do you recall about when you received that  
23 information? Would it, again, be 1969-1970?

24 A 1969, somewhere around there.

25 Q Did the Medical Department evaluate whether the

1 PCBs were a hazard, I think you said, in potable water  
2 or in food for humans -- I am not clear on that, first of  
3 all.

4 MR. FEATHERSTONE: What's the question?

5 Q (By Mr. HYNES) Did the Medical Department  
6 evaluate whether or not PCBs were a hazard in water?

7 A Yes.

8 Q How did you go about doing that evaluation?

9 A We looked at what analyses were available showing  
10 the presence or absence of PCBs in the water. We looked  
11 at the physical characteristics of PCBs which were almost  
12 insoluble in water and could only be present in trace amounts  
13 of water. We looked at what we knew about the acute  
14 toxicity of the PCBs, and we evaluated the possibility of  
15 trace elements of PCBs in water and any relevance to any  
16 particular hazard.

17 Q Do you recall, in regard to your evaluation,  
18 if Monsanto commissioned any specific studies to evaluate  
19 the hazards in water other than what you already had in  
20 your files?

21 MR. FEATHERSTONE: When you are talking about  
22 water, are you talking about drinking water?

23 MR. HYNES: Potable water, drinking water.

24 A We did not initiate any studies on the basis of  
25 any remote, possible or remote, hazard in drinking water.

1 Q It would be a fair characterization that you  
2 based your evaluation upon existing literature and previous  
3 studies done on the Aroclors by Monsanto?

4 A And what was known about the physical, chemical  
5 characteristics of the compound -- it's solubility, it's  
6 stability, it's persistence in nature.

7 Q Did the Medical Department evaluate any other  
8 potential hazards of PCB other than potable water?

9 A When?

10 Q In the same time period -- 1968, 1969, 1970 --  
11 that we were just talking about.

12 A Yes.

13 Q What did you evaluate, what hazards?

14 A In the time frame that you referred to, the  
15 question was brought up as to whether PCBs might be present  
16 in food that could be eaten by humans.

17 Q Do you recall how that was brought to your  
18 attention, that there was a possibility PCBs might be  
19 present in food for humans?

20 A I am sure it was brought -- yes.

21 Q What do you recall?

22 A I recall that some people said that this may  
23 be present in fish.

24 Q In all probability, would that have been in  
25 some literature?

1 A Literature or newspapers.

2 Q As to PCB's presence in fish, did your department  
3 evaluate that hazard?

4 MR. FEATHERSTONE: You mean what effect it might  
5 have?

6 MR. HYNES: Yes.

7 A If people ate the fish?

8 Q (By Mr. Hynes) Did you evaluate the potential  
9 hazard of PCBs in fish?

10 A Yes.

11 Q With respect to consumption by humans?

12 A Yes.

13 Q How did you evaluate it?

14 A I took what we knew about PCBs and went to the  
15 Food and Drug Administration and talked to them and said  
16 here is what people say they are finding in fish, here is  
17 what we know about fish, what do you think we should do  
18 about this -- not know about fish, but what we know about  
19 PCB's toxicity.

20 Q Was it you yourself who went there?

21 A I myself, and I believe also we probably had  
22 one of our consulting toxicologists that I had talked to  
23 before.

24 Q Do you recall who that was?

25 A I imagine it was Doctor Calandra who came along

1 with me. I imagine Doctor Hunt came along with me, too;  
2 and I feel quite certain I talked to Doctor Garth Fitzhugh  
3 or one of his people.

4 Q Would you spell that?

5 A Garth, G-a-r-t-h, Fitzhugh, F-i-t-z-h-u-g-h --  
6 who I think was retired, but I can not -- Doctor Fitzhugh  
7 was there himself, as a rule, even in 1969 and 1970 when  
8 we went down and talked to the Food and Drug Administration  
9 people. There were eight people there.

10 Q Was he employed by the Food and Drug Administration?

11 A He was the head pharmacologist.

12 Q He is the only person at the FDA that you  
13 specifically recall?

14 MR. FEATHERSTONE: Doctor, please wait until  
15 Mr. Hynes is done with the question.

16 Q (By Mr. Hynes) With regard to the Food and  
17 Drug Administration, is there anyone else you specifically  
18 remember discussing this matter with at the Food and  
19 Drug Administration?

20 A I have to say I am not a hundred percent sure  
21 that I discussed it with Doctor Fitzhugh. I certainly  
22 went into Doctor Fitzhugh's office and talked to people  
23 in the Food and Drug department and it is my impression  
24 that I talked to Doctor Fitzhugh at that particular time.  
25 I could be wrong about it. I know I talked to him subsequent

1 to that on and off about that problem.

2 Q Do you recall anyone else specifically?

3 A I don't recall their names.

4 Q I take it you had more than one meeting with  
5 regard to PCB's presence in food, in fish; is that correct?

6 A Quite a few, yes.

7 Q Do you recall about when the first meeting  
8 occurred?

9 A I would say probably in 1969, again, whenever we  
10 had gotten our protocol for testing PCB.

11 Q As best you can recall, what was the content  
12 of your conversations or meetings with the people in  
13 the FDA, in general?

14 A In general, it was this: There have been reports,  
15 and it appears that it's substantiated that PCBs are in the  
16 ecosystem and may be getting into food for human  
17 consumption. The amount of information on PCBs up to the  
18 present date is that of acute and possibly some subacute  
19 testing, not by feeding. If it is getting into the food  
20 of people, it appears to us as a manufacturer of PCB that  
21 even though we didn't intend it to get into food we should  
22 find out something about it and here is what we propose  
23 to do, and what do you think of it.

24 And they said fine. They might have given us  
25 some other suggestions to include this or to include that --

1 they never said take it out, but include this--and that  
2 was the gist of the meeting.

3 Q Would it be a fair characterization, basically,  
4 that you were discussing the types of protocols for tests  
5 that Monsanto intended to run on these products or on the  
6 PCBs?

7 A Yes.

8 Q Do you recall what type of tests you intended to  
9 run?

10 A Yes.

11 Q What types were they?

12 A We intended to run what was considered to be the  
13 most elaborate tests run in toxicological thinking of  
14 whatever year that was, 1969 and 1970. We were going  
15 to run chronic feeding studies at three levels in two  
16 species. We were going to use reproduction studies -- I  
17 am not sure if we were going to use them in one study or two  
18 studies. We were going to use these studies to determine  
19 it in avian species, also. We were going to use teratological  
20 and mutagenic studies which were the ones that were popular  
21 at that time.

22 Q And you can't recall which of the two it was?

23 A The science of toxicology is a moving target  
24 from 1936 when I first became acquainted with toxicology;  
25 and the rules -- not the rules -- but the extent of the tests

1 have been expanded. In the early -- do I go on this way?

2 MR. FEATHERSTONE: No. I think the question  
3 was you don't remember which one?

4 A (Continuing) Except all that whole barrage of  
5 tests that I included -- chronic feeding of two species,  
6 reproductive studies in one or two species, avian species,  
7 hatchability studies, teratological studies, mutagenic  
8 studies -- all were done.

9 Q What was the basic purpose of these studies?

10 A The basic purpose of these studies was to find  
11 out the toxicological properties of PCBs at various levels  
12 in the diet to human and avian species.

13 Q In this battery of studies that we were discussing,  
14 were there any particular Aroclors, any particular Aroclors  
15 which were of the most concern to Monsanto or the focus  
16 of these particular, the particular focus of these studies,  
17 the higher chlorinated or the lower chlorinated?

18 MR. FEATHERSTONE: You have a compound question,  
19 Mr. Hynes.

20 Q (By Mr. Hynes) Were there any particular Aroclors  
21 which were the particular focus of these studies?

22 A Yes.

23 Q Which were they?

24 A I think we picked two or probably three, as well  
25 as I can recall, which reflect the spectrum of Aroclors from

1 moderate chlorination to high chlorination.

2 Q What would a moderate chlorination be?

3 A 1242, 1248 -- I don't know if these were the  
4 ones -- whereas 1266, 1268 were high.

5 Q As best you can recall, two or three?

6 A There were two or three Aroclors run.

7 Q If you know, would a toxicity study of a lower  
8 chlorinated hydrocarbon, would the result of a lower  
9 chlorinated PCB, would that result of a test like that be  
10 able to be extrapolated to a higher chlorinated PCB?

11 A No. They are two different compounds.

12 Q Now, the same would be true at a higher?

13 A To be extrapolated to a lower?

14 Q To be extrapolated to a lower.

15 A I don't know whether I answered this -- how was  
16 the question phrased?

17 MR. FEATHERSTONE: We don't have a question.

18 Q (By Mr. Hynes) Would you be able to extrapolate  
19 the results of a toxicity study in a higher chlorinated  
20 PCB, would you be able to extrapolate those results to a  
21 lower chlorinated PCB?

22 A In a ballpark figure, which is a ballpark figure --  
23 which means that you couldn't be precise and say if we found  
24 the toxicological properties of a compound with high  
25 chlorination -- one could not presume that those properties

1 could be equated to a lower one. They might be of the  
2 same general order, but how specific they would be, no one  
3 could tell.

4 Q And this battery of tests that we were just  
5 discussing where you had the various meetings with the  
6 FDA talking over the protocols, did you subsequently let  
7 out contracts to an outside laboratory to conduct these  
8 tests?

9 A Yes.

10 Q IBT, was that the laboratory?

11 A Industrial Bio-Test, right.

12 Q Did you subsequently get the results from them?

13 A Yes.

14 Q As best you can recall, generally, what were  
15 the results of those tests?

16 MR. FEATHERSTONE: Which tests?

17 MR. HYNES: All of them. If he recalls a specific  
18 test, that's fine -- in general, whatever your best  
19 recollection is.

20 MR. FEATHERSTONE: Doctor, in responding to that  
21 question, I instruct you, to the extent you remember specific  
22 results, to tie that to a specific test; and by that, I  
23 mean specific animals, specific dosage, that type of thing.

24 A Okay. I know that I recall that for some Aroclors,  
25 and maybe all of the ones we tested, we found a safe, tolerable--

1 safe at ten parts per million of the dye.

2 I know we had some problems at varying levels of  
3 Aroclors, and I am not sure which levels, and I am not  
4 sure which one in the hatachability of eggs.

5 That's as much as I can tell you without going  
6 back and reading the data.

7 Q Subsequent to those studies being let out and  
8 the studies being concluded, do you recall any other  
9 studies commissioned by Monsanto regarding the toxicity of  
10 PCBs?

11 MR. FEATHERSTONE: Before what time?

12 A Any time up to now?

13 Q (By Mr. Hynes) Any time up to that point where  
14 you were medical director.

15 A Yes.

16 Q Do you recall what studies were initiated and  
17 when?

18 A Some time probably in the early seventies we  
19 must have done -- we did do some work on ducks and  
20 mallard ducks and grouse and something else -- I mean,  
21 wild fowl -- I believe, but I am not at all familiar with  
22 those.

23 Q Would you characterize them as similar types  
24 of tests as were run that we were just discussing?

25 MR. FEATHERSTONE: I object to the lack of

1 foundation. He just told you he has no familiarity with  
2 those, Mr. Hynes.

3 MR. HYNES: Read back the question.

4 (Whereupon, the court reporter read back the  
5 following question:

6 QUESTION: "Would you characterize them as  
7 similar types of tests as were run that we were just  
8 discussing?"

9 MR. FEATHERSTONE: And the objection is the lack  
10 of foundation. He told you he didn't have any familiarity.

11 Q (By Mr. Hynes) Do you recall?

12 A They were not the extensive type.

13 Q Would they be more of an acute versus a chronic?

14 A No. They were probably the hatchability studies.

15 Q Were you involved in the setting up of the  
16 protocols on those studies?

17 A No -- well, yes, I believe we --

18 MR. FEATHERSTONE: Wait a minute. What's the  
19 answer? Were you involved in the protocol?

20 A Setting up the protocol, no.

21 Q (By Mr. Hynes) Do you recall who was involved  
22 in setting up the protocol?

23 A I think the protocol was set up by the fish  
24 and wildlife people, and we just borrowed their protocol.

25 Q Were the persons at Monsanto who decided to do

1 this study using the fish and wildlife's protocol?

2 A Yes.

3 Q Do you recall why that study was done?

4 A Yes.

5 Q Why?

6 A Because there were reports that PCB was involved  
7 in the nonhatchability of subspecies of wild fowl.

8 Q And the purpose was to see if that was, in fact,  
9 true; is that correct?

10 MR. FEATHERSTONE: Read back the question.

11 (Whereupon, the court reporter read back  
12 the previous question.)

13 A Well, the purpose --

14 MR. FEATHERSTONE: That's a yes-or-no response.

15 A No.

16 Q (By Mr. Hynes) What was the purpose?

17 A The purpose was to see what the effect of our  
18 PCB was on what particular wild species we could obtain.

19 Q And you subsequently received the results?

20 A I can't answer when we got the results.

21 Q Did you get the results? Do you recall?

22 A I can't even answer that.

23 Q Do you remember what laboratory it was that did  
24 the study for you?

25 A No.

1 MR. FEATHERSTONE: Well, that's an answer.

2 MR. HYNES: Do you want to break, now?

3 MR. FEATHERSTONE: Yes.

4 (Lunch break.)

5 Q (By Mr. Hynes) When we broke for lunch we were  
6 discussing some wildlife studies, I think you called them;  
7 and you thought they were on hatching of eggs.

8 Do you recall about when those contracts or  
9 those studies were sent out to the outside lab to be done,  
10 about what year?

11 A Probably in '70 or '71.

12 Q I think you mentioned the types of tests they  
13 were. Do you recall what types of tests, toxicity tests,  
14 they were? Were they acute, chronic, subacute? Do you  
15 recall what type of study they were?

16 A Yes.

17 Q What type was it?

18 A Hatchability.

19 Q Could you briefly describe what a hatchability  
20 test is?

21 A Yes, sir. A hatchability test is a test in which  
22 you give the fowl that laid the egg certain levels of a  
23 product or the compound and see what happens to the clutch  
24 of eggs, how many eggs they lay.

25 Q Is there any other purpose of the study other than

1 to see how many eggs they lay?

2 A The character of the eggs, the eggshell thickness.

3 Q Is there anything else that is studied, do you  
4 recall?

5 A I don't recall anything else.

6 Q Do you recall what Aroclor or what PCB product  
7 was utilized in this study?

8 A No, I don't.

9 Q Do you recall -- I think you answered this --  
10 do you recall if Monsanto ever received the results back  
11 from the outside lab?

12 A I do not recall if we ever received a report.

13 Q Would it be the normal procedure that you would  
14 have received a report back from an outside lab?

15 MR. FEATHERSTONE: I object. You have asked him  
16 the question directly, Mr. Hynes. He doesn't recall  
17 whether he got one in this case.

18 Q (By Mr. Hynes) I am asking again. Would it be  
19 the normal procedure, unless you cancelled the contract,  
20 to receive a final report back from a lab?

21 A Yes, unless the test could not be completed.

22 Q Under what circumstances would the test not  
23 be completed?

24 A When you are dealing with wildlife, they don't  
25 lay eggs every day. They lay eggs once a year or twice a

1 year at the most -- probably once a year -- and if something  
2 happens to the egg laying of the wildlife you are looking  
3 for, the birds that you are looking for, and you miss that  
4 particular fall or spring laying, whenever it was, you will  
5 have to wait another year to be able to do it. So, I don't  
6 know if that whole test was dropped some place there along  
7 the way.

8 Q Now, again, we are talking about other tests  
9 involving PCB.

10 Do you recall any other tests that you haven't  
11 mentioned that Monsanto contracted to have done?

12 A No, I don't.

13 Q Do you recall that, at some point in the late  
14 sixties and early seventies, that letters were sent out  
15 to PCB customers of Monsanto regarding this new information  
16 about PCBs being found in the ecosystem?

17 A Yes.

18 Q Do you recall if you were involved in authorizing  
19 or reviewing any of those letters?

20 A I may have reviewed them. I can't recall whether  
21 I did or not.

22 Q Did you see the letters that went out?

23 A I saw the letters. Whether I saw them prior to  
24 them going out or after they were out, I can't answer.  
25 I don't recall.

1 Q Do you recall if anyone, other than yourself,  
2 in the Medical Department was involved in reviewing or  
3 supplying information to go out in those letters?

4 A If I weren't involved, I don't think anyone else  
5 would have been involved.

6 Q Do you recall whose responsibility it was to  
7 send out those letters?

8 A No, I don't.

9 Q Do you recall who decided that those letters  
10 should go out to the customers?

11 A I don't know what particular individual or  
12 individuals decided that it was important to send a letter  
13 out at the time you mentioned.

14 Q Do you recall what particular group of the  
15 company or division of the company it would have been  
16 that would have made that decision?

17 MR. FEATHERSTONE: Object to the form of the  
18 question.

19 THE WITNESS: Would you repeat it, please?

20 (Whereupon, the court reporter read back  
21 the following question:

22 QUESTION: "Do you recall what particular group  
23 of the company or division of the company it would have  
24 been that would have made that decision?")

25 A It would have been someone, some group, in the

1 Organic Division which was the name of the group that  
2 manufactured the PCBs.

3 Q And you don't recall any involvement of you or  
4 anyone in your department in authorizing or supplying  
5 information to these letters.

6 MR. FEATHERSTONE: Asked and answered.

7 A I don't recall it.

8 Q (By Mr. Hynes) I believe you stated earlier  
9 that labeling for products that were marketed was part  
10 of your responsibility in evaluating the chemicals, what  
11 type of warnings or what type of cautionary instructions  
12 should be on the labels; is that correct?

13 A Correct.

14 Q Now, do you recall in general -- we are talking  
15 the period, say, 1968, 1969, 1970 -- that any changes were  
16 made on the labels of PCB-bearing products?

17 MR. FEATHERSTONE: Which period of time, now?

18 MR. HYNES: 1968 to 1970.

19 A I can't recall for sure, Mr. Hynes, if there  
20 were any changes made.

21 Q (By Mr. Hynes) Do you recall if there were  
22 changes made on the labeling of PCB-bearing products at  
23 any time in the early seventies?

24 A I can't recall that.

25 Q If there were labeling changes, would it have

1 come through your department?

2 A I am sure it would have, yes. If there were  
3 changes for safe handling of the material, it would have  
4 come through our department.

5 Q Do you recall any changes on labeling of any PCB  
6 products which related to adding in a cautionary warning  
7 to customers to prevent the PCBs from getting into the  
8 ecosystem, into the environment, words to that effect.

9 A No.

10 Do I recall what?

11 Q Do you recall doing it, or do you recall changes  
12 of that nature being made in the labeling of PCB products?

13 A I do not recall doing it, and I don't recall  
14 whether or not I saw labels with that change on it.

15 Q If there were labels with that change on it,  
16 would they have to have come from your department or would  
17 there have been another department at Monsanto which  
18 would have authorized that change?

19 A The answer is no, it would not have to come from  
20 my department; and two, it would have to come from another  
21 department.

22 Q Do you know specifically of any other department  
23 which had the responsibility for changing the labeling other  
24 than your own?

25 A I did not have responsibility for changing labels.

1 I had responsibility for changing the warning or caution  
2 data on the labels. Each division had their own labeling  
3 group, and I would give my input into this particular group.

4 Q And your input would be in regard to toxicity prob-  
5 lems, cautionary instructions for workers and the like?

6 A From the health aspect, yes.

7 Q Do you recall if, at some time in the late sixties  
8 and early seventies, a decision was made at Monsanto  
9 to stop marketing certain products containing PCBs?

10 A Say that over, please.

11 Q Do you recall, in the late sixties or early  
12 seventies, a decision being made by Monsanto to stop  
13 marketing certain products which contained PCBs?

14 A No, sir.

15 Q Do you recall a decision in that same time frame  
16 to reformulate some PCB products?

17 A I do not know if the time frame is correct,  
18 whether it was in '70 or '71 or later on.

19 Q But at some point you do recall that there was  
20 a decision made at Monsanto to reformulate some of their  
21 PCB products?

22 A Yes, sir.

23 Q Again, in the 1970s, was there a decision made at  
24 Monsanto to terminate marketing some PCB products, at any  
25 point in the 1970s, do you recall?

1 A For the product uses.

2 Q You are saying that uses for the products, some  
3 uses of the products were terminated?

4 A Were advised we would not sell for certain uses.

5 Q Do you recall when that decision was made?

6 A Again, in the first part of some of the earlier  
7 years of the 1970s.

8 Q Do you recall what products or what uses these  
9 were that the products were restricted?

10 A Predominantly plasticizers.

11 Q What are plasticizers?

12 A A plasticizer is a chemical that is put into  
13 one or more resins to give it pliability -- in other  
14 words, most plastic products, if you want to have suppleness,  
15 if you want to have stretchability, if you want to have other  
16 products, you put in a plasticizer.

17 Q Do you recall any other uses where sales were  
18 restricted with PCB products?

19 A No, I don't.

20 Q Were you involved in making the decision to  
21 restrict the use of any PCB products?

22 A No, sir.

23 Q Was anyone in the Medical Department involved in  
24 the decision of that nature?

25 A No, sir.

1 Q Were you, or anyone to your knowledge in the  
2 Medical Department, asked to provide advice or information  
3 regarding any PCB products with regard to these restrictions  
4 of usage?

5 A I think -- you will have to define what you  
6 mean by "advice", Mr. Hynes.

7 Q Someone wants the knowledge that you have as  
8 to the toxicity of PCBs, as to the results of various tests  
9 that you have had ongoing with regard to potential toxicity  
10 in the food chain, things of that nature.

11 MR. FEATHERSTONE: I believe, Doctor, he is  
12 searching for whether or not the Medical Department had  
13 any input into the people who made the decision on the  
14 restriction of the uses.

15 Is that correct, Mr. Hynes?

16 MR. HYNES: Yes.

17 THE WITNESS: Well, his last statement used  
18 the term "food chain"; and I can not answer that question  
19 with all those ramifications.

20 MR. HYNES: I was just giving examples.

21 MR. FEATHERSTONE: The question, Doctor --  
22 and correct me if I am wrong, Mr. Hynes -- is whether you  
23 or anyone in the Medical Department provided information  
24 to the people who made the decision to restrict the usage  
25 of the PCB products?

1 A Yes, sir.

2 Q (By Mr. Hynes) Who provided the information?

3 A I did.

4 Q What information was provided?

5 A The toxicity data that we were establishing.

6 Q Who did you provide this information to?

7 A Presumably, the marketing and development people.

8 Q Why did you say "presumably"?

9 A Because I do not know if I sent it to the research

10 group, to the development people, to the sales people. I

11 just don't know.

12 Q You provided the information to these people.

13 Other than providing the information, what other

14 involvement did you or the Medical Department have in the

15 decision to restrict the use of PCB products?

16 A None.

17 Q Do you recall ever attending any management

18 meetings where you were asked to give your opinion on

19 toxicity or the health aspects of PCBs?

20 A Yes.

21 Q And again, we are talking about a time frame

22 of the early seventies -- is your answer still yes?

23 A Yes.

24 Q Do you recall how many meetings took place?

25 A Three or four.

1 Q Do you recall when the first one was?

2 A In 1970 to 1973.

3 Q Am I correct, "three or four" means you can't  
4 say, give an exact date for any of them; is that correct?

5 A Correct.

6 Q Other than yourself, who attended these meetings?

7 A Whichever -- I would imagine Doctor Levinskis  
8 may have attended.

9 Q If he weren't a toxicologist in your department?

10 A Correct.

11 Q And who else?

12 A I do not know if Mr. Wheeler did or not.

13 Q Anyone else that you recall at these meetings?

14 A No, from the Medical Department.

15 Q Now, other than from Medical Department, whom  
16 do you recall was at these meetings?

17 A One meeting that I recall, there were members  
18 of the Corporate Management Committee.

19 And one meeting, I recall was members of the  
20 marketing, production and development, a meeting of the  
21 Organic Division, if that was the name of the product  
22 group at that time.

23 Q Any other people that you recall?

24 A I don't recall any other people.

25 Q What is the Corporate Management Committee?

1 A It was the group that ran the company.

2 Q The Chairman, President, executive officers,  
3 of that nature?

4 MR. FEATHERSTONE: I object.

5 A People of that nature. I do not know if it was  
6 all those people.

7 Q (By Mr. Hynes) Would it be fair to say these are  
8 the people that --

9 A -- manage the company, yes.

10 Q That's fair enough.

11 Do you recall if you had more than one meeting --  
12 whether you attended more than one meeting with the  
13 Corporate Management Committee regarding the restriction  
14 of sales?

15 A That's the only one I recall.

16 Q Do you recall, other than the members of the  
17 Corporate Management Committee, were there other people  
18 from other divisions of the company there other than the  
19 Medical Department?

20 MR. FEATHERSTONE: He already answered that,  
21 Mr. Hynes.

22 MR. HYNES: I don't think he has.

23 MR. FEATHERSTONE: Yes, he has. He told you there  
24 were some members from the Organic Division, if that was  
25 the name of the product group, that were there.

1 MR. HYNES: I understood --

2 A There was a separate meeting, but there were  
3 some members of the Organic Division, the management of  
4 the Organic Division, along with the Medical Department in  
5 the Corporate Management meeting.

6 Q (By Mr. Hynes) Any other persons or groups that  
7 you recall?

8 A Not that I recall.

9 Q To the best of your recollection with regard to  
10 PCBs, what was discussed at that meeting?

11 A As well as I can recall, the question discussed  
12 was the presence of PCBs, the possibility of the presence  
13 of PCBs, in the ecosystem and if this were true, what should  
14 Monsanto do about it.

15 If it could be established, then this presence  
16 of PCBs in the ecosystem, indeed, would have some adverse  
17 effects.

18 MR. HYNES: Read back the answer, please.

19 (Whereupon, the court reporter read back the  
20 previous answer.)

21 Q (By Mr. Hynes) Do you recall if any decisions  
22 were made at that meeting with regard to whether PCBs were,  
23 in fact, in the ecosystem?

24 A I do not know of any decision made at that meeting.

25 Q Subsequently, was a determination made that PCBs

1 were in the ecosystem?

2 MR. FEATHERSTONE: By whom?

3 MR. HYNES: By Monsanto.

4 A I do not know if Monsanto determined the presence  
5 of PCBs in the ecosystem.

6 Q (By Mr. Hynes) Do you know if Monsanto ever  
7 accepted the fact that PCBs were present in the ecosystem?

8 A Monsanto accepted the fact that PCBs were alleged  
9 by some to be present in the ecosystem, yes, sir.

10 MR. FEATHERSTONE: He already testified this  
11 morning, Mr. Hynes, that at some point in time Monsanto  
12 did, in fact, accept the fact that PCBs were identified  
13 in the environment.

14 MR. HYNES: He did say that this morning.

15 Q (By Mr. Hynes) At this Corporate Management  
16 Committee meeting, was the Medical Department assigned any  
17 tasks with regard to anything dealing with PCBs?

18 A No specific tasks.

19 Q Any general tasks?

20 A No general tasks.

21 Q Were you asked to do anything?

22 MR. FEATHERSTONE: At this CMC meeting?

23 MR. HYNES: Yes.

24 A I think we were asked to go back and we will let  
25 you know if you should do anything. We weren't given any

1 assigned job at that particular meeting.

2 Q Do you know if, at that meeting, any decision  
3 was made to restrict the uses of PCBs at that point?

4 A Not while I was present in the meeting, and I  
5 do not know if the meeting kept on after I left.

6 Q Subsequently, did you find out that such a  
7 decision was made to restrict uses at that meeting?

8 A Yes, sir, -- not at that meeting -- if that  
9 decision were at that meeting --the decision was made by  
10 Monsanto at some point -- I don't know if that was the  
11 meeting that caused the decision to be made.

12 Q The first restriction of uses that you recall  
13 was as to plasticizers, is that correct, restricting the  
14 use of PCBs for plasticizers?

15 A It was not only plasticizers. It was what could  
16 be termed open uses, and plasticizers was, by far, the  
17 majority. There may have been smaller uses which I do  
18 not recall, but plasticizers was the major element.

19 Q Can you explain what you understand the meaning  
20 of an "open system" to be.

21 MR. FEATHERSTONE: Is this a phrase you are  
22 using?

23 THE WITNESS: I said "open uses".

24 MR. HYNES: I am sorry.

25 A Well, I can explain that by explaining what a

1 closed system is since an open uses everything else but  
2 that.

3 Q (By Mr. Hynes) That's fine.

4 A A closed system is a system in which the material  
5 is supposed to be inside containers and/or pipes during its  
6 use.

7 Q So, an open system is everything other than that?

8 A Yes.

9 Q Do you recall if this restriction of use of PCB  
10 products, restricting the open uses as you termed it, if  
11 that decision was made subsequent to this Corporate  
12 Management Committee meeting?

13 MR. FEATHERSTONE: He already testified he doesn't  
14 know whether it was made at that meeting or whether it  
15 was made at a later time, Mr. Hynes.

16 MR. HYNES: I didn't say at the meeting.

17 Q (By Mr. Hynes) Was it subsequent to the meeting,  
18 to the best of your recollection --

19 MR. FEATHERSTONE: But if he doesn't know whether  
20 it was made at the meeting or subsequently, how can he  
21 answer the question other than what he told you?

22 THE WITNESS: Repeat the question, Mr. Hynes.

23 Q (By Mr. Hynes) Was the decision made to restrict  
24 the use of PCB products to an open system made at that meeting  
25 or after that meeting?

1 MR. FEATHERSTONE: Object to the form of the  
2 question as baseless.

3 I would have her re-read it back to you; and if  
4 you can understand it, you can answer it.

5 (Whereupon, the court reporter read back the  
6 following question:

7 QUESTION: "Was the decision made to restrict  
8 the use of PCB products made at that meeting or after that  
9 meeting?")

10 MR. FEATHERSTONE: Just answer the question.

11 THE WITNESS: Read it again.

12 MR. HYNES: Let me just give you the question  
13 again.

14 Q (By Mr. Hynes) Either subsequent to or at  
15 that meeting, the decision was made not to use PCB products  
16 for open system uses; is that correct?

17 MR. FEATHERSTONE: I object to the form of the  
18 question. He has used the word "open uses".

19 MR. HYNES: Open uses.

20 MR. FEATHERSTONE: Rephrase it with the proper  
21 terms, Mr. Hynes.

22 Q (By Mr. Hynes) Do you understand the question?

23 MR. FEATHERSTONE: There is no question.

24 MR. HYNES: I wasn't asking you a question, Bruce.

25 Q (By Mr. Hynes) At that CMC meeting, either at that

1 meeting or subsequent to that meeting, was there a decision  
2 made to restrict the use of PCB products to open uses?

3 MR. FEATHERSTONE: Do you follow that?

4 THE WITNESS: I am not sure that I got exactly  
5 what I would be saying yes or no to.

6 MR. FEATHERSTONE: Off the record.

7 (Whereupon, discussion was had off the record.)

8 Q (By Mr. Hynes) Either at that meeting or  
9 subsequent to that meeting of the Corporate Management  
10 Committee, Monsanto made a decision to no longer sell  
11 PCB products for open system use; is that correct?

12 MR. FEATHERSTONE: There has been no definition  
13 of the phrase "open system".

14 MR. HYNES: Open uses.

15 MR. FEATHERSTONE: Court reporter, if you strike  
16 the word "open system use " and put in "open use", will  
17 everybody agree to it?

18 MR. JOHN: Why don't you use "nonclosed use"  
19 because he already defined that.

20 MR. FEATHERSTONE: Doctor Kelly, the question  
21 is this: Either at the Corporate Management Committee  
22 meeting or afterwards, was a decision made by Monsanto  
23 to restrict the use of PCB to closed system application?

24 THE WITNESS: Yes, sir.

25 MR. FEATHERSTONE: Mr. Hynes, was that the

1 question you were trying to get?

2 MR. HYNES: That's fine.

3 Q (By Mr. Hynes) To the best of your knowledge,  
4 were there any further restrictions in the use of PCB  
5 products subsequent to that decision?

6 A Yes, sir.

7 Q Do you recall when that occurred?

8 A Yes, sir.

9 Q When was that?

10 A Some time in the 1975s when the government  
11 restricted it -- or 1977s.

12 Q Do you recall what that restriction was?

13 MR. FEATHERSTONE: Objection, relevancy.

14 THE WITNESS: Do I answer?

15 MR. FEATHERSTONE: Yes. If the government wants  
16 to know what it did, tell him.

17 A I think it was the same restriction we put on  
18 after the meeting. They restricted it to closed uses.

19 Q (By Mr. Hynes) Any other restrictions?

20 A I don't know of any others.

21 Q Now, we are going back, again, to the early  
22 1970s.

23 I believe you stated that there were some PCB  
24 products which were reformulated in that late 1969-1970-1971  
25 time period; is that correct?

1 A Yes, sir.

2 Q Do you recall which products were reformulated?

3 A No, I don't.

4 Q Rather than specific products, do you recall the  
5 uses of the products that were reformulated?

6 A Would you rephrase or repeat that?

7 (Whereupon, the court reporter read  
8 back the previous question.)

9 Q (By Mr. Hynes) By specific products, I meant  
10 a brand name or trade name.

11 A Of what kind of products?

12 Q Of PCB-bearing products.

13 A I want to be sure about this.

14 MR. FEATHERSTONE: Doctor, the question is this --  
15 Mr. Hynes, correct me if I am wrong -- you have testified  
16 that you don't remember specifically which PCB products  
17 were reformulated. Mr. Hynes wants to know if you don't  
18 know the specific products names, do you remember the uses  
19 of those products for which the products were reformulated.

20 Is that correct, Mr. Hynes?

21 MR. HYNES: Yes.

22 A We substituted some products.

23 Q (By Mr. Hynes) What products were substituted?  
24 Do you recall?

25 A We substituted products for plasticizers.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

MR. FEATHERSTONE: Any others, Doctor?

Q (By Mr. Hynes) Any other that you recall?

A I don't recall.

Q Now, as to Pydraul fluids, do you recall that they were reformulated in the early seventies?

A At some time in the seventies, we came out with a new Pydraul, yes, sir.

Q Do you recall about when that occurred?

A In the early seventies. I don't know when.

Q Do you recall what the difference was between the old and new Pydraul product that you came out with?

A I would think -- as well as -- yes, I do.

Q What is your recollection?

A My recollection is that some of the Pydraul products had phosphate esters in them. Whether or not that was the change or not, I don't know.

Some of them had lower chlorinated Aroclors, but I don't know whether those things went into commercial practice.

Q What do you mean by "commercial practice"?

A By commercial use in sales.

Q Do you recall that Pydraul was subsequently changed to remove all PCBs from them?

A I don't recall that.

Q To the best of your knowledge, the Corporate

1 Management Committee would have been the group that made  
2 the decision on restricting the use of the PCB products;  
3 is that correct?

4 MR. FEATHERSTONE: Objection. Lack of  
5 foundation.

6 You can answer that, if you want to speculate.

7 A I don't know if it would be the Corporate  
8 Management Committee or the management of the Organic  
9 Division that would make that decision.

10 Q (By Mr. Hynes) But that decision was, in fact,  
11 made; is that correct?

12 A Yes.

13 Q Do you recall being told or advised why that  
14 decision was made?

15 MR. FEATHERSTONE: I have lost what "that  
16 decision" means.

17 What does it mean, Mr. Hynes?

18 MR. HYNES: With restricting the uses of PCB  
19 products that he just testified to, sir.

20 THE WITNESS: Repeat it, please.

21 (Whereupon, the court reporter read back  
22 the following question:

23 QUESTION: "Do you recall being told or advised  
24 why that decision was made?")

25 A Yes, sir.

1 Q (By Mr. Hynes) And what do you recall?

2 A I recall that members of Monsanto accepted the  
3 fact that PCBs would be found, might or could be found,  
4 in the ecosystem, and also that there was a belief in  
5 some areas that the presence of these compounds might  
6 affect avian species.

7 Q Do you recall anything else?

8 A No, sir.

9 Q Do you recall who advised you of these considerations?

10 A Which considerations?

11 Q That the PCBs would be found in the ecosystem  
12 and they might have an effect on the avian species.

13 A There were many reports in all sorts of scientific  
14 journals.

15 MR. FEATHERSTONE: The question is, Who in  
16 Monsanto advised you that those were the considerations  
17 of whatever group who made the decision to restrict the  
18 uses.

19 A I can't tell the specific person that advised me  
20 that that was the reason.

21 Q (By Mr. Hynes) Can you tell what division or  
22 department that person or persons worked in?

23 A No, I can't be specific about that, no.

24 Q That's fine -- if you can't recall, that's fine.

25 MR. FEATHERSTONE: Doctor, he is just testing your

1 recollection. If you have none, tell him.

2 THE WITNESS: Okay.

3 Q (By Mr. Hynes) Do you ever recall learning of  
4 an incident in Japan where it was alleged that PCBs found  
5 their way into fish oil and were eaten by quite a few  
6 people? It's called the Yusho incident.

7 A Yes, sir.

8 Q Do you recall when you learned of that incident?

9 A Yes, sir.

10 Q When was that?

11 A 1968 or 1969.

12 Q What do you recall about the information you  
13 received on that?

14 A Fish oil was adulterated with PCB of Japanese  
15 origin in a manner that I was never sure of how it was  
16 obtained, and that quite a few people cooked rice cakes  
17 or something in this oil, this adulterated oil, and ate  
18 this PCB fried rice cakes over a matter of several weeks  
19 or several months -- I am not sure of the time frame -- and  
20 developed some adverse effects.

21 Q Do you recall how you learned of this incident?

22 A No, sir.

23 Q Did you have any discussions with any people  
24 in Monsanto concerning this incident, that you recall?

25 A I can't recall specific discussions -- obviously,

1 people talked about it, but I don't know who.

2 Q Did you take any action with regard to investigating  
3 this incident, verifying any findings that may have come  
4 of that?

5 A No, sir.

6 Q Did anyone in Monsanto, to your knowledge, take  
7 any action in that regard?

8 A They may have gotten in contact with the United  
9 States Government who probably was investigating it.

10 Q But you yourself didn't have any involvement?

11 A I don't recall if I was one of the ones that did  
12 it. There were two governments investigating it at that  
13 particular time. I didn't investigate it.

14 Q Did you subsequently gain any further information  
15 on the Yusho incident?

16 A Yes, sir.

17 Q Do you recall when?

18 A Yes, sir.

19 Q When was that?

20 A Scattered data came out both in the scientific  
21 literature and at meetings and in conversations with  
22 various agency people over the next two or three years.

23 Q And what type of information did you acquire?

24 A Information quite similar to what I described --  
25 that --

1 MR. FEATHERSTONE: You have answered that.  
2 Is there anything additionally?  
3 Q (By Mr. Hynes) Anything in addition to other  
4 than what you had found out initially in the case?  
5 A With the one exception that some birth weights  
6 in fetuses were lower and that some fetuses may have had  
7 skin discoloration after birth.  
8 Q Did the information on that Yusho incident have  
9 any effect on any decisions within Monsanto as to restricting  
10 PCBs?  
11 A No, sir. We didn't sell it for rice oil.  
12 Q No, sir.  
13 I am asking if it had any impact on any decisions.  
14 A I don't know about Monsanto.  
15 Speaking for myself, that didn't alter any  
16 thinking of mine.  
17 Q To the best of your knowledge, no one else at  
18 Monsanto; is that correct?  
19 A That's correct.  
20 Q Was Monsanto still marketing products containing  
21 PCBs when you retired in 1975?  
22 MR. FEATHERSTONE: Object to the relevancy.  
23 A To the best of my recollection, I think they were.  
24 Q Do you recall what uses they were being marketed  
25 for?

1 A Closed systems.

2 MR. FEATHERSTONE: Same objection.

3 Q (By Mr. Hynes) Do you recall any restrictions  
4 on closed system uses?

5 A I don't recall.

6 Q And prior to your retirement, is it your best  
7 recollection that the only uses that PCB product sales  
8 were restricted, they restricted them from use in open  
9 use; is that correct?

10 MR. FEATHERSTONE: I don't understand the  
11 question. Try it again.

12 MR. HYNES: Let me try it again. I thing I have  
13 a hang-up on this subject matter.

14 Q (By Mr. Hynes) Up to the time of your retirement  
15 in December of 1975, do you recall any other restrictions  
16 in the sale of PCB products other than those restrictions  
17 that you talked about before -- that it was only sold for  
18 closed system uses?

19 A I can not be specific, Mr. Hynes. I think they  
20 may have put a terminal date on when they were liable to  
21 be selling some things, but I don't know if that happened  
22 in 1975, prior to my retirement or immediately afterwards.  
23 I don't know.

24 Q What do you mean by the "terminal date"?

25 A We will cut you off at X period of time.

1 MR. FEATHERSTONE: You mean stop selling?  
2 THE WITNESS: Right.  
3 Q (By Mr. Hynes) For particular uses or particular  
4 customers; is that it?  
5 A At some point in time, they said we will stop,  
6 period.  
7 Q Do you recall if you or anyone in your department  
8 ever evaluated the effect of PCBs getting into the human  
9 food chain?  
10 A Would you explain to me what you mean by "getting  
11 into the human food chain"?  
12 Q Any vegetation, crops, fish, or animals which  
13 would acquire PCB and those vegetation, crops, fish or  
14 animals would subsequently be eaten by humans.  
15 Is that what you mean by food chain?  
16 MR. FEATHERSTONE: Is this in addition to the  
17 IBT testing that he already testified to?  
18 MR. HYNES: Yes.  
19 THE WITNESS: Will you repeat that?  
20 (Whereupon, the court reporter read back  
21 the following questions and answer:  
22 QUESTION: "Do you recall if you or anyone in  
23 your department ever evaluated the effect of PCBs getting  
24 into the human food chain?  
25 ANSWER: "Would you explain to me what you mean

PENGAD CO., BAYONNE, N.J. 07002 FORM 404

1 by 'getting into the human food chain'?

2 QUESTION: "Any vegetation, crops, fish, or  
3 animals which would acquire PCB and those vegetation,  
4 crops, fish or animals would subsequently be eaten by humans.")

5 THE WITNESS: Your definition of "food chain"  
6 is different than mine. Let's start off there.

7 If you say did we ever evaluate PCB getting into  
8 vegetables or crops, we saw no likelihood of that ever  
9 occurring.

10 Some time after 1969, the principle of magnification  
11 of a compound in the food chain was brought forward.

12 MR. FEATHERSTONE: The question is, Doctor,  
13 whether you did any testing or --

14 THE WITNESS: I thought he said evaluate.

15 MR. FEATHERSTONE: -- other than the IBT test  
16 to which you testified to.

17 A (Continuing) We evaluated the PCB in relation  
18 to the IBT testing.

19 Q (By Mr. Hynes) Did you do any other evaluations?

20 A No, sir.

21 Q Did you do any literature reviews?

22 A We always kept abreast of the toxicological  
23 information in the English literature.

24 Q Could you explain this principle of -- you mentioned  
25 the principle of magnification.

1 A Yes, sir, biomagnification.

2 Q Can you explain what that is?

3 A Yes, sir. If a small unicellular organism like  
4 a plankton or an algae eats a particular thing that is  
5 present in very small amounts, in trace amounts, in any  
6 area -- say an aquatic area -- if it is one to ten  
7 million concentration in the water and after the plankton  
8 gets through eating it it gets up to be one in one million,  
9 that's a magnification of ten.

10 Then, if the minnow eats the plankton, it may  
11 concentrate and get up to one hundred thousand; and then,  
12 if a larger fish eats the minnow, he may get up to a  
13 higher level. And if an eagle eats the fish, then, he  
14 may get a higher level. So, there is a magnification  
15 of the concentration of the food level from the lowest level  
16 of the food chain up to the highest level.

17 Q Did you or anyone in the Medical Department  
18 evaluate PCBs under this principle of biomagnification?

19 A No, sir.

20 Q Were you familiar with any scientific literature  
21 which did?

22 A You will have to -- Mr. Hynes, can you repeat  
23 that last question?

24 When I say we evaluated, we evaluated in  
25 relationship to the toxicity we have to mammals, the

1 mammalian species, which are as close to the human species  
2 as we could get at that particular time as far as the  
3 toxicological art was concerned. We evaluated that in  
4 relationship to the presence of PCBs in food that might  
5 be consumed by a human being.

6 So, as far as evaluating how that material got  
7 up to where the person was going to consume it was not  
8 our particular problem. Our particular problem was if there  
9 are going to be PCBs in food that is going to be ingested  
10 by individuals then we did evaluate that in relationship  
11 to our long-term toxicity.

12 The process we did not evaluate, how it got  
13 up there.

14 Q Doctor, in evaluating the various PCB products  
15 that were marketed by Monsanto, you stated earlier that  
16 the intended use of the products was an important  
17 consideration in your determination if there were any  
18 hazards involved in the intended use of the products;  
19 is that correct?

20 A Any ill effects. I don't like the word hazards.

21 Q Fine, ill effects.

22 Can you say if the information that was available  
23 to you, to Monsanto, in the early 1970s with regard to the  
24 discovery of PCBs in the ecosystem -- and I take it that  
25 information wasn't available to you, and I am talking about

1 you in the Medical Department, say, in the 1950s --  
2 if that information was available to you in the 1950s,  
3 how different would you have evaluated these products as  
4 they were referred to you from research and development?

5 A Repeat the question, as a starter. That's a  
6 long one.

7 (Whereupon, the court reporter read back  
8 the previous question.)

9 MR. HYNES: Let's run it over again.

10 Q (By Mr. HYNES) If the information which was  
11 available to you in the early seventies with regard to  
12 PCBs being in the ecosystem, if that information was  
13 available to you in the 1950s, how would you have  
14 evaluated, how differently would you have evaluated the  
15 PCB products as they were referred to you from research  
16 and development in the fifties?

17 MR. FEATHERSTONE: Which information are you  
18 talking about?

19 MR. HYNES: PCBs that were in the ecosystem.

20 THE WITNESS: Where?

21 MR. FEATHERSTONE: Where in the ecosystem?

22 MR. HYNES: All right, in the water.

23 MR. FEATHERSTONE: That's the assumption you  
24 are making?

25 MR. HYNES: Yes.

1           A     If I understand your question, Mr. Hynes,  
2     it is if information were available to me in the 1950s  
3     that PCBs were present in water systems in the ecosystem  
4     would that have made any difference to me in evaluating  
5     PCBs in the 1950s; is that right?

6           Q     Yes.

7           A     No, sir.

8           Q     And why would it have not made any difference  
9     to you?

10          A     Because the standard of knowledge of biomagnifica-  
11     tion was not present in the scientific community at that  
12     time, certainly not in the medical community at that time.

13               PCBs were an insoluble compound; and the  
14     current belief was that insoluble compounds and nonbiodegrad-  
15     able compounds -- there was no talking about biodegradation  
16     or nonbiodegradation, so they thought the compound would  
17     be a static compound.

18               And if this were in the water system, it would  
19     sink to the ground and be covered over by the mud and gook  
20     and sit like coal and not get into the water. So, the  
21     mere presence of the PCB does not signify that there would  
22     be an adverse effect of the PCB in the water system.

23          Q     If information which was available to you in  
24     the early seventies that PCBs were reported in fish tissue,  
25     were found in fish tissue, if that information was

1 available to you in the 1950s, would your evaluation of  
2 PCBs be any different?

3 A You will have to explain to me, Mr. Hynes,  
4 what levels in the fish and how widespread in the fish  
5 and what fish.

6 Q All right, above levels in fish, above, say,  
7 ten parts per million in fish that are a species of sport,  
8 popular for sport fishermen.

9 MR. FEATHERSTONE: These are the only assumptions  
10 you are making, now, Mr. Hynes?

11 MR. HYNES: Yes.

12 MR. FEATHERSTONE: I object to the hypothetical  
13 as incomplete and improper.

14 If you can answer, Doctor, go ahead.

15 THE WITNESS: Would you repeat the hypothetical?

16 MR. FEATHERSTONE: Jim, can you rephrase the  
17 question using the additional assumption put on the record,  
18 or do you want to call the question and my objection and  
19 your statements back?

20 MR. HYNES: Read the question back.

21 (Whereupon, the court reporter read back the  
22 following question and objection:

23 QUESTION: "All right, above levels in fish,  
24 above, say, ten parts per million in fish that are a species  
25 of sport, popular for sport fishermen.

1 MR. FEATHERSTONE: "These are the only assumptions  
2 you are making, now, Mr. Hynes?

3 MR. HYNES: "yes.

4 MR. FEATHERSTONE: "I object to the hypothetical  
5 as incomplete and improper.

6 If you can answer, Doctor, go ahead.")

7 Q (By Mr. Hynes) Doctor, you were going to say  
8 something.

9 A No.

10 MR. FEATHERSTONE: You are now back on the  
11 record. You can now ask him the question.

12 THE WITNESS: You said "different than".  
13 Different than what? When?

14 Q (By Mr. Hynes) If the information which was  
15 available in the 1970s that PCBs were found in a species  
16 of fish which were popular to sport fishermen in levels  
17 above ten parts per million, if that information was  
18 available to you in the 1950s, would your evaluation of  
19 the PCB products change?

20 MR. FEATHERSTONE: Is that it?

21 MR. HYNES: Yes.

22 MR. FEATHERSTONE: I object to the form of  
23 the question as incomplete and improper and without  
24 foundation.

25 A It might and it might not.

1 Q (By Mr. Hynes) What do you mean by it might  
2 and it might not? What additional factors would you need?

3 A I would need two types of factors -- one,  
4 you are putting myself back twenty years and making a  
5 scientific decision in the light of how decisions were made  
6 at that time. I can not equate the way I would be thinking  
7 in 1970 with what the general thinking might be as far  
8 as the presence of ten parts per million in a sport fish.

9 You have not said whether this was in the edible  
10 portion of the fish. You have not said what percent of  
11 the diet of the sport fish it constitutes. So, I would  
12 have to know those things; and then, I still have to get  
13 how were the scientific people thinking, medical people  
14 thinking, in 1952 vis-a-vis a compound with a relatively  
15 low acute toxicity.

16 MR. FEATHERSTONE: Do you want to take a break  
17 while you think about it, Mr. Hynes?

18 MR. HYNES: All right.

19 (Whereupon, there was a short break; and  
20 upon returning to the record, the previous answer was read  
21 back by the court reporter.)

22 Q (By Mr. Hynes) Doctor, you stated earlier that  
23 some time in the early seventies several studies were  
24 commissioned by Monsanto regarding two chronic feeding  
25 studies -- you thought three different levels, two different

1 species, some reproduction studies, avian species studies,  
2 teratological or mutagenic studies; is that correct?

3 A No, sir. That was the late sixties.

4 Q I am sorry.

5 Am I correct that the reason that those studies  
6 were commissioned was because of the information that had  
7 been coming out in regard to the PCBs in the ecosystem  
8 at that time; is that correct?

9 A Yes, sir.

10 Q Now, if that information had been made available  
11 to you in the fifties, would you have, at that time,  
12 commissioned these additional studies so that you could  
13 evaluate these products in the fifties?

14 A No, sir.

15 Q Why would you have not commissioned those types  
16 of studies at that time?

17 A Number one, those types of studies were not even  
18 dreamed of in the 1950s. The character of toxicity testing  
19 was extremely meager in connection with what types of  
20 testing were done in the late 1960s when we did them.

21 So, when you say would I have commissioned those  
22 types of studies, I would not have been able to commission  
23 them because nobody was doing that, nobody thought of  
24 doing them, of that type.

25 Q Were chronic feeding studies utilized in the 1950s?

1 MR. FEATHERSTONE: What do you mean by "chronic  
2 feeding studies"?

3 MR. HYNES: Chronic, long-term feeding studies,  
4 feeding different levels of a substance to test animals  
5 over a period of two years.

6 A I think it would be extremely rare if this were  
7 done for anything except a direct food additive.

8 Q But those types of studies were done, at least  
9 in your recollection, for food additives?

10 A I am not even saying that because the first  
11 work that we had done on food additives was with the  
12 Food and Drug Administration.

13 MR. FEATHERSTONE: Is this in the 1950s?

14 A (Continuing) Earlier.

15 The first ones we had done were much smaller.  
16 In fact, they were much shorter. In fact, they might  
17 have been three months in one species or two months in  
18 one species or six months.

19 The concept of two-year feeding was a later  
20 development. I am not sure when it was.

21 Q (By Mr. Hynes) But there were such studies  
22 called chronic feeding studies, but the difference is --

23 A How chronic, sir?

24 MR. FEATHERSTONE: What's the question? Is the  
25 question the state of the art chronic feeding studies at

1 the time?

2 Q (By Mr. Hynes) In the 1950s, isn't it true that  
3 chronic, lifetime feeding studies were done -- there were  
4 protocols available in the 1950s, and I don't mean for  
5 industrial chemicals -- was the science there to be able  
6 to do chronic lifetime studies?

7 A The science was there, yes.

8 Q Subacute studies, was that -- and by "subacute",  
9 I mean a range finding -- thirty, sixty, ninety-day toxicity  
10 studies.

11 A Let me elaborate. The science could obviously  
12 have been there. You could still feed a rat. Whether those  
13 were done or not, I do not believe is correct because I  
14 do not think the two-year chronic feeding test was a  
15 standard test in the 1950s.

16 Q What you are saying is the science was available  
17 but whether they were done on a routine basis or not --  
18 is what you are saying you don't think they were done on  
19 a routine basis; is that correct?

20 A I think what I am saying, Mr. Hynes, is that I  
21 can not pass myself off as an expert in toxicology to say  
22 what types of long-term testing may or may not have been  
23 done in both halves of the decade of the 1950s.

24 Q Again, if the information which caused you to  
25 commission these studies in 1969 that we have just discussed,

1 if that information was available to you in the first five  
2 years of the 1960s, would your evaluation or testing of  
3 PCB products have been any different?

4 MR. FEATHERSTONE: Repeat that question.

5 (Whereupon, the court reporter read back  
6 the previous question.)

7 Q (By Mr. Hynes) The studies that you commissioned  
8 in, I believe, 1969.

9 A Eight or nine, 1968 or 1969.

10 Q The information which was made available to  
11 you which caused you to commission these studies, if that  
12 information was made available to you in the first five years  
13 of the sixties -- 1960 through 1965 -- would you have  
14 evaluated the PCB products any differently or commissioned  
15 similar studies in the period 1960-1965?

16 MR. FEATHERSTONE: Similar studies to what?

17 MR. HYNES: To those that were done in 1969.

18 A I am confused, again, sir. I am sorry. I  
19 am confused.

20 Will you read it to me because I do not know  
21 what information was given that I was supposed to know then.

22 Q (By Mr. Hynes) The information that was available  
23 as to the PCBs being in the ecosystem which caused you to  
24 commission these various studies in 1969.

25 MR. FEATHERSTONE: What do you mean by getting

1 into the ecosystem?

2 Well, what? He is not going to answer until you  
3 explain it.

4 Q (By Mr. Hynes) The information you had available  
5 to you that PCBs were in the ecosystem in the 1968-1969  
6 period, that information that you had which caused you to  
7 commission these studies in 1969 that we just discussed,  
8 if that information had been made available to you in the  
9 period 1960 through 1965, would you have done an evaluation  
10 of the PCB products that Monsanto was marketing at the time?

11 MR. FEATHERSTONE: What kind of -- well.

12 A Would you give your definition of ecosystem  
13 so we know we are talking about the same problem?

14 Q (By Mr. Hynes) I have been, hopefully, using  
15 the same definition you were using.

16 A Which is --

17 MR. FEATHERSTONE: That's the problem, Mr. Hynes.

18 Q (By Mr. Hynes) What's your definition of  
19 ecosystem?

20 A I asked you first.

21 MR. FEATHERSTONE: Mr. Hynes, you are the questioner.  
22 You are obligated to specify your assumptions, so do it.

23 MR. HYNES: I am asking what his definition of  
24 ecosystem is.

25 You used the term before yourself. I want to

1 make sure I understand what you mean by "ecosystem".

2 A My definition of ecosystem is the atmosphere and  
3 the aqueous and the terrestrial part of the globe.

4 Q (By Mr. Hynes) And the information that was  
5 made available to you or you acquired in this period,  
6 1968-1969, that PCBs were in the ecosystem which caused  
7 you to commission these studies in 1969, if that same  
8 information had been made available to you in the period  
9 1960 through 1965, what evaluation would you have made  
10 of the PCB products in Monsanto at that time?

11 MR. FEATHERSTONE: Mr. Hynes, you are misconstruing  
12 the witness' earlier testimony. The witness' earlier  
13 testimony was that Bio-Test's studies were commissioned  
14 because it was thought the PCBs were in the human food  
15 chain.

16 Now, is that the assumption you want the witness  
17 to make?

18 MR. HYNES: Fine.

19 MR. FEATHERSTONE: So we can get away from  
20 the ecosystem.

21 Is that the only assumption you are making?

22 Q (By Mr. Hynes) Was that the reason for  
23 commissioning those studies?

24 A Yes.

25 Q Then, if that information was available to you in

1 the period 1960 through 1965, what changes, if any,  
2 would you have made in evaluating the PCB products at  
3 Monsanto?

4 MR. FEATHERSTONE: That's the only assumption  
5 you are making, is that correct, Mr. Hynes?

6 MR. HYNES: Yes.

7 MR. FEATHERSTONE: I object to the hypothetical  
8 as being incomplete, improper and without foundation.

9 THE WITNESS: Would you repeat the hypothetical?

10 MR. FEATHERSTONE: Doctor, Mr. Hynes wants  
11 to know if you had known in the 1960 to 1965 period that  
12 PCBs were in the human food chain would your evaluation  
13 of PCB products somehow have been different -- and I  
14 repeat that with my objections still pending.

15 Q (By Mr. Hynes) I didn't ask in the food chain.  
16 I am not sure. Did you?

17 A Did I what?

18 MR. FEATHERSTONE: Mr. Hynes, the testimony has  
19 been that the tests in the late 1960s were commissioned  
20 because of reports that PCBs may be in the human food chain.

21 Q (By Mr. Hynes) Is that what your testimony was?

22 A In the human food chain, yes.

23 MR. HYNES: Then, I have no objection to his  
24 form of the question.

25 If you would repeat it for the Doctor, please.

1           A     In the same levels that you talked about, ten  
2 parts per million?

3           Q     (By Mr. Hynes) No. We are talking about just  
4 the information that was available to you that caused you  
5 to --

6           A     In the food chain, it might or might not.

7           Q     What additional factors would you need to make  
8 an answer?

9           A     Again, there are two factors. One is the factor  
10 of what was the state of the scientific thinking about  
11 X parts of PCBs in human food in the early part of the  
12 decade of the 1960s. If the thinking was, then, that the  
13 material was taken up and excreted and no harm would  
14 be done, that would be a factor in what we would have to  
15 evaluate.

16                     If the factor of storage was known widely at that  
17 time -- that some compounds could be stored -- and if  
18 it were shown that PCBs could be stored, a factor which  
19 was not present at that time, that, too, would have something  
20 to do with my evaluation.

21                     MR. FEATHERSTONE: When you said a "factor not  
22 known at that time", was PCB storage known?

23                     THE WITNESS: It wasn't known at all.

24           Q     (By Mr. Hynes) When you said "X parts", I  
25 wasn't sure if you said X parts or exports.

1 A X parts.

2 Q Now, information such as reports of PCBs in the  
3 food chain in this question -- or reports of PCBs being  
4 found in quantities in water or in sediments, in sediments  
5 in water, is that the type of information, if it were  
6 available, that should have been provided to your department  
7 by sales, by research and development, to make your  
8 evaluations of products?

9 MR. FEATHERSTONE: Can I hear that question  
10 back, please.

11 (Whereupon, the court reporter read back the  
12 previous question.)

13 Q (By Mr. Hynes) I am talking first in the 1950s.

14 A We are back in the fifties?

15 Q Yes.

16 A You have three assumptions there.

17 Can I take them one at a time?

18 Q Sure.

19 A One, you say PCBs in water. The material is  
20 extremely insoluble in water. There is a very slight  
21 amount of it getting in water, so I can't agree with  
22 your assumption that PCBs would be in water.

23 Two, you said the presence of PCBs --

24 MR. FEATHERSTONE: He doesn't care whether you  
25 agree or not. He wants to know if that type of information,

1 even if it's inconceivable, should be conveyed to you.

2 A No, it shouldn't -- what are you telling -- I  
3 am very confused myself.

4 Q (By Mr. Hynes) Let me do it one piece at a time.  
5 It might help.

6 If information were available that PCBs were  
7 in the food chain in the 1950s, is that the type of  
8 information that should have been provided to the Medical  
9 Department in evaluating a PCB product for marketing?

10 MR. FEATHERSTONE: I will make an objection  
11 of foundation, but go ahead.

12 The answer to that is yes or no.

13 THE WITNESS: Repeat it, and let me find out  
14 where you answer yes or no.

15 (Whereupon, the court reporter read back the  
16 following question:

17 QUESTION: "If information were available that  
18 PCBs were in the food chain in the 1950s, is that the type  
19 of information that should have been provided to the Medical  
20 Department in evaluating a PCB product for marketing?")

21 A If such information were available to Monsanto  
22 personnel, it should be provided to the Medical Department.

23 Q (By Mr. Hynes) If information were available  
24 that PCBs were found in sediments in lakes and rivers,  
25 should that information have been provided to your department

1 for evaluating the PCB products in the fifties?

2 MR. FEATHERSTONE: Objection -- foundation,  
3 no basis on the record.

4 A No.

5 Q (By Mr. Hynes) That information should not  
6 have been provided to your department for evaluation?

7 A No.

8 Q What do you base that answer upon? Why not?

9 A Because the mere presence of any compound --  
10 let's stick to PCBs in the 1950s -- with the knowledge  
11 that we had of the stability of PCBs and the insolubility  
12 of the product in water, in our thinking of the 1950s,  
13 there was no likelihood of any adverse effects coming from  
14 the material sitting down at the bottom of the stream  
15 underneath X layers of mud.

16 Q In your evaluation of a chemical referred to  
17 your department from research and development, first of  
18 all in the fifties, was the disposal of the product or  
19 the anticipated disposal of the product  
20 information that should have been provided to your  
21 department for evaluation?

22 MR. FEATHERSTONE: May I hear that, please?

23 (Whereupon, the court reporter read back the  
24 previous question.)

25 MR. FEATHERSTONE: Are we talking about PCBs?

1 MR. HYNES: I am talking about any product,  
2 first.

3 MR. FEATHERSTONE: Well, that's the last  
4 "any product" question you get, Mr. Hynes.

5 A No, sir.

6 Q (By Mr. Hynes) Would your answer be the same  
7 if I just changed the time frame to the 1960s?

8 MR. FEATHERSTONE: Is it any product, still?

9 MR. HYNES: Yes, any product.

10 MR. FEATHERSTONE: I instruct you not to answer  
11 the question, sir.

12 Q (By Mr. Hynes) Do you mean the disposal of a  
13 chemical product isn't a consideration in the evaluation  
14 of the product?

15 MR. FEATHERSTONE: Well, the instruction is not  
16 to answer.

17 Is that a question to me or him?

18 MR. HYNES: That's a question to him.

19 Is the disposal --

20 MR. FEATHERSTONE: He is instructed not to answer  
21 the question.

22 MR. HYNES: What is your basis for him not to  
23 answer the question?

24 MR. FEATHERSTONE: Why don't you establish the  
25 relevancy of it.

1 MR. HYNES: I want to find out why you are  
2 instructing him not to answer.

3 MR. FEATHERSTONE: It's irrelevant.

4 MR. HYNES: I don't think irrelevance is a basis  
5 to instruct someone not to answer.

6 MR. FEATHERSTONE: You can take that up with  
7 the judge. We have been there before, and you attempted  
8 that argument, and you lost.

9 MR. HYNES: You can certify that question.

10 (The question to be certified may be found  
11 on Page 298 of this deposition.)

12 Q (By Mr. Hynes) In any PCB product in the 1950s,  
13 was the disposal or the disposal of that product, would  
14 that information, should that information have been provided  
15 to the Medical Department in evaluating the product?

16 THE WITNESS: Can I answer this one?

17 MR. FEATHERSTONE: The question is whether that  
18 information should have been provided to you.

19 A No.

20 Q (By Mr. Hynes) Why shouldn't that have been  
21 provided to you?

22 A Because the Medical Department are not experts on  
23 how to dispose of a product.

24 Q I am not talking about methods of disposal --  
25 just the fact that it was disposed in a particular way, would

1 that have any relevance to your medical evaluation of the  
2 product?

3 A Say it over, please.

4 (Whereupon, the court reporter read back the  
5 previous question.)

6 A No.

7 Q (By Mr. Hynes) Why would it not have any  
8 relevance to your evaluation of the product?

9 A We have the testing of the material. We test  
10 the material. We tell the customer if they want us to what  
11 the toxic properties are.

12 The disposal of the product --

13 MR. FEATHERSTONE: Are we talking about a PCB  
14 product?

15 A (Continuing) -- of the PCB product is a function  
16 of the user aided by information from the Medical  
17 Department as far as its toxicity is concerned and of our  
18 production department as far as its neutralization might  
19 be concerned, if such could occur.

20 Q (By Mr. Hynes) I don't understand what you  
21 mean by the term "neutralization".

22 MR. FEATHERSTONE: For this line of questioning,  
23 I think we are done for the day.

24 MR. HYNES: Congratulations.

25 Q (By Mr. Hynes) What do you mean by the term

1 neutralization?

2 A I have used the neutralization term because on  
3 some -- when you were talking about antiproducs, there  
4 are some insecticides --

5 MR. FEATHERSTONE: We are talking about PCB.

6 THE WITNESS: I am explaining neutralization.  
7 I ran over from the antiproducs that could be neutralized.  
8 PCB, obviously, can not be neutralized.

9 Q (By Mr. Hynes) Would any information with  
10 regard to the disposal of a PCB product be a consideration,  
11 or would that information be made available to the  
12 Medical Department for evaluation in the 1960s?

13 MR. FEATHERSTONE: What do you mean was it?

14 MR. HYNES: Let me rephrase the question.

15 Q (By Mr. Hynes) Information with regard to  
16 the disposal of a PCB product, should that information  
17 have been made available to the Medical Department in the  
18 1960s for your evaluation of that PCB product?

19 A I don't think I can answer that question.

20 Repeat it again. You are saying should it have  
21 been done? That's what he said -- he said "should".

22 MR. FEATHERSTONE: Doctor, he wants to know whether  
23 that information should have been given to you in the  
24 Medical Department in connection with your evaluation of  
25 the product -- and by "disposal", I take it he means disposal

1 into landfills, disposal into waterways, disposal however.

2 A Well, the function of disposal was not a  
3 responsibility of the Medical Department.

4 Q (By Mr. Hynes) No. What I am saying, Should  
5 information have been made available to the Medical  
6 Department as to the disposal of PCB products?

7 A If such disposal were to constitute a harm,  
8 it should be made available to the Medical Department.

9 Q Who would make the determination, to the best  
10 of your knowledge, as to whether it would be a harm.

11 A I would think that it would have to be the  
12 individual who knew about the way the material was going  
13 to be disposed of would ask either the regulatory system  
14 of people or ask us for the -- us, the Medical Department --  
15 for the toxicological data and then either the regulatory  
16 data or the regulatory people and the individuals in  
17 the Production Department with advice from the Medical  
18 Department would arrive at a conclusion.

19 Q But your department would be the folks to have  
20 the information on toxicity or harm before a decision  
21 of that type would be made, whether to refer the information  
22 to you or to not refer it?

23 A Say that over.

24 Q Correct me if I am wrong. I think what you are  
25 saying is, if the information as to disposal was then

1 available to someone in sales or production, the groups  
2 that you talked about, somehow someone would have to clue  
3 you in that there might be a harm on that particular type  
4 of disposal; is that correct?

5 MR. FEATHERSTONE: May I hear that back, please?

6 (Whereupon, the court reporter read back the  
7 previous question.)

8 MR. HYNES: Someone at Monsanto.

9 MR. FEATHERSTONE: You have a question pending.

10 MR. HYNES: Let's rephrase that.

11 Q (By Mr. Hynes) I believe you said that if  
12 someone at Monsanto suspected that there might be a harm  
13 to the particular method of disposal, some form of harm  
14 or some form of a problem, they would go to your department  
15 to verify if, in fact, there was some harm; is that correct?

16 A They would go to us to find out what the toxicity  
17 of the product was; and then, they would get an opinion.  
18 If there were facts, enough facts on which a judgment  
19 could then be made, the Medical Department would be in  
20 a position to give these individuals that type of  
21 judgment.

22 Q And the judgment would be the Medical Department's  
23 judgment; is that correct?

24 A As to the possibility of adverse effects, yes.

25 Q But, obviously, before you could make that

1 judgment, the information would have to be made available  
2 to you?

3 A Yes.

4 Q We are again talking in the 1960s in this line  
5 of questioning -- why is that different from what you  
6 stated earlier with regard to the 1950s as to PCB disposal?

7 A You are going to have to repeat all these  
8 things I was supposed to have said earlier. I think  
9 let's say this over and delineate it a little more  
10 accurately for me.

11 Q I think you stated that in the 1950s -- I think  
12 my question was, Should the information with regard to  
13 disposal of a PCB product, should that information have  
14 been made available to your department in evaluating the  
15 PCB product; and you answered no because it was your  
16 function to give adequate warnings, cautionary instructions,  
17 to the customers and it was the customers' responsibility  
18 to act accordingly within the confines of those cautionary  
19 instructions or warnings.

20 A You are taking pieces out of several -- is this  
21 a question?

22 MR. FEATHERSTONE: There is no question, Doctor.

23 Q (By Mr. Hynes) I am summarizing what I understand  
24 you to have said; and then, when I asked you a similar  
25 question with regard to information that should have been

1 provided to you on disposal of PCBs in the 1960s, you  
 2 went on to explain that there was some -- someone would  
 3 have to make an evaluation as to whether there was any  
 4 apparent harm to this particular type of disposal.

5 What I am asking is, Would the relevance of the  
 6 information with regard to disposal of PCB products, would  
 7 that information, the relevancy of that information, be  
 8 different in your evaluation of the products in the 1950s  
 9 versus the 1960s?

10 A Yes.

11 Q Why would it make a difference in those two  
 12 time frames?

13 A Because in the 1950s the principle of biomagnifica-  
 14 tion was not widely accepted. The principle of  
 15 biodegradation or nonbiodegradation was not widely accepted.

16 In the 1950s, people thought that if materials --  
 17 PCBs -- were disposed of in current fashion, according  
 18 to good industrial practices at that time, in a landfill  
 19 or something else, then the PCBs would sit there. It would  
 20 not get into the ecosystem.

21 In the late 1960s, when it was found that PCBs  
 22 were in the ecosystem, there was a different set of premises  
 23 as far as evaluating what should be done vis-a-vis disposal  
 24 and what the Medical Department's relationship at that  
 25 particular time to disposal would be.

1 MR. FEATHERSTONE: When Mr. Hynes referred to  
2 disposal of PCB, did you understand him to mean disposal  
3 of PCB into landfills?

4 THE WITNESS: Yes.

5 MR. FEATHERSTONE: And that's true for the line  
6 of questioning we have just been listening to?

7 THE WITNESS: Correct.

8 Q (By Mr. Hynes) If information were available  
9 to Monsanto that the disposal was not to a landfill but  
10 rather directly a river, lake, or stream, would that be  
11 a factor in the 1950s which would change your answers?

12 A You have to --

13 MR. FEATHERSTONE: Wait a minute.

14 Change your answers to what?

15 MR. HYNES: You just changed his answer to mean  
16 that his understanding of disposal was to a landfill.

17 MR. FEATHERSTONE: That's what he understood you  
18 to mean when you said disposal of PCB.

19 Q (By Mr. Hynes) If disposal was not to a landfill  
20 but rather to a lake, river or some body of water, would  
21 that disposal information, should that disposal information  
22 have been made available to your department in evaluating  
23 those PCB products in the 1950s?

24 THE WITNESS: Can I answer this?

25 MR. FEATHERSTONE: Yes.

1           A     No, it shouldn't.

2           Q     (By Mr. Hynes) Why not?

3           A     Because in the 1950s the commonly accepted belief

4     was that if PCB, an insoluble compound, a very chemically

5     stable compound, were disposed into an aqueous environment,

6     putting it into a lake or river, it was insoluble in water.

7     It would not be picked up in the water by anybody drinking

8     the water. It would sink to the bottom. It would lie

9     there, be covered up, and would not -- while it would

10    be in the ecosystem, it would not have been -- it would

11    have been there, as I said earlier, as a piece of coal would

12    be lying down in the bottom of the gook at the bottom of

13    the river.

14           Q     (By Mr. Hynes) If information were available

15    as to the disposal of PCBs in a body of water in the 1960s,

16    in the 1960s should that information have been made

17    available to the Medical Department in evaluating the

18    PCB product?

19           MR. FEATHERSTONE: Can I have the question back,

20    please?

21           (Whereupon, the previous question was read

22           back by the court reporter.)

23           A     No, sir.

24           Q     (By Mr. Hynes) Why not?

25           A     For two reasons.

1           One, until 1967 or 1968, nobody thought that  
2 PCBs would get into the ecosystem. Until 1967 and 1968,  
3 there were no analytical methods, as far as I know, to  
4 tell if small amounts of PCBs were in the layer of stuff at  
5 the bottom of the river or in the river.

6           MR. FEATHERSTONE: Doctor, the two questions of  
7 Mr. Hynes' -- the one pertaining to the 1950s and the one  
8 pertaining to the 1960s -- was not whether it would have  
9 made an effect on your analysis of the medical risks but  
10 whether that information should have been told to you.  
11 That's all.

12           Now, what's the answer to that?

13           A     In the late fifties?

14           Q     (By Mr. Hynes) In the late fifties.

15           A     It should not have been told to me.

16           MR. FEATHERSTONE: In the sixties?

17           Q     (By Mr. Hynes) Say 1967.

18           A     No.

19           Q     And their reason being, am I correct, that it  
20 would have made no difference in terms of your medical  
21 evaluation of the product; is that right?

22           A     The mere presence of PCB in the ecosystem did  
23 not signal --

24           MR. FEATHERSTONE: We are talking about bodies  
25 of water.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A (Continuing) -- bodies of water does not signal  
adverse effects in those years you quoted.

MR. FEATHERSTONE: Are you done with your line  
of questioning?

MR. HYNES: We can continue tomorrow.

(Whereupon, the deposition was adjourned  
for the day to be resumed at eight a.m.  
on Thursday, March 26, 1981.)

1 (The continuation of the deposition of  
2 Doctor R. Emmet Kelly from Wednesday, March 25, 1981.)

3 Q (By Mr. Hynes) Doctor Kelly, I show you what  
4 has been marked Defendant's Exhibit Number 8, dated 3/11/81;  
5 and it's an exhibit number from Mr. Wheeler's deposition.

6 MR. FEATHERSTONE: 3/11/81?

7 MR. HYNES: That's the date on it.

8 MS. OLIVER: That's the date of Wheeler's  
9 deposition.

10 MR. FEATHERSTONE: I thought it was the date of  
11 the document.

12 Q (By Mr. Hynes) And for identification, there is  
13 a stamp number at the bottom 0001516.

14 Would you please read that document, Doctor,  
15 and identify it?

16 A Out loud?

17 Q No.

18 A Yes, sir.

19 Q Do you recall seeing that document before, Doctor?

20 A No, sir, I don't.

21 Q The language which is in quotations in the middle  
22 of the docuemnt apparently suggested language for labeling.

23 Did you have any input into suggesting that  
24 language?

25 A I don't think so, Mr. Hynes, because this memorandum

1 is not addressed to me; and when we filed copies -- if I  
2 may explain --

3 MR. FEATHERSTONE: No. I think you have answered  
4 the question.

5 Q (By Mr. Hynes) You don't think so.

6 Now, Mr. Wheeler's name is on that document?

7 A Yes.

8 Q A number of names, and his is one.

9 Would that indicate to you that he had input  
10 on the language of that document?

11 MR. FEATHERSTONE: Object to the form of the  
12 question.

13 A No -- sorry.

14 Q You can answer it.

15 A (Continuing) No. It appears to me that they  
16 are asking him for any input with this document.

17 Q (By Mr. Hynes) Do you know if similar language  
18 to that which is indicated there was ever used on any labels  
19 for any PCB products or Aroclor products?

20 A You mean subsequent to this memorandum?

21 Q Yes.

22 A Well, it certainly could. I can't, offhand,  
23 recall a label saying this.

24 MR. HYNES: That's all I have.

25

CROSS-EXAMINATION

QUESTIONS BY MR. JOHN:

Q Now, Doctor Kelly, continuing to refer to Defendant's Exhibit 8, as I understand your testimony, you did have input into various labeling that went on PCB products by Monsanto?

A Yes, sir.

MR. FEATHERSTONE: Again, wait until Mr. John finishes his question.

Q (By Mr. John) Your answer is yes?

A Yes, sir.

Q Referring to Defendant's Exhibit 8 and the --

MR. FEATHERSTONE: We have no attachment if you are looking at a --

MR. JOHN: I am referring to the front page of it -- is it your opinion that the wording suggested on that page within the quotation marks was adequate warning concerning the PCBs as of April 13, 1970?

MR. FEATHERSTONE: Object to the form of the question and object on the foundation, and I object on relevancy.

Go ahead.

A Warnings as to what, Mr. John?

Q (By Mr. John) Warnings as to the potential environmental contaminations of --

1 A Not medical warnings?

2 Q No, not medical warnings.

3 A Even though I had no input into it, it seems  
4 adequate.

5 Q Did you ever have any input into warnings or  
6 information provided to a customer concerning the  
7 environmental impact of Aroclors?

8 A Not that I can recall, Mr. John.

9 Q Whose responsibility was that?

10 A At the time, it was Papageorge after he was  
11 made environmental manager of the Organic Division. That  
12 is the man here on this exhibit.

13 Q Prior to the time Mr. Papageorge was made  
14 environmental manager, who was responsible for warnings  
15 concerning the environmental impact of Monsanto products.

16 A I think the ultimate decision was made by their  
17 label committee, if I can term it a committee -- I don't  
18 know if it was the committee or one person -- but he  
19 would go out to various sections of the company and get  
20 their input and then make up the label.

21 MR. FEATHERSTONE: I think Mr. John has gone  
22 beyond labels, if I understand correct.

23 I think your question was customer inquiries.

24 MR. JOHN: I believe Doctor Kelly understood --  
25 at least he was responsive to my question.

1 Q (By Mr. John) Was there some reason, Doctor Kelly,  
2 if the environmental impact had a health aspect to it that  
3 your department wasn't in the review process of labeling  
4 concerning the environmental impact?

5 A Mr. John, you will have to define what "health  
6 aspect" means and what is the context of "health aspect".

7 Q Any health aspect of an industrial product --  
8 in other words, if it gets into the environment and does  
9 pose some sort of health problem, as I understand your  
10 testimony, you don't recall being involved in the labeling  
11 or warning concerning any environmental impacts of  
12 industrial products of Monsanto; is that correct?

13 A Repeat that.

14 Q As I recall your testimony, you, Doctor Kelly,  
15 in your Medical Department, werenot involved in the labeling,  
16 warning function, on products with respect to environmental  
17 impacts.

18 A That is not correct.

19 Q That is not correct?

20 A I do not think it is complete. I don't think  
21 you are quoting me.

22 Q Please complete.

23 A Yes. Unless there is an appreciable adverse  
24 health effect, unless there is a suspected adverse health  
25 effect, in that case, my department would have impact.

1 Q And who determines whether there is a suspected  
2 adverse health effect?

3 A I think that is developed -- that is determined  
4 by the general scientific knowledge with input from  
5 various sources of which one might be the Medical Department.

6 Q Was not part of the Medical Department's function  
7 to determine whether or not there were suspected health  
8 hazards or effects from a particular product that was going  
9 to be marketed by Monsanto?

10 A Say that over. I want to be sure.

11 (Whereupon, the court reporter read back the  
12 previous question.)

13 A Yes, sir.

14 Q (By Mr. John) So, would it not be the Medical  
15 Department's responsibility to determine whether or not  
16 there was a suspected or potential health hazard of a  
17 product being marketed by Monsanto?

18 A Is that the same question?

19 MR. FEATHERSTONE: Yes, it is.

20 THE WITNESS: Would you repeat it? I want to  
21 be sure.

22 (Whereupon, the court reporter read back the  
23 following question:

24 QUESTION: "So, would it not be the Medical  
25 Department's responsibility to determine whether or not

1 there was a suspected or potential health hazard of a  
2 product being marketed by Monsanto?")

3 A Yes, sir.

4 Q (By Mr. John) While you were at Monsanto  
5 through 1975, did you ever determine whether or not there  
6 was a health hazard or effect from PCBs marketed under the  
7 product name Pydraul?

8 A Yes, sir.

9 Q When did you make that determination?

10 THE WITNESS: Read the question back.

11 (Whereupon, the court reporter read back the  
12 previous question.)

13 A I said yes, and you said when?

14 Q (By Mr. John) Yes, sir, when did you make that  
15 determination?

16 A We made the determination in, as far as the  
17 health hazard to workers is concerned, some time in the  
18 1950s, before the material was marketed.

19 Q What was the health hazard you determined with  
20 respect to workers in the 1950s?

21 A Repeated skin contact constituted a hazard,  
22 inhalation of the fumes at elevated temperatures constituted  
23 a hazard, or in confined stages.

24 Q (By Mr. John) Are those the only hazards you  
25 determined to workers in the 1950s?

1 MR. FEATHERSTONE: From Pydraul?

2 MR. JOHN: Right.

3 A If you got it in your eye, you would have a  
4 temporary burning, yes.

5 Q (By Mr. John) Any other health effects that  
6 you determined in the 1950s, like workers' contact with  
7 Pydraul?

8 A You would get dermatitis if you kept it on  
9 your skin. You got prompt acute reddening of the skin if  
10 it remained on for an extended period.

11 Q Are those all the effects that you determined  
12 in the fifties?

13 A Yes, sir.

14 Q Did you determine, at any subsequent period,  
15 additional effects on workers from contact with Pydraul  
16 products?

17 A No, sir, with the exception of determining that  
18 if the material hit a heat source of three to five hundred  
19 degrees centigrade irritating and potentially harmful  
20 fumes could be evolved.

21 Q When was that determination made?

22 A In the 1950s some time.

23 Q Was that a result of an incident reported to  
24 you at a plant in Brazil, Indiana?

25 A No, sir.

1 Q Was there a different incident reported to you  
2 other than the incident in Brazil, Indiana?

3 A Can I explain?

4 Q Yes, sir.

5 MR. FEATHERSTONE: What is the question, Mr. John?

6 MR. JOHN: I would like him to explain --

7 THE WITNESS: -- the Brazil.

8 MR. FEATHERSTONE: No. The question was,  
9 Doctor, whether there was an incident reported to you  
10 other than the one at the Brazil, Indiana plant.

11 A No, sir.

12 Q (By Mr. John) In the 1970s, did you determine  
13 any additional health effects or impacts or hazards upon  
14 workers exposed to Pydraul products?

15 MR. FEATHERSTONE: This is PCB Pydraul?

16 MR. JOHN: Yes.

17 A Yes, sir.

18 Q (By Mr. John) What?

19 A By that time, we had found that chronic feeding  
20 at some leveasl could cause toxic effects in mammals.

21 We had also, then, by relationship of intake,  
22 decided that repeated low levels of-- repeated, prolonged or --

23 MR. FEATHERSTONE: The question, Doctor, was the  
24 effect on workers.

25 A (Continuing) I am talking about workers.

1           We related the chronic toxicity from the feeding  
2   test to the possibility of chronic exposure in workers.

3           Q     (By Mr. John) What was the possible exposure  
4   in workers that you perceived from the chronic feeding test?

5           A     It could be repeated or prolonged skin contact  
6   which we warned against.

7                     It could be repeated inhalation in confined spaces  
8   which we warned against.

9           Q     How about the ingestion of Pydraul from being  
10   on the hands or the clothes or that type of contact?

11          A     We did not envision any type of ingestion of an  
12   industrial chemical in sufficient quantities to bother  
13   anyone.

14          Q     You testified that the chronic feeding can cause  
15   toxic effects in mammals.

16          A     Yes, sir.

17          Q     What toxic effects in mammals does chronic  
18   feeding cause?

19          A     Effects on the liver, some effects on the  
20   reproductive pattern.

21          Q     When did you first suspect that feeding of PCBs  
22   could have a toxic effect on the liver?

23                     MR. FEATHERSTONE: You mean any feeding? Do  
24   you have specific dosage in mind?

25                     MR. JOHN: No.

1 A 1938, at the time of the Drinker work.

2 Q (By Mr. John) Was your knowledge concerning the  
3 toxic effects on the liver of PCBs based solely on the  
4 Drinker reports?

5 A No, sir.

6 Q What else was it based on?

7 MR. FEATHERSTONE: His knowledge at what point  
8 in time, Mr. John?

9 MR. JOHN: 1938.

10 THE WITNESS: Read back the question, please.

11 (Whereupon, the court reporter read back the  
12 following questions and answer:

13 QUESTION: "Was your knowledge concerning the toxic  
14 effects on the liver of PCBs based solely on the Drinker  
15 reports?

16 ANSWER: "No, sir.

17 QUESTION: "What else was it based on?"

18 MR. FEATHERSTONE: What else other than Drinker's  
19 1938 --

20 A Nothing.

21 Q (By Mr. John) Did you subsequently learn of any  
22 other facts that led to your knowledge or suspicion that  
23 PCBs could have an effect on the liver?

24 A Yes.

25 Q When?

1 A I will have to correct that.

2 At the time of 1938, we understood people had  
3 liver troubles in this factory in Massachusetts in 1938.

4 MR. FEATHERSTONE: That was more than chlorinated  
5 byphenyl?

6 THE WITNESS: I am sorry. That was chlorinated  
7 naphthalene, ninety percent.

8 Q (By Mr. John) But you still had a suspicion,  
9 based on the Drinker study and the possibility of a  
10 connection due to the chlorinated byphenyls in Boston in  
11 1938, that there was an effect on the liver; is that correct?

12 A No, it isn't correct, Mr. John.

13 The Drinker study of PCBs by itself showed a  
14 very minor reversible attack on the liver. It did show  
15 the target organ was the liver so that it was -- we had  
16 a suspicion that if any organ were involved it would be  
17 the liver.

18 Q Was that your only suspicion of a toxic effect  
19 on animals or potentially humans who ingested PCBs between  
20 1938 and 1969?

21 A No, sir.

22 Q I am talking about the internal ingestion of it.

23 A Yes, sir.

24 Q What other toxic effects, besides an effect on  
25 the liver were you aware of?

1 A That wasn't the question you asked me.

2 Q Let's get it clarified.

3 MR. FEATHERSTONE: Do you want it read back?

4 MR. JOHN: I will just restate it.

5 Q (By Mr. John) As I understand your testimony,  
6 you were aware that there was a potential toxic effect  
7 on the liver based on chronic feeding of PCBs; is that  
8 correct?

9 A When?

10 Q In 1938.

11 A It was not chronic feeding in 1938.

12 Q Was there any feeding in 1938?

13 A There was acute feeding in 1938.

14 Q Based on acute feeding; is that correct?

15 A No, sir.

16 Q What Drinker study or test led to his conclusion  
17 that there were toxic effects on the liver in 1938?

18 A Repeated inhalation studies of PCB Aroclor 1265.

19 Q Besides the liver difficulties due to inhalation,  
20 was there any other toxic effect due to inhalation that  
21 you were aware of between 1938 and 1969?

22 A Yes, sir.

23 Q What?

24 A In 19 -- some time in the 1950s, an organization  
25 in Brazil, Indiana reported that two or three workers were

1 exposed to a heat transfer unit that presumably contained  
2 Aroclors that was in a makeshift temporary arrangement.

3 There were repeated leaks over a three-day  
4 period from this heat transfer unit, and two or three  
5 workers developed liver damage which turned out to then  
6 be reversible.

7 Q That is another instance that you became aware  
8 where liver damage was a toxic effect; is that correct?

9 A Yes, sir.

10 Q Was there any other toxic effects besides liver  
11 damage due to inhalation or ingestion of PCBs?

12 A Yes, sir.

13 Q What?

14 A Some time either in the fifties or the early  
15 sixties, a Doctor Meigs, M-e-i-g-s, reported that people  
16 had developed chloracne from inhalation of some sort of  
17 PCB fumes at elevated temperatures. I am not familiar with  
18 the details of how long they developed or in truth if there  
19 was ever any PCB found because as I understand there was  
20 a retrospective study, a post hoc thing.

21 Q What is chloracne?

22 A It's a skin condition characterized by an  
23 increase of fatty compounds in the sweat glands and  
24 sebaceous cells similar to teenage acne only worse.

25 Q Besides the knowledge that you have just testified

1 to concerning the toxic effects between 1938 and 1969, were  
2 you aware of any other toxic effects on humans besides  
3 the toxic effects with respect to the liver and chloracne?

4 A Yes, sir.

5 Q What others?

6 A I went into a thermometer factory some time in  
7 the forties, and individuals were dipping their hands into  
8 PCB solutions to fill up billows for a transformer and  
9 developed some chloracne.

10 MR. FEATHERSTONE: The question was whether you  
11 knew of anything other than chloracne.

12 Q (By Mr. John) Other than liver damage or  
13 chloracne.

14 A No, sir, I did not, except--what year did you  
15 say?

16 Q Through 1969.

17 A The fetus problem in the Yusho incident had  
18 been reported in 1969, yes. I do not know the exact  
19 time that that fetus problem was reported.

20 Q Beteen 1938 and 1969, have you now testified to  
21 all the toxic effects on humans that you were aware of  
22 from inhalation or ingestion of PCBs?

23 A I think that includes all of them.

24 Q Now, between 1969 and the present time, are you  
25 aware of any other toxic effects on humans from the

1 inhalation or ingestion of PCBs?

2 A Between what years?

3 Q 1969 and today.

4 A I am not aware of any proven cases of human  
5 ill adverse -- adverse human effects in the years from  
6 1969 up to today with the exception of the Yusho people.

7 Could I add "proven human adverse effects"?

8 Q Doctor Kelly, is it your opinion today that if  
9 a human eats fish tissue containing PCBs in the levels  
10 that have been reported in the studies, he would have  
11 adverse medical effects from eating that fish?

12 MR. FEATHERSTONE: Which studies?

13 MR. JOHN: Any studies.

14 THE WITNESS: Would you give me the levels,  
15 sir?

16 Q (By Mr. John) I can't.

17 Have you reviewed studies --

18 A I don't recall any studies on the toxicity  
19 of PCBs in fish. Is that what you mean?

20 Q Yes, sir.

21 A I can't give you any of those.

22 Q Are you aware of any studies dealing with PCBs  
23 that have made their way into the food chain since 1969?

24 A What does that question mean? I don't know.

25 MR. FEATHERSTONE: You have answered it.

1 Do you mean an effect on humans, Mr. John?

2 MR. JOHN: Yes.

3 MR. FEATHERSTONE: Why don't you rephrase it  
4 that way and help the witness?

5 Q (By Mr. John) What I am getting at, Doctor  
6 Kelly, I want to determine your opinion today as to whether  
7 your knowledge of the levels of PCBs that have gotten  
8 into the environment and then have gotten into various  
9 elements of the various food chain through the  
10 biomagnification process, whether the ingestion of the  
11 foods could have adverse effects on human beings.

12 A Do I have an opinion?

13 Q Yes, sir.

14 A Yes, sir.

15 Q What is your opinion?

16 A My opinion is that if the levels of PCBs are  
17 in accord with the government tolerances for PCBs in  
18 food there is no ill effect.

19 Q What is that level that you are referring to?

20 A I do not know what it is now. I know at one  
21 time it was five parts per million in the total diet.

22 Q Is it your opinion that if PCBs are greater  
23 than five parts per million in the total diet that there  
24 would be adverse effects?

25 A No, sir, it is not.

1 Q Do you have a level at which you believe,  
2 Doctor Kelly, that there would be adverse effects?

3 A I know of no level at the present time with  
4 the exception of the levels used in the Yusho incident.

5 I also would pick the level of the safety  
6 factor that the Food and Drug people use in their --  
7 a hundred times their tolerance, that is supposed to be --  
8 their tolerance level is listed as one hundred. One  
9 hundred, this is what they would think would be a dangerous  
10 level.

11 Q That's a tolerance level in humans?

12 A All human food, yes, sir.

13 Q Doctor, let me back way up.

14 When were you born?

15 A 1909, November 14.

16 Q You were retired from Monsanto in 1975?

17 A That's correct.

18 Q What have you been doing since 1975?

19 A I have been engaged in occupational medicine.

20 I have been a consultant for various companies. I am  
21 a part-time medical director of Consolidated Aluminum  
22 Company and I spend ten to twelve hours a week at an  
23 industrial clinic doing industrial medicine and occupational  
24 medicine.

25 Q Is that a clinic in Saint Louis?

1 A Yes, sir, Sutter Industrial Clinic.  
2 Q Is Consolidated Aluminum in Saint Louis?  
3 A It's headquarters is in Saint Louis.  
4 Q Have you performed any consulting services for  
5 Monsanto since 1975?  
6 A Yes, sir. The first year after I retired, I  
7 was a consultant.  
8 Q For Monsanto?  
9 A For Monsanto.  
10 Q Have you been a consultant for Monsanto since  
11 that first year?  
12 A No, sir.  
13 Q Are you on a retirement pension from Monsanto?  
14 A Yes, sir.  
15 Q Do you receive any other benefits from Monsanto  
16 today other than a retirement pension?  
17 A Do you call dividends a benefit?  
18 Q I sure do.  
19 You own stock in Monsanto; is that correct?  
20 A Yes, sir.  
21 Q Do you have any other benefits?  
22 A I got the company magazine.  
23 Q Anything else?  
24 A I am asked to the retirees' banquet.  
25 Q But you have performed no services for Monsanto

1 since 1976; is that correct?

2 A That's correct.

3 Q Have you ever given your deposition in any case  
4 prior to this deposition, Doctor Kelly?

5 A Any case in my life, anyplace?

6 Q Have you ever testified before?

7 A Yes.

8 Q Have you ever testified concerning PCBs?

9 A Yes, sir.

10 Q Where?

11 A Knoxville, Tennessee.

12 Q When?

13 A Four to five years ago.

14 Q Was that a litigated case or a governmental  
15 investigation? What was it?

16 A It was a personal damage suit.

17 Q Do you remember the name of the case?

18 A No, I don't.

19 Q Did the case go to trial?

20 A Yes, it did.

21 Q Was it a jury case?

22 A Yes, sir.

23 Q Was there a verdict?

24 A I believe there was.

25 Q Do you know what the verdict was?

1 A I believe the verdict -- I do not know definitely  
2 what the verdict was. I just --  
3 Q Do you know if Monsanto won or lost?  
4 A Monsanto was not involved.  
5 Q Who was involved?  
6 A General Electric.  
7 Q Do you know if General Electric won or lost?  
8 A I don't know.  
9 Q You said it was Knoxville, Tennessee?  
10 A That's right.  
11 Q Do you know if it was in the federal or state  
12 court?  
13 A State.  
14 Q Did you also give your deposition in that case?  
15 A No, sir.  
16 Q Besides the testimony in the case in Knoxville,  
17 have you testified concerning PCBs?  
18 A Yes, sir.  
19 Q Where?  
20 A Cincinnati, Ohio.  
21 Q When was that?  
22 A Two to three years ago.  
23 Q Was that a state or federal court case?  
24 A It was an OSHA hearing. It wasn't a court.  
25 Q Was Monsanto involved?

1 A No, sir.

2 Q Who was involved?

3 A Cincinnati Gas and Electric and OSHA.

4 Q Were you acting as a consultant at the time to

5 Cincinnati Gas and Electric?

6 A I was a consultant on that case, if that's what

7 you mean.

8 Q Do you know what OSHA's claim was in that case?

9 A Yes, sir.

10 Q What was it?

11 A That the Cincinnati Gas and Electric people who

12 were repairing capacitors were exposed to, in an undue

13 manner, to PCB vapors and/or fluids.

14 Q Did they claim to exhibit any adverse health

15 effects?

16 A Did who claim?

17 Q The workers.

18 A No, sir, they did not.

19 Q Have you testified in any other hearing or court

20 case besides the two you have mentioned?

21 A Yes, sir.

22 Q What?

23 A Ward Transformer Company.

24 Q Warren?

25 A Ward, W-a-r-d.

1 Q When was that?

2 A That was two to four years ago.

3 Q What type of proceeding was that, Doctor Kelly?

4 A That was a criminal case.

5 Q Against who?

6 A Mr. Ward.

7 Q What was the claim that involved PCB?

8 A That he knowingly conspired to spill PCBs over  
9 a hundred twenty miles of various state and county highways,  
10 the shoulders.

11 Q Where was that pending?

12 A I think it was Raleigh-Durham.

13 Q Do you know the result of that case?

14 A Yes, sir.

15 Q What was the result?

16 A The government claims were unfounded.

17 Q Is that the United States versus Ward?

18 A I think it was.

19 Q Or was that a state case?

20 A They had government attorneys in there, and  
21 they had government witnesses. I can not say, but -- I  
22 don't know.

23 Q If you don't know, that's all I need to know.

24 Besides the three you have already testified  
25 about, Doctor Kelly, have you testified at any other hearing

1 or proceeding?

2 MR. FEATHERSTONE: On PCBs?

3 MR. JOHN: Yes, sir.

4 A No, sir. I can't think of any.

5 Other than these three I mentioned?

6 Q (By Mr. John) Yes, sir.

7 A I can't think of any.

8 Q Have you consulted with anyone else concerning

9 PCBs?

10 A Yes, sir.

11 Q Who?

12 A American Steel Foundries in Granite City, Illinois.

13 Q When was that consultation?

14 A Within the last year.

15 Q What was the nature of the consultation?

16 A There was a fire in which PCB fluids were

17 liberated from a transformer during the course of the fire,

18 and the --

19 MR. FEATHERSTONE: Go ahead and finish your

20 answer.

21 A (Continuing) -- and the company asked me to

22 examine the workers to see if any harm had occurred.

23 Q (By Mr. John) Did you determine whether or not

24 any harm had occurred?

25 A Yes, sir.

1 Q Had any harm occurred?

2 A None.

3 Q Did you prepare a report?

4 A Yes, sir.

5 Q Do you have a copy of that report in your

6 personal files?

7 A I presume I do. I don't know.

8 Q Doctor, do you keep an office for your consulting

9 business, now?

10 A Not per se. I have an office in my house.

11 Q Is that where the files would be located that

12 you do have?

13 A That's right.

14 Q Have you done any other consulting concerning

15 PCBs?

16 A Yes, sir.

17 Q What was that?

18 A Union Electric.

19 Q When?

20 A Within the last year and a half.

21 Q What was the nature of that consultation?

22 A It was another case in which OSHA stated -- OSHA

23 investigated an employee complaint that there might be

24 adverse effects from PCBs.

25 Q What did you do?

1 A I talked to the OSHA people. I talked to  
2 employees, and I examined the reports that NIOSH gave Union  
3 Electric.

4 Q What was the nature of the claim by the employee?

5 MR. FEATHERSTONE: Was it a claim by an employee?

6 THE WITNESS: A claim to OSHA.

7 MR. JOHN: Yes.

8 A We were wondering whether or not PCBs might  
9 be harming us.

10 Q (By Mr. John) Did you make a determination  
11 based upon your review?

12 A Yes, sir.

13 Q What was your conclusion?

14 A I agreed with the OSHA findings that PCBs were  
15 not harming their employees.

16 Q Did you prepare any reports?

17 A No, sir.

18 Q Have you done any other consultations with  
19 respect to PCBs?

20 A Not that I can recall.

21 Q Besides your consultation and the testimony  
22 in the proceedings that you indicated to us, have you  
23 given a statement in any other matter to the newspapers,  
24 to a magazine, to anyone else concerning PCBs since you  
25 left Monsanto?

1 A You mean a written statement?

2 Q Yes, sir.

3 A No, sir.

4 Q Or an oral statement that someone else transcribed  
5 into a written statement?

6 A No, sir.

7 Q I would like to go back to the period after  
8 the war, 1946, when you returned and became the medical  
9 director of Monsanto.

10 A Yes, sir.

11 Q Who was in the Medical Department besides yourself  
12 between the time that you became medical director and  
13 Doctor Wheeler joined the Medical Department as a  
14 toxicologist?

15 A We had in Saint Louis a nurse and technician --  
16 that is, the Central Medical Department.

17 It's Mr. Wheeler, by the way, not Doctor Wheeler.

18 Q I am sorry.

19 A We had doctors in various plants of Monsanto.  
20 We had nurses in various plants of Monsanto.

21 If you are speaking --

22 Q I am talking about the Central Medical Department.

23 A We had a nurse, a medical technician, a secretary  
24 and myself.

25 Q And the medical technician's job was to review,

1 take blood samples, and do clinical tests?

2 A That's correct.

3 Q After Mr. Wheeler arrived and became a part  
4 of the Medical Department, was there any additional staff  
5 in the Medical Department?

6 A Another secretary.

7 Q How about between 1952 -- which is, I believe,  
8 when Mr. Wheeler came to your best recollection -- and  
9 the time that you left Monsanto in 1975?

10 A Did you finish the sentence? I don't know  
11 what you asked.

12 Q Who else was in the Medical Department?

13 A We engaged, during the course of those years  
14 from 1952 when Mr. Wheeler came, three industrial hygienists,  
15 one toxicologist -- Doctor Hunter who died, Doctor Levinskass,  
16 a toxicologist -- we engaged a Doctor Johannesburg (phonetic) --  
17 not Johannesburg -- Johannson (phonetic) as another  
18 toxicologist.

19 Q Were these all the people, other than secretaries,  
20 who were in the Medical Department between the time  
21 Mr. Wheeler arrived and 1975 when you left Monsanto?

22 A Yes, sir.

23 MR. FEATHERSTONE: Do you understand the question  
24 goes through 1975?

25 Q (By Mr. John) When you retired.

1 MR. FEATHERSTONE: I mean, if you answered --

2 A (Continuing) I am sorry. There was also --  
3 we also had two part-time doctors in the -- we had two  
4 part-time doctors, a Doctor Mezera who is now dead and  
5 a Doctor Malt (phonetic) who is still doing part-time clinical  
6 work in the dispensary. We had a Doctor Morris Johnson  
7 who was the assistant medical director who left us about  
8 three years before I retired, and a Doctor George  
9 Rausch (phonetic) who succeeded me as medical director.  
10 He was there during the last two years, 1973 to 1975.

11 MR. FEATHERSTONE: How about Doctor Wright?

12 A (Continuing) Doctor Paul Wright was another  
13 toxicologist.

14 Q (By Mr. John) Does that exhaust your recollection  
15 as to the people who were there during that period?

16 THE WITNESS: Off the record.

17 MR. FEATHERSTONE: No. Answer the question as  
18 best you can.

19 A Yes, as best I can.

20 Q (By Mr. John) Doctor Kelly, what is a toxicologist?

21 A A toxicologist is an individual who by training  
22 and experience devotes himself to the properties, to the  
23 pharmacological and/or harmful -- and/or potential  
24 harmful effects of compounds.

25 Q Is it a branch of medicine or a branch of science?

1 A Those two words are not different. Medicine  
2 is a science.

3 Q Is that a branch of medicine?

4 A It can be.

5 Q Is it normally?

6 A There are physicians who are toxicologists;  
7 there are physicians of medicine who are toxicologists.  
8 There are doctors of veterinary medicine who are toxicologists.  
9 There are biochemists who are toxicologists. There are  
10 pharmacologists who are toxicologists.

11 There is no strict discipline to say I am a PhD  
12 in toxicology. They might be offering them now; but up  
13 to now, the toxicologists were gotten from those disciplines.

14 In the early days, all toxicologists were  
15 physicians.

16 Q Are you a toxicologist?

17 A No, sir.

18 Q Have you ever been a toxicologist?

19 A No, sir.

20 Q Do you profess any expertise in toxicology even  
21 though you wouldn't describe yourself as a toxicologist?

22 A Yes, sir.

23 Q How would you describe your expertise in toxicology?

24 MR. FEATHERSTONE: Today?

25 MR. JOHN: Yes, today.

1           A     My expertise in toxicology is as one who can  
2 interpret toxicological reports, who can determine on  
3 the basis of my past education, experience and contact  
4 with toxicologists whether or not a toxic, a hazardous  
5 occurrence might occur, a hazardous event might occur given  
6 if I were to know the duration, the extent of the exposure  
7 and the compound to which the individual was exposed.

8           Q     Before Mr. Wheeler arrived in 1952, did you rely  
9 upon outside toxicologists to determine the toxicity as to  
10 the various compounds that you were reviewing for Monsanto?

11          A     Yes, sir.

12          Q     And then, you would interpret the toxicological  
13 reports that were provided you by the outside sources;  
14 is that correct?

15          A     Yes, sir.

16          Q     I take it your expertise developed from reviewing  
17 these toxicological reports and combining them with your  
18 medical background to determine what potential effects  
19 they would have on human beings?

20          A     No, sir.

21          Q     That is not correct?

22          A     No, sir.

23          Q     Correct me where I am wrong.

24          A     Because, in addition to those two things you  
25 mentioned, there were frequent consultations with toxicologists.

1 There were frequent meetings, scientific sessions, at  
2 which toxicological papers were given and discussed.

3 Q You mean you attended various meetings where  
4 toxicological papers were discussed?

5 A Yes, sir.

6 Q You mean general toxicology papers or the specific  
7 reports of compounds you were having investigated?

8 A Repeat that question because I can not answer  
9 it in the form you have given it to me.

10 Q My changed question, Doctor Kelly, is, Did  
11 you attend toxicological seminars to enhance your knowledge  
12 of toxicology?

13 A Yes, sir.

14 Q During this period of time?

15 A Yes, sir.

16 Q Are those the meetings where various papers  
17 were reviewed?

18 A Yes, sir.

19 Q So, it was general seminars concerning toxicology  
20 as opposed to a particular product that Monsanto was  
21 marketing?

22 A No, sir. There were general seminars which  
23 included specific toxicological discussions of various  
24 compounds some of which might have been products Monsanto  
25 used, some of them products that Monsanto might have

1 manufactured.

2 Q And you were a regular attendee of these various  
3 meetings?

4 A What do you mean "regular", sir?

5 Q A couple times a year.

6 A No, sir, it was not that often.

7 Q How often was it?

8 A Once a year, probably; and these were not only  
9 toxicological seminars. Toxicological papers were given  
10 at industrial medicine meetings. As part of an industrial  
11 meeting, a half day might be devoted to toxicology.

12 Q Besides what you have already testified to,  
13 Doctor Kelly, what other input did you have in the discipline  
14 of toxicology up to the time that Mr. Wheeler arrived  
15 at Monsanto?

16 MR. FEATHERSTONE: What other input?

17 MR. JOHN: Yes, sir.

18 MR. FEATHERSTONE: You mean what other sources  
19 of knowledge did he have about toxicology?

20 MR. JOHN: Right.

21 A I read all the toxicological journals in the  
22 English language that I knew of.

23 Q (By John) All of them?

24 A There were only three or four.

25 Q Those were regular publications?

1 A Yes, sir.

2 Q Do you remember what they were?

3 MR. FEATHERSTONE: This is up to the time 1952  
4 or whenever Mr. Wheeler came on board.

5 A One was, I think, Annals of Environmental Toxicology.  
6 One was the British Journal of Industrial Hygiene and  
7 Toxicology -- I am not sure about these names, what the  
8 titles were thirty years ago. In the industrial medical  
9 journals, toxicology items were -- toxicology articles  
10 were there. That was the American Journal of Occupational  
11 Medicine, the American Public Health Journal. Science  
12 was another one.

13 There may be others that I forget, but they  
14 changed from the time of 1936 when I came with Monsanto  
15 until Mr. Wheeler came. I do not know if more were  
16 added at that time, but there were only three or four or  
17 five that were subscribed to.

18 Q Mr. Wheeler was an industrial hygienist?

19 A Yes, sir.

20 Q Did he have a toxicological background?

21 A No, sir.

22 Q Was he involved at all in your determination or  
23 evaluation of the toxicological reports on various  
24 compounds that you sent to outside labs?

25 A No, sir.

1 Q When was the first time that you had a toxicologist  
2 in the Medical Department?

3 A When Doctor Hunt was engaged, which I think  
4 was '62, around there.

5 Q So, between the time that you started and 1962,  
6 you were the sole person at Monsanto who evaluated  
7 toxicological reports concerning compounds; is that right?

8 A Yes, sir.

9 Q After Doctor Hunt arrived in 1962, did he  
10 evaluate the toxicological reports?

11 A Yes, sir.

12 Q Did you both do it at that time, or did he  
13 assume that function?

14 A No. We both did it. He evaluated it, and he  
15 talked it over with me.

16 Q So, it would be fair to say that no compound  
17 that was studied for its toxicological effects went out  
18 of Monsanto without you having reviewed it?

19 A No, sir, that's not fair to state.

20 Q State it fairly for me.

21 A There were minor compounds that were subjected  
22 to acute screening that he had to do just to find out  
23 what the freight classification was that went out, and he  
24 would do those routinely, and I would never see them.

25 Q I believe you testified yesterday that you

1 considered part of your responsibilities in the Medical  
2 Department to determine the toxicological effects of  
3 various compounds upon workers at Monsanto.

4 A Yes, sir.

5 Q Do you consider it a part of your responsibility  
6 to determine the toxicological effects of various  
7 compounds on wildlife?

8 MR. FEATHERSTONE: What date? Do you have a  
9 pretty good date in mind?

10 MR. JOHN: Any time up through the period 1969.

11 A Yes, sir.

12 Q (By Mr. John) What did you consider that part  
13 of your responsibility?

14 A In 1968 or 1969, when it was alleged to show  
15 that Monsanto products had an effect on wildlife.

16 MR. FEATHERSTONE: These are PCBs, now, Doctor?

17 THE WITNESS: PCBs.

18 Q (By Mr. John) Prior to 1968 and 1969, were  
19 there any other products at Monsanto that were determined  
20 to have an effect on wildlife?

21 A Yes, sir.

22 Q What?

23 A Product 1080, a phosphate ester insecticide.

24 Q When was that determined?

25 A I would gather some time in the late fifties.

1 Q What was your involvement in that circumstance  
2 or situation?

3 MR. FEATHERSTONE: We are talking about the  
4 1080 insecticide, now, Mr. John?

5 MR. JOHN: Yes.

6 MR. FEATHERSTONE: What's the relevancy of that  
7 to this litigation?

8 MR. JOHN: To find out the scope of the Medical  
9 Department during the period that we considered to be  
10 relevant in this litigation.

11 MR. FEATHERSTONE: Which is?

12 MR. JOHN: As far as Doctor Kelly, from the time  
13 he started with Monsanto until he left Monsanto.

14 MR. FEATHERSTONE: Doctor, have you given a  
15 date on when this was done?

16 MR. JOHN: He said the fifties, late fifties.

17 THE WITNESS: Probably the fifties.

18 MR. FEATHERSTONE: You can describe generally  
19 for Mr. John at this stage what your involvement was.

20 A 1080 was an insecticide that was used for rat  
21 killing. It would kill the rats; and if the pet dog would  
22 eat the rat, there was enough 1080 left in the rat to  
23 kill the dog.

24 Q (By Mr. John) What was your involvement,  
25 Doctor Kelly, with this situation? is my question.

1 MR. FEATHERSTONE: I think he wants to know whether  
2 you had any test done or something like that.

3 Q (By Mr. John) Had you had tests done prior to  
4 the time this product was marketed?

5 A Yes, sir.

6 Q Did it deal with the problem that was discovered  
7 about the --

8 A It was not discovered. This was a product known  
9 to kill, put out to kill rats, to kill mammals, so it  
10 did not come as a surprise it would kill dogs.

11 MR. FEATHERSTONE: You knew before it was  
12 marketed?

13 THE WITNESS: Yes.

14 Q (By Mr. John) And you did testing to determine  
15 the lethal dose effect of it?

16 A Yes, sir.

17 Q And those were the same acute tests that were  
18 used to test PCB?

19 A Yes, sir.

20 (Short break.)

21 Q (By Mr. John) Doctor Kelly, we were discussing  
22 the responsibility for determining toxicological effects  
23 on wildlife.

24 A Yes, sir.

25 Q In order to make that determination, you would

1 have to determine, I would suspect, what possibilities  
2 there were for a particular product to get into an area  
3 where it could affect wildlife; is that right?

4 A Say that over -- would I have to determine?

5 Q Yes, sir.

6 A Repeat that.

7 MR. JOHN: Read the question back.

8 (Whereupon, the court reporter read back the  
9 following question:

10 QUESTION: "In order to make that determination,  
11 you would have to determine, I would suspect, what  
12 possibilities there were for a particular product to get  
13 into an area where it could affect wildlife; is that right?")

14 A No, sir.

15 Q (By Mr. John) You would not need to know?

16 A That's not what you asked. You said I would  
17 have to determine.

18 Q All right. I don't want to get caught up in  
19 semantics.

20 A Determine means to me I would have to find it  
21 out myself.

22 Q Finding out yourself could be by asking other  
23 people?

24 A Or having other people tell me.

25 Q Did you feel it was a part of the responsibility

1 to ask other people about the possibilities or potential  
2 for a particular product to be in areas where wildlife  
3 could be affected?

4 A When?

5 Q Between 1946 and 1969.

6 A Yes, sir.

7 Q HOW did you go about becoming aware of whether  
8 a particular product would be in an area where it would  
9 affect wildlife?

10 A In 1967, there was a newspaper report by a  
11 Doctor Jensen who stated that a PCB was found in an area  
12 where it could affect wildlife.

13 Q I would like to be a little more general than  
14 that.

15 First of all, Doctor, let me restate it.

16 I am talking about your general responsibilities  
17 as the medical director of Monsanto to determine  
18 toxicological effects of various products. All right?

19 A Yes, sir.

20 Q I believe you testified yesterday that in order  
21 to make -- part of your determination was the various uses  
22 for which the product was made.

23 A Yes, sir.

24 Q What I would like to find out is how did you go  
25 about acquainting yourself to the uses of a particular product?

1 in your evaluation of that product?

2 A By reading copy that would be put out in bulletins  
3 of Monsanto, by talking with the commercial development  
4 people who explained to me the proposed uses of a Monsanto  
5 product.

6 Q Are those the technical bulletins that you  
7 referred to?

8 A Yes, sir, technical or developmental bulletins.

9 Q Once you became aware of the information with  
10 respect to the uses, what would you do with it? How would  
11 it become part of your evaluation?

12 A If any of the proposed uses appeared to me to  
13 present any risk to humans, I would then make an evaluation  
14 of that compound in regard to what we knew about the  
15 toxicology and what we knew about the extent, the anticipated  
16 or expected exposure.

17 Q Would you also take that information to determine  
18 what warnings or labeling would be necessary or adequate  
19 for a particular product?

20 A Yes, sir.

21 Q Between 1946 and 1969, can you think of any  
22 product that was manufactured by Monsanto whose intended  
23 use was to be used in a closed system but that product,  
24 to your knowledge, could escape from that closed system  
25 due to various breakdowns or occurrences?

1 A Yes, sir.

2 Q What?

3 MR. FEATHERSTONE: Are you asking for specific  
4 product names?

5 MR. JOHN: Well, generally. If he wants to  
6 use specific product names, that's fine; but I am asking  
7 for a general product where he took into consideration  
8 that product would escape from a closed system.

9 MR. FEATHERSTONE: I would not refer to specific  
10 product names. You can describe it by use.

11 MR. JOHN: That's fine.

12 A Of course, the general principal of a closed  
13 system is the material is closed. I also know that on  
14 rare occasions closed systems break so that any compound  
15 that might be in a closed system could, on occasion, escape  
16 to the atmosphere.

17 Q (By Mr. John) Did you take that into consideration  
18 in your evaluations of the various products?

19 A Yes, sir.

20 Q Can you tell me what you would do once you  
21 determined that a particular product used in a closed  
22 system could escape to the atmosphere or to the environment?

23 A Yes, sir?

24 Q What?

25 A If a compound could escape to the atmosphere --

1 MR. FEATHERSTONE: Is this work atmosphere?

2 A (Continuing) Yes.

3 I was going to say I would be concerned with

4 the effects on the individual or individuals who would

5 come in contact with that product following its escape.

6 Q (By Mr. John) And I take it you translate that

7 into the warnings or the precautions on a particular

8 product?

9 A That's correct, or safe handling procedures.

10 Q So, you did take into consideration that products

11 designed for closed systems could escape into the work

12 environment?

13 A Might escape.

14 Q Into the work environment?

15 A Yes, sir.

16 Q And you considered it part of your responsibility

17 to deal with that potentiality insofar as it affected or

18 could affect health?

19 MR. FEATHERSTONE: Workers' health?

20 MR. JOHN: Right.

21 A Yes, sir.

22 Q (By Mr. John) Now, let's go a step further.

23 Did you understand, during the period that you

24 were a medical director, that various products designed

25 for closed systems could escape into the environment, outside

1 of the workers' environment due to malfunctions, spillage,  
2 breakdowns, whatever?

3 A Say that over.

4 (Whereupon, the court reporter read back the  
5 previous question.)

6 A Yes, sir.

7 Q (By Mr. John) Did you take that into consideration  
8 in your evaluation of a product for marketing by Monsanto?

9 A Yes, sir.

10 Q What would you do in your evaluation with the  
11 knowledge of a potential that the product could accidentally  
12 escape into the environment outside of the workers'  
13 environment?

14 A I would put on a warning such as "Do not allow  
15 to get in contact with feed or grain" or other warnings  
16 of that type.

17 MR. FEATHERSTONE: If there was a perceived risk?

18 THE WITNESS: If there was a perceived risk.

19 Q (By Mr. John) That's another element.

20 Would you only put it on if there was a perceived  
21 risk?

22 A Yes, sir.

23 Q Can you give me an example of a product,  
24 Doctor Kelly, that you did put on such a warning or a  
25 precaution?

1           A     Every one of our insecticides we ever shipped  
2     had that warning on it -- "Do not allow to come in contact  
3     with feed or grain".

4           Q     But insecticides are not designed for a closed  
5     system, are they?

6           A     No, but if --

7           MR. FEATHERSTONE: You answered the question,  
8     Doctor.

9           A     (Continuing) No, sir.

10          Q     (By Mr. John) Can you think of any product  
11     designed for a closed system that you anticipated would  
12     get outside of the closed system under the circumstances  
13     we have been discussing where you did put such a precaution  
14     or warning or labeling concerning not to allow it to  
15     get into grain or feed or whatever?

16          A     I can't recall.

17          Q     Fair enough.

18                 You testified that you would put the labeling  
19     or warnings on the products that you would have expected --  
20     that you could have expected -- to get out if you perceived  
21     a risk.

22          A     If I perceived a risk, yes, sir.

23          Q     And I take it that's a risk to either wildlife  
24     or human health?

25          A     No, sir. Human health.

1 Q Not the wildlife?

2 A Yes, sir.

3 Q What factors would you take into consideration  
4 to determine whether or not there was a risk to human  
5 health?

6 A We are talking, now, about a closed system in  
7 a factory; is that correct?

8 Q Correct.

9 A The factors I would take into consideration would  
10 be the amount of exposure, the type of exposure and the  
11 toxicity of the product.

12 Q How would you obtain the information to make  
13 those determinations, Doctor Kelly?

14 A The toxicity information, obviously, is gained  
15 by toxicological testing.

16 The other possibility of the exposure and the  
17 extent of exposure was gained, was obtained, by me through  
18 reading the proposed technical bulletins and my general  
19 knowledge of industrial applications.

20 Q Would you talk to the salesman in the field of  
21 Monsanto concerning their knowledge about the potentiality  
22 of the escape of these particular products?

23 A No, sir, unless an occurrence had occurred.

24 Q Why wouldn't you talk to the salesman if you  
25 wanted to know the exposure and the potential exposure of

1 humans to a particular product?

2 A Because the people who designed the products  
3 and who wrote the bulletins and who developed the uses of  
4 the products were the ones that were closer to me and  
5 would know what the material was being sold for.

6 Q Is that the Research and Development Department?

7 A The Development Department and the Marketing  
8 Department in Saint Louis.

9 Q Would you ask them about the particular uses  
10 and the potentiality of the escape of these products for  
11 use in your evaluation?

12 A Escape where? Onto the worker?

13 Q Yes, or into the environment.

14 A There are two questions there.

15 As far as the workers are concerned, the bulletin  
16 would say what the uses were.

17 MR. FEATHERSTONE: Doctor, the question was,  
18 Did you discuss these things with the research and  
19 commercial development people?

20 MR. JOHN: I believe he said it was the  
21 Development Department.

22 THE WITNESS: I could have.

23 Q (By Mr. John) Do you recall that you did?

24 MR. FEATHERSTONE: Do you have a specific product  
25 in mind, Mr. John?

1 MR. JOHN: No, any product. I am still talking  
2 generally, and I believe the doctor is still talking  
3 generally.

4 MR. FEATHERSTONE: I believe the question is one  
5 of procedure -- do you recall that you did that from time  
6 to time?

7 A Yes, from time to time, I did.

8 Q (By Mr. John) Do you recall under what  
9 circumstances you would do it and under what circumstances  
10 you would not do it?

11 A Well, I can give you a circumstance in which I  
12 did it.

13 Q Okay.

14 A A man came to me and said we have a plastic that  
15 we are manufacturing that has various ingredients in it,  
16 and they are used for surveyors' stakes, and cows are  
17 eating them. Is this liable to hurt the cows?

18 Q Then, you would look at your toxicological  
19 data to determine whether or not, in your opinion, the  
20 amount of paint on the stakes would affect the cows?

21 A It wasn't the paint. These were vinyl strips  
22 that were hanging -- in fact, in that particular case,  
23 we fed it to cows to see if it did really hurt them.

24 Q Did you ever do that prior to the time the product  
25 was marketed -- when I say "do that", I mean make that type

1 of analysis that this product is going to be out in  
2 the environment or can get in the environment and could  
3 possibly affect --

4 A No, sir.

5 Q So, it was an after-the-fact analysis; is that  
6 correct?

7 A Yes, sir. If we perceived a risk, however, we  
8 might have.

9 Q But generally, it was an after-the-fact analysis  
10 of particular situations brought to you of problems that  
11 had been developed?

12 MR. FEATHERSTONE: We are talking about industrial  
13 chemicals, now?

14 MR. JOHN: Yes.

15 A Yes.

16 MR. JOHN: All my questions are dealing with  
17 industrial chemicals.

18 MR. FEATHERSTONE: Are you still up to the period  
19 1969?

20 MR. JOHN: Yes.

21 THE WITNESS: Were you in 1969?

22 MR. FEATHERSTONE: Up to the period 1969.

23 THE WITNESS: You mean up to the time of the  
24 Jensen work?

25 MR. JOHN: Yes, sir.

1 MR. FEATHERSTONE: And he is talking about PCB  
2 products.

3 THE WITNESS: Yes, sir.

4 Now, would you tell me what you asked me?

5 MR. JOHN: Strike it.

6 Q (By Mr. John) Doctor Kelly, what is an extender  
7 used with insecticides -- do you know what an extender is?

8 A An extender is something if used in insecticides  
9 it prolongs the use of the product.

10 Q What's the mechanism that prolongs the use?

11 A I don't know.

12 (Whereupon, Kelly Deposition Exhibit 1 marked  
13 for identification by the court reporter.)

14 MR. FEATHERSTONE: Do you want him to read  
15 the thing, the document?

16 MR. JOHN: No. I just want to point out and  
17 ask him about a particular aspect of it.

18 MR. FEATHERSTONE: Is there any reason, Mr. John,  
19 you have a May 25, 1972 attachment to a February 3, 1971  
20 letter?

21 MR. JOHN: Because that's the way it was produced  
22 to us, as I understand.

23 MR. FEATHERSTONE: The question is, Is there any  
24 reason to introduce it this way?

25 MR. JOHN: Not to my knowledge. I am not interested

1 in the last page of it.

2 Q (By Mr. John) Take a look at it, Doctor Kelly,  
3 and see if you recognize --

4 MR. FEATHERSTONE: Look at it long enough to see  
5 if you recognize it.

6 Q (By Mr. John) Do you recognize that document?

7 A Yes.

8 Q You are the author of that document?

9 A Yes.

10 Q Do you know who Griffith E. Quinby, M.D. is?

11 A Yes, sir.

12 Q Who is he?

13 A He is a physician and a -- I do not know if he  
14 ever had any public health appointment, but he is an  
15 individual very interested in the environment on the  
16 West Coast.

17 Q Where does he live?

18 A Washington, California -- I don't know what his  
19 address is there.

20 Q It's not on there.

21 Does he have any affiliation with any company,  
22 to your knowledge?

23 A Not that I know of.

24 Q This was a private inquiry to you; is that  
25 correct?

1 A Yes, sir.

2 Q Would you turn to Page 2 of Kelly Deposition  
3 Exhibit 1; and under Number 2, it says "Monsanto has been  
4 aware that in the early and mid 1950s there was some use  
5 of PCBs as extenders for pesticides where the formulations  
6 were applied to field crops or, in the case of research  
7 sponsored in New York State not participated in by Monsanto,  
8 on forests for attempted control of elm tree disease."

9 A Yes, sir.

10 Q Where did you learn that, that PCBs were used for  
11 extenders for pesticides in the fifties?

12 A Some time later in the fifties, after they were  
13 used.

14 Q Do you remember when, Doctor Kelly?

15 A No, I don't; I don't know the date.

16 Q Was it in the fifties?

17 MR. FEATHERSTONE: He already answered that.

18 A I am not sure of that; I don't know when we learned  
19 it.

20 Q (By Mr. John) Do you recall how you learned it?

21 A Yes. Somebody told me in our company that the  
22 Department of Agriculture has been using and recommending  
23 PCBs for an extender in some insecticides -- we don't know  
24 whether anybody ever did it or not -- did we ever sell it  
25 for that. And we said no, we never sold it for that.

1                   So, as far as I know -- I don't know when  
2 we found out. I certainly never knew before it was used  
3 that it was going to be used.

4           Q     What did you do after you learned it had been  
5 used?

6           A     It happened years before. I did nothing. I  
7 said was anybody selling it for that, and they said no.

8           Q     Did you perceive any potential health hazard  
9 from using PCBs as extenders in pesticides and applied to  
10 field crops?

11          A     Health hazards to --

12          Q     Human beings.

13          A     I didn't know how they were used. I didn't know  
14 how much they were being used. I didn't know how often  
15 they were being used. I didn't know about the crops they  
16 were being used on. I didn't know how the applicator used  
17 it, so I had no basis to make a judgment.

18          Q     Did you undertake to find the answers to the  
19 questions you just elaborated on?

20          A     No, sir.

21          Q     Did you undertake to determine whether or not  
22 this was still a use that was being made of PCBs?

23          A     Yes.

24          Q     How did you go about that inquiry?

25          A     I asked our development and sales people are these

1 people up in New York still doing this, and they said no.

2 I don't know how much they used. It was years  
3 ago, and I don't know anything about it.

4 Q Doctor Kelly, do you have an opinion today as to  
5 whether the use of PCBs as extenders for pesticides being  
6 applied to field crops could present a health hazard?

7 A I still don't -- I can't have an opinion unless  
8 I know how much is liable to be used. I don't know the  
9 mechanism.

10 Q So, you don't have an opinion?

11 A I don't have an opinion.

12 Q Based on a number of factors supplied to you to  
13 reach an opinion; is that correct?

14 A Yes, sir.

15 Q Now, the next sentence after the one that I  
16 initially read, Doctor Kelly, states: "These experiments  
17 were based on research efforts of the USDA."

18 A Yes, sir.

19 Q What is your knowledge in regard to that  
20 information?

21 A In some publication of the United States  
22 Department of Agriculture they have a footnote saying that  
23 PCBs could or have been used as an extender in some sort  
24 of pesticides. That's all I know about them.

25 Q Do you know what that publication was?

1           A     No, because when I saw it it was a five-to-ten-  
2 year-old publication.

3           Q     Did you have a file in the Medical Department  
4 that would contain the information dealing with this  
5 subject? Do you know?

6           A     It might have it.

7           Q     Do you recall one as you sit here today?

8           A     Yes, sir, I recall a Department of Agriculture  
9 bulletin or release that had this mentioned in the footnote.

10           MR. FEATHERSTONE: What is this? You mean  
11 the substance of this sentence?

12           THE WITNESS: That PCBs have or are being used  
13 as an extender or have a possibility of being used for  
14 an extender.

15           Q     (Ey Mr. John) Did you ever incorporate in any  
16 of your cautionary labeling not to use PCBs as an extender?

17           A     No, sir.

18           Q     Now, the next sentence says: "As far as our  
19 records indicate these were abortive attempts in using  
20 the PCBs in 'broadcast applications' on perhaps all kinds  
21 of crops".

22                     What do you mean by "broadcast applications"?

23           A     You put a tractor, you put an instrument on a  
24 tractor, and you send the tractor down the row of  
25 crops; and this instrument scatters out like water from a

1 water sprinkler.

2 Q Skipping a sentence, the next sentence: "I don't  
3 have exact figures but I would estimate that something  
4 less than one hundred thousand pounds of PCBs were ever  
5 used in experimental or semi-commercial applications."

6 Do you know where you obtained that information?

7 A I don't now. I don't recall where I got that  
8 information.

9 Q Were you ever asked by anyone at Monsanto to  
10 evaluate PCBs for the use indicated in this letter as  
11 extenders in pesticides?

12 A No, sir.

13 Q Prior to 1968, did you ever reevaluate PCBs  
14 based on additional uses of PCB products?

15 A Yes, sir.

16 Prior to 1968?

17 Q Yes, sir.

18 A Yes, sir.

19 Q Let me limit it more. Let's take the Pydraul  
20 PCB products.

21 How many times were they evaluated by you as  
22 medical director?

23 A Whenever a proposed use came -- how many times?  
24 I don't know how many times.

25 Q Can you estimate how many times?

1 A Three, four, five -- I can't estimate them.

2 Q It's not ten or twenty, I take it?

3 A No, I don't -- I can't estimate it. It's not  
4 two hundred. I know that.

5 Q It was reevaluated when you were advised of a  
6 new proposed use for the product; is that correct?

7 A Yes, sir.

8 Q Was there ever a time when you learned of a  
9 proposed use and asked yourself to reevaluate it for that  
10 use?

11 MR. FEATHERSTONE: This is Pydraul?

12 MR. JOHN: Yes, this is Pydraul.

13 A Yes, sir.

14 Q (By Mr. John) Under what circumstances?

15 A If a situation occurred where we knew that the  
16 use would involve confined spaces, then I would evaluate  
17 whether or not we had adequate information to put enough  
18 safe handling data on the material.

19 MR. FEATHERSTONE: This is a worker exposure?

20 THE WITNESS: Worker exposure.

21 Q (By Mr. John) Doctor Kelly, let me make sure  
22 I understand.

23 Were there circumstances when you, reading the  
24 literature or the technical bulletins without officially  
25 having been asked to reevaluate Pydraul, that you determined

1 that you should reevaluate it based upon uses that you  
2 became aware of?

3 A I never became aware of any uses that, to me,  
4 purported any risk to humans so I did not have the  
5 necessity for reevaluating Pydraul.

6 MR. FEATHERSTONE: You mean after it was marketed?

7 THE WITNESS: After it was marketed.

8 Q (By Mr. John) Were there any circumstances with  
9 any of the industrial division products where you would  
10 initiate a reevaluation based upon your independent  
11 determination that the product was being used in a way that  
12 you previously were unaware of?

13 A I am sure there were.

14 Q How would you go about doing that?

15 A I would hear or a customer would call me and say  
16 these people are doing this with this product, and then  
17 I would look at what we knew about the product and say  
18 either stop it or let's find out more about it.

19 Q You felt it was your responsibility to initiate  
20 reevaluations of industrial products based upon your learning  
21 of different uses than you were previously aware of; is  
22 that a fair statement?

23 A No, sir.

24 Q How is it unfair?

25 A You are saying "uses".

1 Q Yes, sir.

2 A You have to qualify that by saying uses that  
3 would present a hazard to people.

4 Q So qualified.

5 Then, the statement is fair?

6 A Let's repeat it to be fair.

7 MR. JOHN: Read back the question.

8 MR. FEATHERSTONE: Do you want it reread,

9 Mr. John?

10 MR. JOHN: I would like the question reread.

11 (Whereupon, the court reporter read back  
12 the following questions and answers:

13 QUESTION: "You felt it was your responsibility  
14 to initiate reevaluations of industrial products based  
15 upon your learning of different uses than you were previously  
16 aware of; is that a fair statement?

17 ANSWER: "No, sir.

18 QUESTION: "How is it unfair?

19 ANSWER: You are saying 'uses'.

20 QUESTION: "yes, sir.

21 ANSWER: You have to qualify that by saying uses  
22 that would present a hazard to people.")

23 Q (By Mr. John) I believe you indicated that that  
24 is a fair statement if it's qualified that the uses would  
25 present a potential health risk.

1           A     Yes, sir.

2           Q     Can I see Kelly Deposition Exhibit 1, please?

3                     In the first page of the letter, you refer to

4     Doctor Drinker's study at Harvard which I believe you

5     previously testified took place in 1933.

6           A     Yes, sir.

7           Q     How many studies did Doctor Drinker do for

8     Monsanto?

9           A     Two.

10          Q     What was the time period for the first study?

11          A     It was in 19, I guess, 68.

12                     MR. FEATHERSTONE: 1968?

13                     THE WITNESS: I'm sorry -- 1938.

14          Q     (By Mr. John) And, generally, what did that

15     study involve?

16          A     He did two studies for Monsanto, either in 193

17     or 1937 or 1936, around that. One was 1265 --

18                     MR. FEATHERSTONE: Aroclor 1265?

19          A     (Continuing) -- which is chlorinated byphenyl.

20     He did that and made us a report on it.

21                     He did Aroclor 1254, an inhalation study. We

22     never got any details of that particular report; but in

23     his publication he gave a safe, a maximum, tolerable level

24     on 1254 at that particular time.

25                     Those are the ones he did for Monsanto.

1 Q (By Mr. John) Was it as a result of those  
2 two studies that an opinion or conclusion was reached that  
3 the lower chlorinated byphenyl was more toxic than the  
4 higher chlorinated byphenyl?

5 A Concluded by whom?

6 Q By Drinker.

7 A I can't answer that -- what Drinker -- how  
8 Drinker concluded. I don't know.

9 Q You were never advised of his conclusions in that  
10 regard?

11 MR. FEATHERSTONE: You have two different  
12 questions.

13 One is, What was the basis of Drinker's conclusion;  
14 and secondly, whether Doctor Kelly was advised of the  
15 conclusion.

16 Q (By Mr. John) I misspoke if that's what I said.

17 What I am asking is, Did Doctor Drinker's studies  
18 indicate that the lower chlorinated byphenyl was more  
19 toxic than the higher chlorinated byphenyl?

20 A I don't think it did.

21 Q Are you aware of any study that indicated that  
22 the higher chlorinated byphenyl, 1265, was more toxic  
23 than the lower -- I mean, was less toxic than the lower?

24 MR. FEATHERSTONE: Why don't you read back the  
25 question, ma'am.

1 (Whereupon, the court reporter read back  
2 the previous question.)

3 MR. FEATHERSTONE: I think Mr. John can restate  
4 it.

5 Q (By Mr. John) Let me go at it another way.

6 Doctor Kelly, as you sit here today, do you have  
7 an opinion as to whether a higher chlorinated byphenyl  
8 is more toxic or less toxic than a lower chlorinated byphenyl?

9 MR. FEATHERSTONE: In what circumstances,  
10 Mr. John?

11 MR. JOHN: In Pydraul.

12 MR. FEATHERSTONE: More toxic or less toxic to  
13 what and under what circumstances?

14 MR. JOHN: To humans.

15 MR. FEATHERSTONE: Can you answer that question?

16 THE WITNESS: Not based just on that.

17 Q (By Mr. John) What else do you need?

18 A You have to find out, you have to tell me what  
19 the exposure is. There are different exposure rates.  
20 There are different absorption rates. Higher chlorinated  
21 are more viscous, or are more solid, chlorinated PCBs than  
22 the lower ones.

23 If a person would get the same amount of 1268 or  
24 1242 into the body, I do not know what the difference in  
25 toxicity is.

1 Q My question was, Assuming the same concentrations  
2 of inhalation or ingestion or exposure of toxicity.  
3 I take it your answer is, then, you don't know?  
4 A I don't know.  
5 MR. FEATHERSTONE: He doesn't know, Mr. John,  
6 he told you based on what information you gave him.  
7 (Whereupon, Kelly Deposition Exhibit 2 marked  
8 for identification by the court reporter.)  
9 Q (By Mr. John) Doctor Kelly, would you look at  
10 Kelly Deposition Exhibit 2 and identify that for me?  
11 A Would I?  
12 Q Would you, please?  
13 A Yes, sir.  
14 This is a letter from me to Doctor Spolyar dated  
15 February 14, 1950.  
16 Q Please refer to the second, third paragraph of  
17 that letter.  
18 A Second paragraph?  
19 Q Third paragraph.  
20 A Yes, sir.  
21 Q Do you recall that there was some confusion  
22 concerning the toxicity on inhalation of Aroclor 1254 and  
23 Aroclor 1268?  
24 A Yes, sir.  
25 Q What was that confusion, in your own mind?

1 A We never knew what Drinker tested.

2 Q Do you know, today, what he tested?

3 A We still do not know what he tested.

4 Q Do you know or do you have an opinion today as  
5 to whether or not, as indicated in your letter, in  
6 Kelly Deposition Exhibit 2, whether Aroclor 1254 is more  
7 or less toxic than Aroclor 1268?

8 MR. FLAMMERSTONE: In an inhalation test,  
9 Mr. John?

10 MR. JOHN: Yes, on inhalation.

11 A I do not have an opinion based -- if the same  
12 concentration were inhalaed?

13 Q (By Mr. John) Yes, I am assuming the same concen-  
14 tration.

15 A I do not have an opinion based on the same  
16 concentration being innaled, no, sir.

17 Q Did Monsanto ever do any studies to resolve the  
18 confusion which is indicated in your letter of February 14,  
19 1950?

20 A Yes, sir.

21 Q What studies were done?

22 A We ran some inhalation studies at the Kettering  
23 Laboratory some time in the 1950s on two Aroclors, as I  
24 can recall. I am not familiar with which ones we ran, and  
25 I can't tell you the exact findings, but I am sure the reports

1 are in the literature.

2 Q Do you recall whether the higher chlorinated  
3 Aroclors were more, less toxic on inhalation?

4 A I don't recall the details.

5 Q Going to the second paragraph of Kelly Deposition  
6 Exhibit 2, the second to the last sentence -- that  
7 paragraph which was dealing with the Brazil, Indiana  
8 incident -- says: "I suspected the possibility that the  
9 Aroclor fumes might have caused liver damage, but was  
10 unable to obtain this information over the phone."

11 A Yes, sir.

12 Q Did you ever attempt to determine whether your  
13 suspicions were correct about whether the Aroclor caused  
14 liver damage?

15 A Yes, sir.

16 Q What?

17 A It was reported that the men showed up with  
18 jaundice which is a symptom of adverse effects on the liver.

19 Q Is that where you concluded that you suspected  
20 a liver problem due to the report that they had jaundice?

21 A No, sir. We knew that -- no, sir.

22 Q What was your suspicion founded on?

23 A All the work prior to that that was done with  
24 PCBs with Aroclors showed that the liver was the toxic,  
25 was the target organ.

1 Q So, that was your suspicion?

2 A Yes.

3 MR. FEATHERSTONE: Are you done with Exhibit 2,  
4 Mr. John?

5 MR. JOHN: Yes.

6 (Whereupon, Kelly Deposition Exhibit 3 marked  
7 for identification by the court reporter.)

8 Q (By Mr. John) Mr. Kelly, would you identify  
9 Kelly Deposition Exhibit 3, please.

10 A Yes, sir. It is a letter from me to Mr. Litzsinger  
11 discussing toxicity data on OS-95.

12 Q On the first page, the last sentence, it says:  
13 "It is, of course, based on our long-term studies with  
14 the basic chemical makeup of OS-95."

15 A Yes, sir.

16 Q What long-term studies are you referring to in  
17 that memo?

18 A The repeated inhalation studies with the Aroclors  
19 at the Kettering Laboratory.

20 Q And those were the only studies you were referring  
21 to in that memo?

22 A Yes, sir.

23 MR. FEATHERSTONE: You mean the long-term studies?

24 MR. JOHN: Right.

25 Q (By Mr. John) Dr. Kelly, yesterday I believe you

1 testified that your first knowledge that Pydraul was in  
2 the ecosystem was in 1969.

3 A No, sir.

4 Q When was your first knowledge of Pydraul being  
5 in the ecosystem?

6 A I don't ever remember that Pydraul was told  
7 to me to be in the ecosystem.

8 Q When was your first knowledge that Pydraul was  
9 in the environment?

10 A I think during this discussion, Pydraul per se.

11 MR. FEATHERSTONE: I think, Mr. John, if you recall  
12 the testimony yesterday, there was a confusion between  
13 the witness and Mr. Hynes as to whether the reference was  
14 to PCB or Pydraul.

15 Q (By Mr. John) Let's take PCB.

16 A All right.

17 Q When was your first knowledge that PCBs were  
18 in the ecosystem?

19 MR. FEATHERSTONE: Firm knowledge or a report  
20 that they might be there?

21 MR. JOHN: A report.

22 A What do you mean by the "ecosystem"?

23 Q (By Mr. John) In the water, in the land.

24 A At the time of Jensen's work -- it was what --  
25 1967 or 1968.

1 Q You knew at that time, prior to 1967-1968 that  
2 PCBs were nonbiodegradable; is that correct?

3 A No, sir, I didn't know that.

4 Q You did not know that?

5 A No, sir.

6 Q When did you first learn that PCBs were  
7 nonbiodegradable?

8 MR. FEATHERSTONE: Wait a minute. That's not  
9 even a scientific fact.

10 Are you referring to certain PCBs that may be  
11 more slowly degraded than others?

12 MR. JOHN: Yes, that were extremely slowly  
13 biodegradable.

14 MR. FEATHERSTONE: When did he learn that some  
15 PCBs were slowly biodegradable?

16 A Some time in late 1969 or the 1970s.

17 Q (By Mr. John) Did you have any idea as to how  
18 long it took PCBs to biodegrade prior to that period of  
19 time?

20 A Prior to 1969 or 1970, I had no idea how long it  
21 took them.

22 Q Had any studies been undertaken by Monsanto to  
23 determine how long they would take to biodegrade?

24 A I can not recall.

25 MR. FEATHERSTONE: Wait until he is done with

1 his question.

2 Q (By Mr. John) Prior to 1967, what did you think  
3 happened to PCBs after they were used for the industrial  
4 purposes for which they were used?

5 A After they were -- say that over -- PCBs?

6 Q Yes, PCBs.

7 MR. FEATHERSTONE: He wants to know how you  
8 thought they were disposed of.

9 A I don't know. Maybe they stayed with the product  
10 for all I know. It depends on what PCB was being used for.  
11 If PCB was being used in an adhesive, it was probably on  
12 a package; and then the package may have been burned if  
13 the package may have been discarded.

14 If PCBs were in use as an industrial chemical  
15 in other ways and was found -- and they decided they  
16 weren't going to be used any more or it was contaminated,  
17 it was disposed -- it was my knowledge or my opinion that  
18 they were disposed according to industrial practices in  
19 those days which I believe was a landfill.

20 Q Were you aware that some industrial practices  
21 in those days was to allow some of these products to go  
22 into waterways as a means of disposal?

23 MR. FEATHERSTONE: PCB products?

24 MR. JOHN: Yes, PCB products.

25 A No, sir.

1 Q (By Mr. John) You only thought they went into  
2 landfills; is that correct?

3 A Yes, sir.

4 Q Did they pose any health hazards in landfills,  
5 to your knowledge?

6 A No, sir.

7 Q Did you have any idea, prior to 1967, how long  
8 these products would stay in a landfill?

9 A No, sir. This was an unreactive soluble compound,  
10 unreactive chemically, unreactive soluble compound; and  
11 I thought it stayed in the landfill until it might be  
12 broken down like other compounds in the landfill by soil  
13 and bacteria.

14 Q That is what I am trying to get at.

15 Your first knowledge that PCBs were in the  
16 environment in 1967 or 1968, based on Jensen's study --

17 MR. FEATHERSTONE. Or Jensen's report in the  
18 newspaper.

19 Q (Continuing) -- in the newspaper, I take it,  
20 was a surprise to you?

21 A Yes, sir.

22 Q Was it a surprise because you thought that PCBs  
23 would biodegrade or return to their basic molecular  
24 structure and that's why you didn't expect them to be in  
25 the environment, or was it you were surprised because you

1 assumed whatever PCBs were out there were in landfills?

2 MR. FEATHERSTONE: And I take it you don't mean

3 to exclude one or the other or both?

4 MR. JOHN: No.

5 A Read that again.

6 (Whereupon, the court reporter read back the

7 following question:

8 QUESTION: "Was it a surprise because you thought

9 that PCBs would biodegrade or return to their basic molecular

10 structure and that's why you didn't expect them to be in

11 the environment, or was it you were surprised because you

12 assumed whatever PCBs were out there were in landfills?")

13 A I was surprised because when I thought it was

14 in the landfill I thought it stayed there and that the

15 soil and bacteria would have the opportunity to break that

16 down which is the purpose of landfills.

17 (Whereupon, Kelly Deposition Exhibits 4 and 5

18 marked for identification by the court reporter.)

19 Q (By Mr. John) Doctor Kelly, let me show you

20 Kelly Deposition Exhibits 4 and 5.

21 Please identify Four for me, first.

22 A Yes, sir.

23 MR. FEATHERSTONE: You better look through it a

24 little bit.

25 Q (By Mr. John) Would you please identify them?

1 A Kelly Deposition Number 4 is a report dated  
2 1937. The report is not signed, and it doesn't say whose  
3 it was, but I presume it was Doctor Drinker's.

4 Q Is Doctor Drinker still alive today?

5 A No.

6 Q Do you know when he died?

7 A Twenty years ago.

8 Q When we were previously discussing Drinker's  
9 study you said you did not know what products he used in  
10 his study.

11 Now, do you recall that testimony?

12 A Yes, sir.

13 Q You can not tell from Exhibit 4 what product  
14 was used in his study?

15 A If this is a report on 4465, 4465 is not a  
16 chlorinated byphenyl. That is a chlorinated terphenyl and  
17 a mixture of stuff which is at the bottom of the pots after  
18 distilling the diphenyl off.

19 4465 was not given to Drinker by us, so I don't  
20 know, really, if this is truly 4465 especially since he was  
21 mixed up on 1268. I am not sure that the product he got  
22 from this customer was really 4465.

23 At any rate, 4465 is not a polychlorinated  
24 byphenyl.

25 Q You don't know that he did not receive 4465?

1 A No, I don't know.

2 Q Take a look at Exhibit 5.

3 Can you identify that, please?

4 A That is a report from Drinker dated September 15,  
5 1938 to Monsanto indicating chlorcosane, diphenyl phthalate,  
6 chlorinated diphenyl 1268, and chlorinated diphenyl and  
7 chlorinated diphenyl benzene.

8 Q Does he identify an Aroclor in there that he tested?

9 A Yes, sir.

10 Q What is it?

11 A He identified two Aroclors -- a chlorinated  
12 dipehnyl 1268 and Aroclor 5460.

13 Q Again, you did not provide him with those samples?

14 A May I look through this and see which one it was?

15 Q Sure.

16 A 1268 was provided by Monsanto Company.

17 MR. FEATHERSTONE: According to the report?

18 A (Continuing) According to the report, and  
19 Aroclor 5460 was also provided for by Monsanto Company.

20 Q (By Mr. John) So, would your answer with respect  
21 his test concerning those two Aroclors be that as far as  
22 you know he did use those two Aroclors in his test?

23 A Yes, sir.

24 MR. FEATHERSTONE: Is their Aroclor 5460 a  
25 diphenyl?

1 THE WITNESS: No. It is a mixture of 4465 plus  
2 chlorinated diphenyl benzene -- in other words, we have  
3 4465 which is a gamosh (phonetic) of chlorinated stuff  
4 some of which is diphenyl.

5 MR. FEATHERSTONE: But, Doctor, 5460 is not a  
6 polychlorinated diphenyl?

7 THE WITNESS: Correct.

8 Q (By Mr. John) Do you know if you received any  
9 other materials from Doctor Drinker other than that  
10 Exhibit 4 and Exhibit 5?

11 A No, sir, I do not.

12 (Whereupon, Kelly Deposition Exhibits 6 and 7  
13 marked for identification by the court reporter.)

14 Q (By Mr. John) Doctor Kelly, looking at Exhibits 6  
15 and 7, I believe yesterday you testified that you reviewed  
16 some toxicological data from Swann Chemical Company that  
17 had been done on OS-95 before you arrived.

18 A No, sir.

19 Q Do you recall that testimony?

20 A No, sir. I think I said I reviewed either reports of--  
21 no, sir.

22 Q What did you say?

23 A I thought I said I either read memoranda or  
24 reports abot toxicological data.

25 Q Taking a look --

1 MR. FEATHERSTONE: Also, Mr. John, for your  
2 information, OS-95 was not a compound or mixture until  
3 the 1960s. Your question was some toxicological data  
4 from the Swann Chemical Company.

5 Q (By Mr. John) Is the toxicological data that  
6 you are reviewing now the material that you reviewed from  
7 Swann Chemical Company?

8 A I haven't the slightest idea if this is it or  
9 not. I don't know.

10 Let me look it over.

11 Q Would you take a look?

12 All I am trying to find out is if you can recall  
13 if the information in Six and Seven was the only information  
14 you had available when you first started at Monsanto.

15 A I don't see any toxicological data on Exhibit 7.

16 Q What is Exhibit 7?

17 A It's a description of the properties of diphenyl  
18 which is not chlorinated at all.

19 Q That's what the heading says, Doctor?

20 A Yes, "Swann Diphenyl, Technical".

21 Q And the date is January 1, 1935?

22 A Yes, sir.

23 Q Do you know if you reviewed the information  
24 in Exhibit 7 at any time?

25 A That's what we are talking about, Seven?

1 Q Yes, sir.

2 A No, I don't recall reviewing it at all. No, sir,  
3 I don't.

4 Q How about Kelly Deposition Exhibit 6?

5 MR. FEATHERSTONE: Better look through it,  
6 Doctor.

7 A Yes, sir, what is the question?

8 Q (By Mr. John) Do you recognize that?

9 A As what?

10 Q As anything.

11 A I recognize part of the exhibit.

12 Q What do you recognize?

13 A I recognize the safe handling data referring  
14 to Aroclors.

15 Q Were you the author of that text?

16 A I can't say if I was the author. I don't know.

17 Q What do you recall about that material, the  
18 handling of Aroclors?

19 A I recall that this seemed to be adequate safe  
20 handling data for Aroclors in 1937.

21 Q For identification purposes, that's on Page 0000029.

22 On Page 30 of Exhibit 6, there is a memo from  
23 an L.A. Watt dated October 11, 1937.

24 Do you know who L.A. Watt was?

25 A He is a man who was in charge of what was called

1 the Technical Service Department of the old Organic Division.

2 Q Of Swann or of Monsanto?

3 A Of Monsanto.

4 Q Was he responsible at the time for the development  
5 of the precautions and warnings on the products at  
6 Monsanto --

7 A Yes, sir. In 1937, yes, sir.

8 Q -- for compounds relating to the Organic Division?

9 Did Monsanto ever have an in-house laboratory  
10 for testing products, evaluating products?

11 A For what purposes?

12 Q Toxicology.

13 A Yes, sir.

14 Q When?

15 A 1977, around that, 1977-1978.

16 Q Was that after you left Monsanto?

17 A Yes.

18 Q But there was never any in-house toxicological  
19 lab while you were there?

20 A No, sir.

21 Q It was all done by outside consultants?

22 A All done by outside consultants.

23 Q Doctor Kelly, yesterday I believe you said you  
24 did the first subacute evaluations in the sixties of PCBs;  
25 is that correct timing?

1 A No, sir.

2 Q What was the timing on the first subacute testing?

3 A We did repeated inhalation studies of PCBs,  
4 which I think might be termed subacute, I thought, in  
5 the fifties.

6 Q Why were those done in the fifties?

7 A As best I can recall, we must have had information  
8 come to us that people might be exposed to repeated small  
9 amounts of this material by vapor inhalation.

10 Q Do you recall under what circumstances you learned  
11 that people might be exposed?

12 A No, I don't.

13 Q Do you remember the industrial use?

14 A It might have been when it was started to be  
15 a plasticizer, and incorporating PCB in plasticizers involves  
16 an open use.

17 Q That's your best recollection?

18 A That's my best recollection.

19 Q Do you recall, after those subacute tests in  
20 the fifties, the reason subacute tests were done on PCBs?

21 A Yes, sir.

22 Q What are those reasons?

23 A In 1968, we found out that PCBs were present in --  
24 could be present in -- human food; and we ran -- did you  
25 say subacute or chronic?

1 Q Subacute.

2 A The only other subacute tests we might have done --  
3 no, I don't recall any others.

4 Q Our records indicate that the Younger Labs on  
5 October 20, 1958 did a toxicity test on OS-95 by skin  
6 absorption in rabbits.

7 Do you recall that test?

8 A No, sir.

9 Q Do you recall why it was done in 1958, an absorption  
10 test?

11 A It must have been done because we had a formulation  
12 that we hadn't tested and we wanted to see what the acute  
13 effect was if people had prolonged contact with the  
14 material.

15 (Whereupon, Kelly Deposition Exhibit 8 marked  
16 for identification by the court reporter.)

17 Q (By Mr. John) Doctor Kelly, take a look at  
18 Kelly Deposition Exhibit 8.

19 A Yes, sir.

20 Q Is that a report of Younger Laboratories in 1960  
21 on Pydraul F-9?

22 A Yes, sir.

23 Q Do you know why F-9 was retested for toxicity in  
24 1966?

25 A I can't recall a reason.

1 Q Do you know where I would look or inquire to  
2 determine the reason?

3 A I wouldn't have the slightest idea.

4 Q Under what circumstances would F-9 be evaluated?

5 A It may have been reformulated, or it may have  
6 been that additives were added to it.

7 Q If additives were added to F-9, wouldn't it  
8 be redesignated at a different number?

9 A No.

10 Q Would it stay the same?

11 A That's right.

12 Q Were additives added to F-9 when you were  
13 there, to your knowledge?

14 A I can't answer that. I know additives were  
15 added to various compounds for various reasons -- corrosion,  
16 inhibition, to lower viscosity, for any number of reasons.

17 Q Would you retest or reevaluate those products  
18 whenever an additive was added?

19 A Yes, sir.

20 Q Without exception?

21 A Yes, sir.

22 Q And when was that policy in effect at Monsanto?

23 A Ever since we started the policy of testing  
24 products that went out in a routine manner, that went out  
25 to the customers or developmental samples, which was some time

1 in the forties.

2 Q Is it possible, by determining from prior testing  
3 in the chemical composition of a product what the increase --  
4 what effect, what toxicity effect an additive would have  
5 without doing testing?

6 A No, sir.

7 Q Testing is the only means to determine the  
8 toxicity of a product?

9 A No, sir.

10 Say that over.

11 Q What I am getting at is, Can you take a look at  
12 a formulation of a product and determine that the toxicity  
13 would not change based upon adding whatever might be  
14 added to it.

15 A Yes, you can.

16 Q So, in those circumstances, there would probably  
17 be no need to retest the product if you can tell by the  
18 formulation the toxicity would not be affected?

19 A By the complete formulation. If you added water  
20 to the product or something, you would not retest it.

21 Q Or if you added some inert compound that you know  
22 had no toxicity value, you could determine without retesting  
23 that that would probably not affect the toxicity of the existing  
24 product?

25 A Yes, sir, but not on that, Mr. John.

1 If someone would inquire to us about what is  
2 the toxicity of Pydraul F-9, we felt scientifically and  
3 morally obligated that the data we gave him was the current  
4 Pydraul F-9 and not a Pydraul F-9 we tested five years ago.

5 Q You would retest that?

6 A Yes.

7 Q Are you talking about a customer's inquiry?

8 A Yes. We got customer inquiries all the time.

9 Q Did you update your toxicological data based  
10 on customer inquiries?

11 A Not only on customer inquiries. We would update  
12 our toxicological information if we had an idea that the  
13 product was maybe altered in any way; but even if we thought  
14 the material would not be altered we would test it so  
15 that we could give our data on our currently manufactured  
16 material.

17 MR. FEATHERSTONE: By reference, you are referring  
18 to the alteration of the composition.

19 THE WITNESS: Yes.

20 MR. FEATHERSTONE: And it is in reference to the  
21 addition of an additive?

22 THE WITNESS: Yes, sir.

23 Q (By Mr. John) Doctor Kelly, when you were updating,  
24 would you run a whole new screen of tests with an independent  
25 lab?

1 A We would run that type of battery of tests.  
2 That was not a very expensive test.

3 Q The acute test you indicated in Kelly Deposition  
4 Exhibit 8?

5 A Yes, sir, we would run that type of test.  
6 (Whereupon, Kelly Deposition Exhibit 9 marked  
7 for identification by the court reporter.)

8 Q (By Mr. John) Doctor Kelly, would you please  
9 identify Kelly Deposition Exhibit 9?

10 A Yes, sir. This is a "Data Sheet for Toxicological  
11 and Safe Handling Information" supplied by Monsanto Company  
12 on Pydraul A-200.

13 Q Is that a Monsanto Company form?

14 A No, I think this was -- no.

15 Q Do you know whose form it is?

16 A I think it was something taken from one of  
17 the government agencies in -- oh, yes -- the Industrial  
18 Hygiene Section, Division of Safety, Department of Labor  
19 and Industries, General Administration Building, Olympia,  
20 Washington.

21 MR. FEATHERSTONE: That's what it says on  
22 Page 3 of the document?

23 THE WITNESS: Yes. And that's I think, the one  
24 that put that out.

25 Q (By Mr. John) How did Monsanto use that form?

1 A Mostly for freight classification and in answer  
2 to inquiries from customers.

3 Q If you had an inquiry from a customer, for  
4 instance, you would send them that form filled in concerning  
5 the toxicology of the product?

6 A Their inquiries on this form had to do with  
7 freight classifications that were put in around that date.

8 If you notice, it refers to fire, flash point,  
9 how to put out a fire and everything else.

10 MR. FEATHERSTONE: Mr. John's question was,  
11 Would you send that form to customers?

12 A I would send that form to customers who ask for  
13 it.

14 Q (By Mr. John) Would you send it to them other  
15 than in freight classification circumstances?

16 A I would send it to them whenever they asked for  
17 it.

18 Q How would they ask for it -- say will you provide  
19 me with the toxicological information, or will you provide  
20 me with this form?

21 A Yes on the first, sometimes no on the first;  
22 sometimes no on the second.

23 Q You may explain your answer.

24 MR. FEATHERSTONE: Well, he has answered the  
25 question.

1 Do you have a particular question in mind,  
2 Mr. John?

3 Why don't you explain? I will humor Mr. John.

4 A At the time this form was developed the government  
5 made everybody -- some part of the government made everybody  
6 have in their files this type of information on almost  
7 every product that came into their plant or was shipped  
8 out through the plant. So, they would ask for this just to  
9 stick it in the file, and there it was. They really  
10 wouldn't do an awful lot with it, but they had the  
11 information.

12 So, if people called us and asked would you send  
13 me industrial safety section form so-and-so, we would send  
14 them this. We might send them this on 45 compounds.

15 If they wrote me and said tell me about the  
16 toxicological data of Product X, I would write them a letter  
17 if we did not have a particular form of our own made up  
18 for that purpose.

19 Q This was not the form, though, made up by  
20 Monsanto for the toxicological data on a particular product?

21 MR. FEATHERSTONE: You mean the blank form itself?

22 MR. JOHN: Right.

23 Q (By Mr. John) Let me put it this way: You  
24 would have a separate form if a customer asked for toxicological  
25 data on a particular product?

1 A No, sir.

2 Q You would use this for both purposes?

3 A No, sir.

4 Q Would you explain?

5 A Yes. We had safe handling data sheets. We  
6 had sheets that described toxicology.

7 MR. FEATHERSTONE: You mean toxicological data?

8 A (Continuing) Toxicological properties on some  
9 products.

10 If this sufficed, we would send them that. If  
11 it didn't suffice, we would write an individual letter.

12 Q When the requests were made for the data or  
13 the requests were made for the document which has been  
14 identified as Kelly Deposition 9, would you perform  
15 additional toxicological tests on the product?

16 MR. FEATHERSTONE: May I hear that back, ma'am?

17 Q (Continuing) To update your information before  
18 you sent out the information on the form which is Kelly  
19 Deposition Exhibit 9?

20 MR. FEATHERSTONE: Still, I would like to hear  
21 the question back.

22 (Whereupon, the court reporter read back  
23 the previous question.)

24 MR. FEATHERSTONE: Are you assuming there has  
25 been a change in the product from the time --

1 MR. JOHN: No change.

2 A No, sir, we would not.

3 Q Doctor Kelly, yesterday you were talking about

4 the period after the Jensen purported findings reported

5 in the newspaper.

6 A Yes, sir.

7 MR. FEATHERSTONE: Excellent.

8 Q (By Mr. John) You indicated that subsequent to

9 that period of time your people developed an analytical

10 technique to pick up PCBs in tissue.

11 A Yes, sir.

12 Q What people were you talking about?

13 A The analytical group of whatever the industrial

14 chemical division was called at that time -- whether that

15 was the Organic Chemical Division or Industrial Chemical

16 Division -- the analytical group of the section of

17 Monsanto that manufactured --

18 Q Was that done in-house by Monsanto research people?

19 A I can't answer that. That was an analytical

20 problem. I don't know.

21 Q You were not involved in that yourself?

22 A No, sir.

23 (Whereupon, Kelly Deposition Exhibit 10

24 marked for identification by the court reporter.)

25 THE WITNESS: Yes, sir.

1 Q (By Mr. John) Do you recognize that document?

2 A I do now, yes, sir.

3 Q Will you please identify it?

4 A Yes. It is a letter to me from a Gene Wilde in  
5 the General Office at Monsanto with the topic "Evil  
6 Publicity on Chlorinated Biphenyls".

7 Q Who was Gene Wilde?

8 A I think he was a sales correspondent in the  
9 overseas division.

10 Q What I am interested in, on Page 2 of that  
11 document, there are lists of things, I believe, that  
12 were proposed that you were going to do concerning  
13 the purported discovery of PCBs in the environment.

14 A Yes, sir.

15 Q Did you do what is listed there on Page 2, the  
16 five items?

17 MR. FEATHERSTONE: He is asking for your  
18 recollection.

19 A I know I never did Number 5.

20 Q (By Mr. John) Number 5 is "Arrange for contact  
21 with Bayer and Prodelac."

22 A I never did Number 4, "Talk to the NCR people".

23 Q Did you do any of them?

24 A I feel quite sure I did One, Two, and Three.

25 Q So, you were involved in the preparation of a

1 statement or letter for use by Marketing with customers  
2 who inquired about the publicity?

3 A Yes.

4 Q Doctor Kelly, do you know what a nanogram is?

5 A Yes. It's either one billionth or a trillionth  
6 of a part. It's a very small amount.

7 Q Doctor Kelly, during the period that you worked  
8 for Monsanto, did you have any contact with Johnson Motors  
9 in Waukegan, Illinois?

10 A No, sir, not that I can recall.

11 Q Did anyone at Monsanto report to you of contacts  
12 with people at Johnson Motors in Waukegan?

13 A No, sir, not that I can recall.

14 Q As you sit here today, do you have any information  
15 concerning purported health concerns at Johnson Motors in  
16 Waukegan due to discharge of PCBs?

17 A No, sir.

18 Q Prior to the time that you left Monsanto in  
19 1975, I take it you had no information, no involvement  
20 and no discussions concerning anything about the use of  
21 PCBs by Johnson Motors in Waukegan?

22 A That's correct.

23 Q As far as you know, you knew nothing about Johnson  
24 Motors in Waukegan, Illinois in relation to PCBs?

25 A Except what I have heard in the last few days.

1 Q I am discounting any discussion you may have  
2 had with Mr. Featherstone as to what this is all about,  
3 but I am trying to find out if you had any contact whatsoever  
4 with Johnson Motors.

5 A Not that I can recall, Mr. John.

6 Q Did you evaluate 50-E Pydraul fluid before it  
7 was marketed? Do you know?

8 A I don't know.

9 Q You were aware that there was a substitution  
10 for PCB hydraulic fluid made by Monsanto in the seventies?

11 A I know that there was talk of a substitution.  
12 I don't know whether it actually went into, passed the  
13 development stage.

14 Q Were you ever in any discussions or conversations  
15 concerning whether it was advisable to cease using PCBs  
16 in hydraulic fluid?

17 A I do not believe any discussion I had was limited  
18 to hydraulic fluids.

19 Q It was more general to no longer using --

20 A Limit the use of PCBs in open systems.

21 Q I am trying to shortcut this.

22 Were you aware that PCB, hydraulic fluid Pydraul,  
23 was discontinued and that PCT, terphenyls, were used in  
24 lieu of the dyphenyls?

25 A No, sir, I can not recall that.

1 Q And also, you were not aware that subsequently  
2 phosphate esters were used in lieu of PCTs?

3 A I can't recall that now.

4 Q So, you just don't recall studying the toxicity  
5 or the potential toxicity of those alternate products; is  
6 that a fair statement, Doctor Kelly?

7 A Well, we might have, but I can't recall it.

8 Q That's what I mean -- as you sit here, I could  
9 ask questions until I'm blue in the face, and you don't  
10 recall if you tested or what you might have found?

11 A Yes, true.

12 Q Did you ever do any toxicological testing on  
13 PCTs while you were medical director at Monsanto in any  
14 product?

15 MR. FEATHERSTONE: We have just seen some today.

16 A Yes, Aroclor 4465 was a mixture of PCTs and  
17 PCBs.

18 Q (By Mr. John) I am not talking about a mixture,  
19 now. I am talking about PCT alone without any PCBs in it.

20 A I can't recall that, Mr. John.

21 Q Would you expect there to be a toxicological  
22 difference between PCTs and PCBs?

23 A There might and there might not.

24 Q Does that mean you can't tell from a chemical  
25 formulation the potential difference in toxicity?

1 A No, sir.

2 Q You would have to test?

3 A We would have to test.

4 Q And you are not aware of any toxicological tests  
5 that were performed?

6 MR. FEATHERSTONE: He said he doesn't recall.

7 A I don't recall.

8 MR. FEATHERSTONE: There is a difference.

9 Q (By Mr. John) You said there was a report that  
10 you saw today that was a combination of PCBs and PCTs.

11 A Aroclor 4465 had PCTs in this mixture.

12 MR. FEATHERSTONE: Did it have PCBs -- his question  
13 was a combination of PCBs.

14 A It was a mixture of chlorinated biphenyls and  
15 terphenyls.

16 Q (By Mr. John) That was a product that was  
17 supposed to be tested by Doctor Drinker back in 1935; is  
18 that correct?

19 A Yes, sir.

20 Q Since the time you were at Monsanto, did you  
21 know of any product that was tested for toxicity that  
22 contained a combination of PCBs and PCTs?

23 A Repeat that, please; read back the question.

24 (Whereupon, the court reporter read back the  
25 previous question.)

1           A     Yes.

2           Q     (By Mr. John) What?

3           A     Aroclor 4465.

4           Q     Besides Aroclor 4465?

5           A     Not that I can recall, no, sir.

6           Q     Is it fair to say that you were not involved in

7     the discussions concerning products, alternate products,

8     for PCBs?

9           A     No, sir.

10          Q     You were involved in discussing alternate

11     products?

12          A     I am sure that -- yes.

13          Q     Did you recommend any alternates to PCBs?

14          A     No, sir.

15          Q     What was your role in the discussions concerning

16     alternates to PCBs?

17          A     They would ask me the toxicological characteristics

18     of these alternate products.

19          Q     You would be provided with a potential alternate

20     product and you would be asked to advise of the toxicological

21     properties of that product?

22          A     Yes, sir.

23          Q     That was your sole contact with the discussion

24     concerning alternate products?

25          A     No, sir.

1 Q What else were you involved in?

2 A Safe handling data along with it, precautionary  
3 statements that should be used.

4 Q And that came from the toxicological data?

5 A That's correct.

6 Q Any other involvement besides those two aspects  
7 of a substitute product?

8 A Which year? Are we talking about alternate  
9 products?

10 Q Yes, alternate products after the PCD problem  
11 arose.

12 A Yes, sir, I would have had other thoughts.

13 Q Who would you provide those thoughts to?

14 A To whoever the meeting was.

15 Q That's the analytical group?

16 A And the research group who were talking about  
17 these new products.

18 Q Do you recall any of your thoughts as to --

19 A Yes.

20 Q What were they?

21 A Are we sure this isn't going into the food chain  
22 like the PCBs did?

23 Q Why was that your concern?

24 A Because the reports that PCBs might be in the  
25 food chain constituted a potential for adverse human effects;

1 and if we were going to get out of PCBs into another  
 2 product that could also be in the food chain I thought,  
 3 also, we would have adverse effects from this particular --  
 4 a possibility of adverse effects from this new product.

5 Q So, were you suggesting that a product be found  
 6 that had a lower toxicity than PCBs on the assumption it  
 7 might also find its way into the food chain?

8 A No, sir.

9 Q What were you suggesting?

10 A That we find a product that would not find its  
 11 way into the food chain.

12 Q How would you do that? By finding one that would  
 13 biodegrade, for instance, immediately?

14 A Yes, sir.

15 Q Was there any other method that you were thinking  
 16 about?

17 A Easily destroyed by implant methods.

18 Q Was there anything else?

19 A I can't think of anything else at the moment.

20 Q Do you know what happened to the inventory of  
 21 your Pydraul products that contained PCBs when it was decided  
 22 to no longer market them?

23 A No, sir.

24 Q Were you involved in any determination as to how  
 25 to dispose of them?

1 A If you say -- yes, sir.

2 Q What?

3 A It depends on what you mean by "involvement".

4 I knew they had built an incinerator, and I  
5 knew they were incinerating some Pydraul products.

6 Q Were you involved in any studies or did you  
7 review any studies about, for instance, what temperatures  
8 they would have to be incinerated at not to have problems  
9 with the vapors?

10 A No, sir.

11 Q Do you know who did that?

12 A I would imagine the research people.

13 Q Why wouldn't you have been involved in that if  
14 you are incinerating a product?

15 A Because I recognized that the people who were  
16 building the incinerator had followed the specifications  
17 of the research people who knew they had to break down  
18 the product and destroy it. I knew they were smart enough  
19 to do it.

20 I was not involved in it because that was not my  
21 responsibility. They said they would destroy this stuff,  
22 and I -- I wouldn't check these experts, no, sir.

23 Q They said they would destroy them without any  
24 adverse effects to the environment?

25 A That's correct.

1 Q And you took their word for it?

2 A Yes, sir.

3 Q Doctor Kelly, at some point in time, did you  
4 learn that a Monsanto plant in Pensacola, Florida was having  
5 difficulties due to discharge of PCBs?

6 A What type of difficulties?

7 Q That PCBs were being found in fish.

8 A I don't recall if they were found in fish.

9 Q Let me make it more general.

10 Are you aware in the late 1960s or the early  
11 1970s that any Monsanto plant was discharging PCBs into  
12 the environment?

13 MR. FEATHERSTONE: How is that relevant, Mr. John?

14 MR. JOHN: To find his knowledge of what to do  
15 about it from a health standpoint and what to advise  
16 customers to do in similar situations.

17 MR. FEATHERSTONE: From a health standpoint?

18 MR. JOHN: Sure.

19 THE WITNESS: Would you repeat the question,  
20 Mr. John, please?

21 Q (By Mr. John) Did you become aware in the late  
22 sixties or early seventies that any Monsanto plant was  
23 discharging PCBs into the environment?

24 MR. FEATHERSTONE: With health ramifications.

25 A He didn't say -- he said was I ever aware -- is

1 that your question -- was I ever aware that any Monsanto  
2 plant --

3 Q (By Mr. John) Right.

4 A -- has discharged some PCBs into where?

5 Q The environment.

6 A Yes.

7 Q When did you become aware?

8 A I can't recall the exact date of that. It  
9 was in the time frame between 1965 and 1975. I am not  
10 sure.

11 Q What did you learn?

12 A That a plant in or near Pensacola had either  
13 been cited or had said or had been found that some PCBs  
14 had escaped from their plant.

15 Q Were you asked to become involved in the evaluation  
16 by Monsanto?

17 A No, sir.

18 Q Were you involved in that situation by Monsanto?

19 A No, sir.

20 Q So, your knowledge is just from what you have  
21 been told; is that correct?

22 A Yes, sir. There were no health aspects involved,  
23 so I didn't get involved.

24 Q You were not asked to give an evaluation as to  
25 whether or not there were health aspects involved?

1           A     As best I can recollect, they said to me is  
2     there any particular health hazard involved; and after  
3     looking over what fragmentary data they had, it did not  
4     appear to me -- I can not recall -- I feel quite sure that  
5     it was brought to my attention to see whether there was  
6     a health hazard involved; and from the data that was  
7     given to me, which I can not recall at the present time,  
8     I said I see no health hazard.

9           Q     Were you ever asked to make that determination  
10    in any other -- with respect to any other Monsanto plant?

11          A     No, sir.

12          Q     Were you ever asked to make that determination  
13    with regard to any other customer's plant?

14          A     No.

15          Q     So, your only involvement with the escape of  
16    PCBs into the environment from an industrial plant was  
17    the Monsanto Pensacola plant?

18               MR. FEATHERSTONE: Can I hear that back, please?

19               (Whereupon, the court reporter read back the  
20               previous question.)

21               MR. FEATHERSTONE: Are you talking about health  
22    aspects?

23               MR. JOHN: Yes, health concerns.

24          A     Yes, sir.

25               Say that over. I don't know if that's yes or no

1 what I am supposed to answer.

2 Q (By Mr. John) Was your only involvement with  
3 health concerns with respect to the escape of PCBs from  
4 an industrial plant your experience with regard to the  
5 Pensacola plant of Monsanto that you have just testified  
6 to?

7 A Yes, sir.

8 Q Were you in any meeting or discussion or heard  
9 any conversation about what to do with existing fluids  
10 containing PCB in industrial plants when it was determined  
11 to stop marketing PCBs?

12 A Yes, sir.

13 Q What?

14 A They would tell me we are going to take back  
15 fluid from transformer plants, how should we protect  
16 workers who are taking this out and bringing it back to us  
17 for incineration.

18 Q What would you do?

19 A Followed the safe handling procedures that we  
20 had our customers do, the same thing.

21 Q Were you ever asked the same question concerning  
22 hydraulic fluids?

23 A No, sir.

24 Q So, it was only in the transformer situation?

25 A Yes, sir.

1 Q Doctor Kelly, did you ever review the Bio-Test  
2 results of their evaluation of PCB in water or fish tissues?

3 A Yes, sir.

4 Q When did you do that?

5 A If you have a copy of that evaluation, I could  
6 tell you.

7 Q Was it shortly after it was made?

8 A I don't know. I don't know the date of it. I  
9 reviewed it some time, but I think I reviewed it some time  
10 after I left Monsanto.

11 MR. FEATHERSTONE: I think he is talking about  
12 the Industrial Bio-Test studies.

13 THE WITNESS: No. He said the evaluation of PCB  
14 in water. That's what he told me - is that what your  
15 statement was?

16 Q (By Mr. John.) Right.

17 A I don't even know if that was the study I saw.  
18 I saw a Bio-Test evaluation of the occurrence of PCBs in  
19 the environment.

20 Q Right.

21 A I saw that particular report some time in 1977 or  
22 1979.

23 Q So, you did not see or review it with respect to  
24 your duties and responsibilities at Monsanto when you were  
25 still there; is that correct?

1 A No, sir, if we are talking about the same report.

2 What is the date of the report?

3 Q We have a report dated November, 1972 which is  
4 a four-page fish toxicity study dated November, 1972.

5 A I am sure I saw that. I have no recollection of  
6 the details.

7 MR. FEATHERSTONE: Doctor, was that the one  
8 you were referring to?

9 THE WITNESS: No, sir, that was not the one I  
10 was referring to.

11 Q (By Mr. John) Which one were you referring to?

12 A There was a report by Doctor Calandra, and I  
13 thought that was subsequent to my leaving Monsanto that  
14 gave his opinion as to his thoughts on the whole problem  
15 of PCBs in the environment. It was not a report, a  
16 toxicological report.

17 MR. JOHN: Let's take a break.

18 (Short break.)

19 Q (By Mr. John) Doctor Kelly, if a Pydraul  
20 containing PCBs were in a machine and you added to that  
21 a Pydraul product containing PCTs, could you tell me the  
22 toxicity of that combined product without testing?

23 A In a rough way, yes, sir.

24 Q In what rough way could you tell me?

25 A If someone knew the toxicity of the particular PCB

1 and if he knew the toxicity of the particular PCT involved,  
 2 then he would have to decide what this physical combination  
 3 could do as far as the absorption of one or the other through  
 4 the human system and what that physical condition would do  
 5 as far as the inhalation of one or the other of the  
 6 components.

7 Q Would you expect there to be any chemical  
 8 interreaction between the PCBs and PCTs?

9 A Not an organic chemical mixture, I can't answer  
 10 that.

11 Q That would cause a toxicological effect?

12 A I still can't answer it.

13 Q Would your answer be the same with respect to  
 14 combining products containing PCBs, PCTs and phosphate  
 15 esters in the same machine?

16 A The same.

17 Q You wouldn't know?

18 A I wouldn't know what the combined mixture of this  
 19 particular combination would be.

20 Q Could you give me a rough idea like you could if  
 21 you had PCBs and PCTs combined in the same machine?

22 A No, because the phosphate ester solution is a  
 23 general -- we have to define "phosphate" which is all  
 24 varying toxicities.

25 The answer is no, I could not.

1 Q You would have to test?

2 A Yes, sir.

3 Q Do you know if you performed any such test in  
4 the seventies before you left Monsanto, or had it performed?

5 A On what?

6 Q On a combination of hydraulic fluid containing  
7 PCB, PCT, and phosphate esters.

8 A If those compounds were ever put out into  
9 commercial application or in a development stage, we tested  
10 them.

11 MR. JOHN: That's all I have.

12 MR. HYNES: I have a couple of questions.

13 REDIRECT EXAMINATION

14 QUESTIONS BY MR. HYNES:

15 Q On an answer to a series of Mr. John's questions  
16 earlier today, you mentioned that there were some warnings --  
17 I am not sure if it was on labels or what -- given on some  
18 Monsanto products to the effect that they should not be  
19 allowed to come in contact with feed or grain.

20 Do you recall saying that?

21 A Yes, sir.

22 Q Was that only in relation to that insecticide 1080?

23 A No, sir.

24 Q Do you recall at least more than one product  
25 where that type of warning was given?

1 A More than one type of product?

2 Q Or more than one product.

3 A Yes, sir.

4 Q Do you recall any similar warnings given in  
5 the 1970s for the Therminal (phonetic) heat transfer fluids?

6 A No, sir.

7 Q If such warnings were given, should they have  
8 come from your department or should your department have  
9 been advised on those precautions?

10 A If our department thought that Therminal  
11 products created such an acute hazard that we had to put  
12 that warning on, that warning would have come from our  
13 department.

14 Q But -- I'm sorry.

15 A But -- that's the answer.

16 Q But for Monsanto to give out a precautionary  
17 warning of that type, that did not necessarily have to come  
18 through your department; is that correct?

19 A I can't answer that. I don't know -- what time  
20 frame?

21 Q Early to mid seventies.

22 A I think if the shipping people thought that  
23 shipping a product would involve a possibility of that  
24 leaking and getting into feed or grain they would put on  
25 that particular warning based on information of the toxicity

1 that we had and the safe handling characteristics that we had  
2 on the product.

3 If we do not think it should be taken internally  
4 and the type of shipping was such that it may have come  
5 in contact with feed and grain they might have put it on.  
6 I do not know.

7 Q Earlier you answered a series of questions on  
8 that USDA suggestion to use PCB as an insecticide extender.

9 A Yes, sir.

10 Q What was an extender? Could you say what an  
11 extender was?

12 A It prolongs the action of the insecticide.

13 Q It prolongs the action rather than adds more  
14 volume to the pesticide being sprayed; is that right?

15 A That's right.

16 Q Just to refresh your recollection, the exhibit  
17 exhibit today had been marked as Defendant's Exhibit 6 from  
18 Mr. Wheeler's deposition.

19 The quoted language in the middle there about the  
20 precautionary language to prevent environmental -- let  
21 me look at that "'Care should be taken to prevent any loss  
22 into the environment through spills, leakage, disposal,  
23 evaporation or otherwise.'" |

24 A Yes, sir.

25 Q Do you recall if that language or similar language

1 was ever put out to customers of PCB products?

2 MR. FEATHERSTONE: He has already been asked  
3 that question, Mr. Hynes.

4 MR. HYNES: I think he has, and I don't recall  
5 the answer right now.

6 A I don't recall if this actually got on a label.  
7 I don't know whether that was put out.

8 Q (By Mr. Hynes) I don't mean to limit it just  
9 to labels but any type of precautionary instructions to a  
10 customer about it -- a label, a technical bulletin, a  
11 letter.

12 A I am sure some such warning was sent to customers  
13 at some time before I left Monsanto. I do not know the  
14 form this took or at what particular time it was done.

15 Q And am I correct that you don't specifically  
16 recall being involved yourself in that precautionary  
17 warning to customers?

18 A I myself?

19 Q You yourself.

20 A No, sir.

21 MR. HYNES: I don't have anything further.

22 MR. FEATHERSTONE: I do, but I suggest we break  
23 for lunch and come back at one.

24 (Lunch break.)  
25

CROSS-EXAMINATION

QUESTIONS BY MR. FEATHERSTONE:

Q Doctor Kelly, you have used the term "industrial chemical" during your deposition.

What did you mean by that?

A An industrial chemical is a compound that is used in industry that is a compound that is not expected to be used either as an agricultural chemical, a food chemical or a food additive chemical.

Q Is it used in things known as industrial products?

A Yes, sir.

Q When you have used the term "stable", what do you mean by that?

A I mean by that chemically stable. I mean by that that it is not easily broken down into its component parts and is not easily metabolized.

Q Does the term "chemically stable" have anything to do with its ability to react with other chemicals?

A Yes.

Q If the product is chemically stable what does it mean in terms of reacting with other chemicals?

A It would be less likely to react with other chemicals.

Q Is a PCB or Aroclor an industrial chemical?

A Yes, sir.

Q Doctor, you testified that to your knowledge the

1 PCB Pydraul fluids were used as an industrial hydraulic  
2 fluid; is that correct?

3 A Yes, sir.

4 Q What exposures did you anticipate from the use  
5 of PCB Pydraul as an industrial hydraulic fluid up to the  
6 period of the late 1960s?

7 MR. JOHN: Exposure to whom or what?

8 MR. FEATHERSTONE: Any type of exposure.

9 A I expected exposure only to handlers, shippers,  
10 and workers. I expected only acute exposures from the  
11 dermatological point of view or the inhalation point of  
12 view during filling. I expected exposures from the  
13 dermatological and/or inhalation point of view if ruptured  
14 lines occurred.

15 Q Would you characterize these as acute exposures?

16 A Yes, sir.

17 Q And if I understand you correctly, what you  
18 anticipated were acute exposures for workers?

19 A Yes, sir.

20 Q As a result of these anticipated exposures, what  
21 types of testing was done on the Pydraul fluids?

22 A An acute type of testing which involved ocular  
23 contact, skin contact and inhalation -- acute inhalation  
24 toxicity and acute oral intake in a case where, for some  
25 reason, a dose were taken internally by the worker.

1 Q That would be an accidental dose, I take it?

2 A Yes, sir.

3 Q When you say "ocular", is that pertaining to  
4 the eyes?

5 A Dropped in the eye.

6 Q Did you anticipate any type of chronic exposure  
7 to workers or anything else from the use of PCB Pydraul  
8 as an industrial hydraulic fluid?

9 A Yes. I thought that there might be occasional  
10 low levels of inhalation at times, so -- yes.

11 Q Would that have been on a repeated basis?

12 A I thought it was possible.

13 Q Were the PCB Pydraul fluids tested on a repeated  
14 basis for that exposure?

15 A We did -- yes, sir, we did repeat inhalation  
16 studies over a period of two or three weeks.

17 Q Other than that repeated exposure I take it  
18 there were no other chronic exposures anticipated?

19 A No, sir.

20 Q To turn to PCB or Aroclor products generally in  
21 the 1950-1960 period, did you anticipate any exposure from  
22 the use of those products other than acute exposures?

23 A Yes, sir.

24 Q Let's break it down.

25 First, I take it you did anticipate some acute

1 exposures from the use of Aroclor products?

2 A Yes, sir.

3 Q And what kind of testing was done in connection  
4 with --

5 A The acute battery of tests that I explained  
6 earlier.

7 Q The same tests done on the Pydraul fluids?

8 A Yes.

9 Q What type of chronic exposure did you anticipate  
10 in the use of Aroclor based products?

11 A I did not expect any exposure --

12 Q Any repeated exposure?

13 A I expected that there might be repeated exposure.

14 Q Did you do any testing or repeated testing because  
15 of that anticipated exposure?

16 A We did repeated vapor inhalation of Aroclors,  
17 and we did a repeated two-week or three-week testing of  
18 skin contact with Aroclors.

19 Q Other than repeated testing, if you will of  
20 that nature, did you anticipate any other chronic exposure  
21 or do any chronic testing?

22 A No, sir -- until when?

23 Q Prior to the late 1960s when the Industrial  
24 Bio-Tests were done.

25 A None prior to that.

1 Q Doctor, in your capacity as medical director  
2 at Monsanto Company, were you the fellow who had ultimate  
3 supervisory responsibility for the health of workers in  
4 Monsanto plants?

5 A Yes, sir.

6 Q I take it that would include any plant at which  
7 Monsanto manufactured Aroclors?

8 A Yes, sir.

9 Q Were you aware of any problems to Monsanto  
10 workers as a result of their handling of the Aroclors in  
11 Monsanto plants?

12 A If you include manufacturing to include handling,  
13 yes, sir.

14 Q And this questioning involves the period of time  
15 roughly from 1936 to 1975 when you left Monsanto Company.

16 A Yes, sir, but it was all from 1936 to 1939.

17 Q Can you describe for me any exposure problems  
18 that you were aware of to Monsanto workers as a result  
19 of handling Aroclors?

20 A Yes -- well, when you handled it, you had an  
21 exposure problem.

22 Is that what you are asking?

23 Q What was the effect of that exposure problem,  
24 if any, that you knew?

25 A The effect was chloracne.

1 Q Was there anything done to handle that exposure  
2 problem?

3 A Yes, sir.

4 Q What was that?

5 A We instructed the workers on how to handle it  
6 safely by using gloves, by using clean coveralls and by  
7 washing their hands if they had the material on them.

8 Q In other words, certain hygienic practices were  
9 instituted?

10 A Hygienic and good housekeeping practices.

11 Q When did this happen, approximately?

12 A Immediately after we found the chloracne which  
13 was in 1937 to 1939.

14 Q After the institution of those simple hygienic  
15 practices were there any problems among Monsanto workers  
16 in connection with the handling of the product?

17 A No, sir.

18 Q Were there any problems -- and I may have asked  
19 you this already -- were there any problems to the Monsanto  
20 workers other than the dermatitis problems you have  
21 described as a result of handling Aroclors?

22 A No, sir, with the possible exception if they  
23 had something in their eye an irritation could occur, but  
24 nothing else, no, sir.

25 Q Did the fact that the only exposure problem not

1 being dermatitis and the fact that it can be  
2 remedied with simple hygienic practices. have any medical  
3 significance in your analysis of Aroclors?

4 A Yes, sir.

5 Q What was that?

6 A As an industrial compound, this is a relatively  
7 low order of toxicity.

8 Q There has been testimony earlier, Doctor, on  
9 the Drinker studies that were done at Harvard in the late  
10 1930s.

11 A Yes, sir.

12 Q There has been testimony from you that Professor  
13 Drinker did some studies of the effect of Aroclor exposure,  
14 inhalation exposure using Aroclor 1268; is that correct?

15 A Using a compound purported to be Aroclor 1268.

16 Q Did Professor Drinker report any effects from  
17 inhalation exposure of Aroclors?

18 A Yes.

19 Q What were those effects?

20 A He developed -- he found transient cellular  
21 changes in the liver characterized by cloudy swelling which  
22 is the first instance -- which is an example of low liver  
23 injury -- which was reversible in nature following cessation  
24 of the study.

25 Q I am sorry. Did Professor Drinker state that the

1 liver changes were, in fact, reversed?

2 A To the best of my recollection, I thought he did.  
3 I can't be certain about it, but I thought he did.

4 Q Based on Professor Drinker's tests and observations,  
5 did you make any medical opinion about the toxicity of  
6 Aroclors?

7 A Yes.

8 Q What were they?

9 A It was the same as before -- it was a compound  
10 that had a low order of toxicity but should also be handled  
11 safely.

12 Q What were the instructions that you had given  
13 to Monsanto workers or customers of Monsanto who had a  
14 potential inhalation exposure?

15 A At what time?

16 Q At approximately the time of the Drinker study  
17 or as a result of the Drinker study or thereafter.

18 A I am not sure if at 1936 when I came with Monsanto  
19 I had said any more than avoid repeated or prolonged skin  
20 contact. I am sure at some time at or about the Drinker  
21 study I added to not breathe at elevated temperatures or  
22 in confined spaces avoid repeated breathing or skin contact.

23 Q There was some questioning of you earlier, Doctor,  
24 about an incident at a plant in Brazil, Indiana in the 1950s.  
25 Do you recall that?

1 A Yes, sir.

2 Q Do you remember that it was an incident involving  
3 leakage of PCB Therminal fluid?

4 A Yes, sir.

5 Q From a heat transfer system?

6 A Yes, sir.

7 Q Do you recall, Doctor, whether the workers there  
8 were in a confined space or well-ventilated space?

9 A Confined space.

10 Q And do you recall the duration of the exposure  
11 of the workers?

12 A It was two or three days.

13 Q Did the fact that the inhalation took place in  
14 a confined space over a two-to-three day period have any  
15 medical significance to you?

16 A Yes, sir.

17 Q What was that?

18 A Two things -- one, you should not breathe Aroclor  
19 vapors at a high temperature; and two, you should not breathe  
20 them in a confined space; and three, it doesn't seem like  
21 this is a particularly toxic industrial compound from the  
22 exposure description they gave me and the results of the workers  
23 who had temporary liver problems.

24 Q Doctor, when you were advised of the exposure  
25 and the results of the exposure in the workers, was this

1 something that you had not anticipated from prior testing?

2 A No, sir. We had warned against it.

3 Q Doctor, there were several PCB Pydrauls marketed  
4 by Monsanto in the 1950s and the 1960s; is that correct?

5 A Yes, sir.

6 Q Am I correct that as you testified earlier the  
7 anticipated exposures were acute exposures?

8 A Correct.

9 Q And the testing done was the acute screening  
10 testing that was routinely done?

11 A With the exception of the addition of the testing  
12 of the dropping on a hot metal plate.

13 Q With that exception?

14 A With that exception, yes.

15 Q I take it you reviewed the data from the acute  
16 toxicological studies?

17 A Yes, sir.

18 Q Did you form an opinion as to the toxicity of  
19 the Pydraul fluids?

20 A Yes, sir.

21 Q What was that?

22 A I have an opinion A, that it was a relatively  
23 low industrial toxic chemical; B, that you should avoid  
24 repeated or prolonged skin contact; and C, that it should  
25 not be breathed in confined spaces at elevated temperatures.

1 Q I take it during the 1950s and 1960s there was  
2 similar acute testing on the other Aroclor products?

3 A Yes, sir.

4 Q Did you learn anything from the test results of  
5 those studies that caused you to change those conclusions  
6 in any way?

7 A No, sir.

8 Q Doctor, during the time period roughly from 1936  
9 until we will say the late 1960s, did you learn of any  
10 other toxicological effects or potential problems from  
11 exposure to PCB Pydraul other than what you have already  
12 testified to?

13 A No, sir.

14 Q And the same question with respect to Aroclor  
15 products during the same time period?

16 A Aroclor products, yes, sir.

17 Q What was that?

18 A I said the same Aroclors as PCBs.

19 Q Well, the question is, Doctor, Did you learn anything  
20 different?

21 A No.

22 Q Doctor, you were asked some questions about a  
23 Yusho incident in Japan.

24 Do you recall that?

25 A Yes, sir.

1 Q When, approximately, was that -- not the  
2 questioning, but when was the incident?

3 A I thought it was either in the latter part of  
4 1968 -- 1967 or the early part of 1968. It was in that  
5 time frame, give or take six months, I think.

6 Q Was it roughly the time period of which the  
7 testing was commenced at Industrial Bio-Test by Monsanto?

8 A I think we had already finished our range-finding  
9 test. We had established the protocols for the chronic  
10 test. Whether we had actually started the chronic test or  
11 not, I can't say; but certainly, it was right around  
12 that time.

13 Q Doctor, you testified that -- in part, anyway --  
14 that the situation at Yusho was the Aroclor PCB contamination  
15 of some rice oil.

16 A No, sir -- certainly not Aroclor.

17 Q Was it PCB contamination of rice oil?

18 A It was purported to be somebody's PCB; it was  
19 not Monsanto's PCB.

20 Q It was not Monsanto's PCB; is that correct?

21 A Yes, it is.

22 Q In your knowledge of the Yusho incident, did you  
23 pick up any information about the dosages that the eaters  
24 of the rice oil were subjected to?

25 A Yes, sir.

1 Q What was that?

2 A They had a very high acute dose of over a period  
3 of some weeks, repeated high acute doses.

4 Q I think you testified that the duration of the  
5 exposure was roughly two weeks to two months; is that  
6 correct?

7 A Something of that order -- three weeks to three  
8 months, I believe.

9 Q Do you recall how high the dosages were?

10 A About two to three hundred parts per million -- two  
11 to three thousand parts per million.

12 Q Was this essentially an acute poisoning incident?

13 A Yes, we could consider it that.

14 Q I think you testified, Doctor, that the symptoms  
15 shown by the rice oil eaters were principally liver damage  
16 and chloracne; is that correct?

17 A With the addition of skin discoloration, but  
18 that also accompanies chloracne.

19 Q The fact that this was an acute poisoning case,  
20 did those symptoms surprise you?

21 A No. We would have -- no, sir.

22 Q Why not?

23 A We would have expected that from our previous  
24 toxicological information. We knew chloracne occurred.  
25 We knew the target was the liver.

1 Q At some later point in time, Doctor, did you  
2 obtain any information that the polychlorinated byphenyls  
3 involved in Yusho may have contained impurities?

4 A Yes, sir.

5 Q Which impurities were those?

6 A I can not be sure whether they were dioxins  
7 or dibenzofurans. It was a different compound from  
8 Monsanto, so I don't know what the impurities were.

9 Q Were you aware of the scientific literature  
10 that reported the toxic effects noted in the Yusho patients  
11 were attributable to impurities?

12 A I have seen scientific reports bearing on that.

13 Q Did you attach any medical significance or health  
14 significance to the fact that PCBs have low volatility?

15 A Yes, sir.

16 Q What was that? What significance?

17 A If there is volatility, there is less chance of  
18 it being inhaled at ambient temperatures or at somewhat  
19 over ambient temperatures.

20 Q In other words, it's less likely to have an  
21 exposure?

22 A Yes, sir.

23 Q Did you attach any significance, Doctor, to the  
24 fact that PCBs were insoluble in water?

25 A Yes, sir.

1 Q What was that significance?

2 A If a compound is insoluble, it is less likely  
3 to cause adverse effects when put on the skin or taken  
4 internally.

5 Q Doctor, did you attach any medical significance  
6 to the fact that PCBs were chemically stable?

7 A Yes, sir.

8 Q What was that?

9 A If a compound is chemically stable, it would not  
10 be as likely to react with other chemicals which could be  
11 present in the organism and as such might be excreted,  
12 might be more likely to be excreted, in an unchanged fashion.

13 Q Doctor, during the period 1950 to the late 1960s,  
14 assume that you were advised that PCBs had found their way  
15 into lakes and rivers and assume only that additional fact  
16 that you knew at the time.

17 Would you have attached any medical or health  
18 significance to that?

19 A Where did you put an upper date on that --  
20 1960s?

21 Q Up to, say, 1967.

22 A Now, would you repeat the question?

23 (Whereupon, the court reporter read back the  
24 following question:

25 QUESTION: "Doctor, during the period 1950 to

1 the late 1960s, assume that you were advised that PCBs had  
2 found their way into lakes and rivers and assume only that  
3 additional fact that you knew at the time.

4 "Would you have attached any medical or health  
5 significance to that?")

6 A No, I wouldn't have.

7 Q And why not?

8 A Because we were dealing with a compound that,  
9 as far as we knew, was a stable compound. We were dealing  
10 with an insoluble compound and would -- your previous  
11 question, where was it?

12 Q In lakes and rivers.

13 A It was our belief that this material would settle  
14 to the bottom of the lakes and rivers and would be covered  
15 over then by the layer of slime, mud, and whatnot and would --  
16 due to its insolubility, only minute traces of the material  
17 would be present in the water.

18 Q Your answer, Doctor, you attached some significance  
19 to the fact that PCB was stable.

20 Are you again saying --

21 A Chemically stable, yes, sir.

22 Q When you say it was insoluble, does that mean  
23 it does not mix with water?

24 A It does not mix, does not dissolve -- if you add  
25 a teaspoonful of PCB into a quart of water, it doesn't enter

1 the water except for minute traces.

2 If you put sugar into the water, it would dissolve  
3 and spread throughout the water.

4 Q Let's assume that humans drank the water from  
5 this waterway that the PCB is in the sediment.

6 In the 1950s or the early 1960s, would you have  
7 attached any medical significance to that?

8 A No, sir.

9 Q Why not?

10 A I would not expect anything except minute  
11 inconsequential traces of the chemical to be present in  
12 water being drunk.

13 Q Did the fact that humans would only consume  
14 trace amounts of PCBs in the water have any significance  
15 in connection with the low acute toxicity of PCBs?

16 A Yes, sir.

17 Q Can you explain that?

18 A Well, it enhances the safety, if that is the  
19 term you want to use, of the situation.

20 If you are taking a trace amount of a compound  
21 with a low oral toxicity, from the acute point of view,  
22 that is certainly safer than a trace amount of a compound  
23 with a high oral toxicity. But still, a trace amount does  
24 not bother me much at all about any type, but this was  
25 an added factor, a low oral toxicity, and it was trace

1 amounts, if any.

2 Q Assume further, Doctor, that there were fish  
3 in this water.

4 Would the fact that PCBs were in the sediment,  
5 given the thinking and knowledge in the 1950s and early  
6 1960s, have had any significance to you?

7 A No, sir.

8 Q And why not?

9 A Because my thinking and opinion would be the  
10 same for fish as it would be for humans -- that fish have  
11 an alimentary canal, they ingest water through their  
12 alimentary canal. If there were only trace amounts in  
13 the water, they would only receive trace amounts through  
14 their water intake.

15 Q You have referred to something known as the  
16 concept of storage of PCBs, Doctor.

17 A Yes.

18 Q Can you tell us what that means?

19 A Yes, sir.

20 Storage of PCBs or storage in general?

21 Q Storage of PCBs.

22 A Storage of PCBs means if an organism takes in  
23 a certain amount of PCBs they probably metabolize a certain  
24 amount of this, they excrete a certain amount of this, and  
25 the residue is stored. It is usually stored in the fat

1 although it may be stored in other areas of the body.

2 Q When was it first known in the medical community  
3 that PCBs could be stored in fats or tissues?

4 A In late 1969 -- 1968, 1969, 1970, in that order.

5 Q Before that time, was the theory that PCB, if  
6 it got in an organism, would be excreted or metabolized?

7 A Yes, sir.

8 Q Doctor, you have referred to a concept known as  
9 biomagnification.

10 A Yes, sir.

11 Q Can you briefly describe what biomagnification  
12 of PCBs means in connection with the food chain?

13 A Yes, sir.

14 In the food chain, let's postulate that there are  
15 five lesser organisms to go up to the human.

16 We start with a plankton. Then, we go to a two-or-  
17 three cellular organism. Then, we go to a small minnow,  
18 a bigger minnow, a fish and a human.

19 The lowest member of this food chain picks up  
20 PCB from its diet or from the water -- from its water. If  
21 the PCB is in concentration in the water in a minute amount,  
22 after this lowest organism gets finished with it, it stores  
23 a certain amount of PCB. So, if the water -- I am using  
24 these figures very generally just for description --

25 Q Doctor, is it fair to say that the concentration

1 in PCBs increases up the food chain?

2 A It's enhanced. I will give rough figures, but  
3 the lower one may have X parts of PCBs in it. The next  
4 has 10 X, the next 15 X; and when you get up to the fish  
5 which the human is likely to eat, it has a hundred X so  
6 the concentration has increased.

7 Q When was it first known or accepted in the  
8 medical community that PCBs would be biomagnified in the  
9 human food chain?

10 A In the late 1960s.

11 Q At approximately the same time the concept of  
12 storage was known?

13 A You have to have storage if you have  
14 biomagnification.

15 Q I take it, prior to the late 1960s, it was assumed  
16 then that PCBs did not biomagnify if they somehow got  
17 into the food chain?

18 A It was not known; I don't think it was thought of.

19 Q Doctor, assume that you were made aware in the  
20 1950s-1960s, up before the late 1960s, that PCBs were found  
21 in the human food chain.

22 Would that have had any medical significance to  
23 you?

24 A Yes.

25 Q How so?

1 A Well, as the only United States manufacturer of  
2 PCBs and if it were in the human food chain, this would  
3 make me realize that we have got a food additive and we  
4 better find out what the chronic oral toxicity of PCBs is.

5 Q Would there have been state of the art chronic  
6 testing done at whatever point you would have learned of  
7 that?

8 A Yes, sir.

9 Q And I take it this would have been initiated  
10 had you been aware of more than just an isolated instance  
11 of PCBs in the food chain?

12 A When we say the food chain, yes, sir.

13 If someone said there was an isolated lake in  
14 South Dakota that they found a fish with X amount of PCBs  
15 in it, that would be one thing. If it were found that  
16 fish up and down the Mississippi River had PCBs in them  
17 and these fish were obviously in the food chain, that would  
18 make it different, yes, sir.

19 Q I take it, in the first instance, you may or  
20 may not do the testing.

21 A This might be an isolated case. This could be  
22 the result of spillage. But the other one --

23 Q The other one being the second instance?

24 A The second where the fish in wide areas are showing  
25 up with PCBs, that means something is happening and that it is

1 a widespread use of -- a widespread possibility for adverse  
2 effects.

3 Q When you hear the term "PCB" in the human food  
4 chain, do you understand that to include knowledge of the  
5 concept of the biomagnification of PCBs and storage of  
6 PCBs?

7 A Yes, sir.

8 Q Again, these concepts of biomagnification and  
9 storage with respect to PCBs weren't known until the late  
10 1960s?

11 A Weren't known in -- as far as PCB is concerned,  
12 yes, were not known.

13 Q Doctor, there has been some reference to state  
14 of the art chronic testing.

15 A Yes, sir.

16 Q Doctor, the chronic testing that was done in  
17 the late 1960s, was that an advancement over the chronic  
18 testing that was done in the 1950s?

19 A Yes, sir, that was as much of an advancement  
20 as a 747 over the Wright brothers' plane.

21 Q Well, is it fair to state that the state of the  
22 art chronic toxicological testing changed a number of times  
23 during the period 1950 to 1970?

24 A Yes, sir.

25 Q In the 1950s -- the early 1950s, for instance --

1 did Monsanto do any chronic testing?

2 A On what? Anything?

3 Q Yes.

4 A Yes, we did.

5 Q On what types of chemicals?

6 A We did it on food additives. We did it on

7 unintentional food additives. We did it on agricultural

8 chemicals which were unintentional food additives.

9 Q How was it determined what protocols to use in  
10 connection with the chronic testing of these chemicals  
11 in the 1950s?

12 A It was a combination of myself, our consulting  
13 toxicological laboratories, and the government people  
14 in either the Department of Agriculture or the Food and  
15 Drug Administration, whoever had the final say in that  
16 particular time.

17 Q Doctor, in the 1950s, were there any mutagenicity  
18 tests in these chronic protocols?

19 A No, sir.

20 Q Why was that?

21 A The concept was not either accepted or known or  
22 important.

23 Q Were there any teratological tests run in those  
24 protocols?

25 A No.

1 Q Why not?

2 A The thalidomide disaster had not occurred. It  
3 was not known.

4 Q Were there any reproductive tests run in this  
5 battery of tests?

6 A No, sir.

7 Q Why was that?

8 A That concept was either not known or not given  
9 much attention.

10 Q Is it fair to state that the state of the art  
11 chronic testing done in the 1950s on food additive type  
12 chemicals did not include these sorts of tests?

13 A That is correct.

14 Q Doctor, if you had learned in the 1950s that  
15 PCBs were in the human food chain, would you have done  
16 state of the art chronic testing of PCBs assuming it was  
17 other than an isolated report?

18 A Yes, sir, I would have done state of the art  
19 testing as of that date that I started testing.

20 Q And this would have been the same type of testing  
21 done to food additive products?

22 A Yes, sir.

23 Q Doctor, I am going to put in front of you what  
24 has been previously marked as Kelly Deposition Exhibit 1  
25 and turn your attention to paragraph numbered Two on Page 2.

1 A Yes, sir.

2 Q This is the same paragraph shown to you earlier  
3 today by counsel for Outboard Marine Corporation.

4 There is a reference there to the use of Aroclors  
5 as a pesticide extender.

6 A Yes, sir.

7 Q Doctor, there is reference in that paragraph to  
8 some testing done for the use of Aroclors in that connection  
9 by the USDA; is that correct?

10 A I do not -- it says here USDA. Whether it was  
11 the USDA or the New York Department of Agriculture I don't  
12 know -- probably USDA.

13 Q Do you have a recollection that the federal  
14 government did engage in some testing?

15 A It was a government agency, and I believe it  
16 was the federal government.

17 Q Is it your recollection that that government  
18 agency approved Aroclors for that use or recommended  
19 Aroclors?

20 A Recommended, because I do not think there was  
21 an approval necessary at this particular time by a government  
22 agency.

23 MR. FEATHERSTONE: No further questions.

24 MR. HYNES: I have a couple, Doctor.

25

REDIRECT EXAMINATION

QUESTIONS BY MR. HYNES:

Q Doctor, when Mr. Featherstone asked you some questions about the Yusho incident, you thought or you understood that there were also possibly some dibenzofuran or dioxins as in the PCB fluid that contaminated the rice oil; is that correct?

A Yes, sir.

Q Could you just briefly tell us what those two chemicals are?

A They are normally toxic compounds of the magnitude of several magnitudes greater than PCB.

Q Do you know if dioxins can be formed by the heating or burning of PCBs?

A I do not know that.

Q The same answer for dibenzofuran.

A Yes, sir.

Q Do you know if they can be formed by a chemical reaction with PCB or a reaction with another chemical?

A No, sir, I do not.

Q I think you stated that in the late 1960s, early seventies, the knowledge of PCBs in terms of storage was that some of the PCBs will metabolize and some would be excreted, some would be stored in the body or in the animal tissue; is that correct?

1 A You will have to repeat that one, please.

2 Q Let me do it again.

3 You stated, I believe, that PCBs, some PCBs,  
4 if ingested in an organism would metabolize, some would  
5 be excreted, some would be stored most likely in the fatty  
6 tissue.

7 A No, sir, that wasn't what I said.

8 I said amounts of PCB could be excreted, some  
9 could be metabolized and some could be stored.

10 I am talking about the same PCB. You said  
11 "some" PCBs, some part of the particular PCB, yes, sir.

12 Q I believe you stated that prior to the state  
13 of science knowledge now on the process of storage, prior  
14 to that, it was your opinion that the scientific community  
15 thought that the PCBs which were ingested would either  
16 metabolize or be excreted from the body; is that correct?

17 A No, sir.

18 Q How am I mischaracterizing what you said?

19 A I do not know if the scientific community ever  
20 anticipated that PCBs would be taken internally. So,  
21 I don't know if the scientific community ever gave a thought  
22 to the fact as to whether or not PCBs were going to be  
23 stored.

24 Q Did you ever give a thought to that?

25 A No. I never expected it to be taken internally,

1 either.

2 MR. HYNES: I don't have anything else.

3 RE CROSS EXAMINATION

4 QUESTIONS BY MR. JOHN:

5 Q Was the scientific concept of storage first  
6 developed in 1969?

7 A No, sir.

8 Q Was it first developed in relation to PCBs in  
9 1969?

10 A Yes, sir.

11 Q That's true of biomagnification, also?

12 A Yes, sir.

13 Q So, the scientific concept of biomagnification  
14 existed long before the PCB problem was determined?

15 A No, sir.

16 Q Did the concept of biomagnification first arise  
17 in the study of the PCB problem in the late 1960s?

18 A No, sir.

19 Q It was a scientific concept prior to that, too?

20 A Yes, sir, but you said "long before".

21 Q When was it developed?

22 A I thought it was about the time of the middle  
23 or early sixties in connection with insecticides.

24 Q And that was, to your knowledge, the conception  
25 of the concept of biomagnification?

1 A The general acceptance of the knowledge. I  
2 am sure that somebody someplace in some country brought  
3 out the theory of storage of compounds in people; but the  
4 storage of industrial chemicals -- the storage of insecticides,  
5 I think, was the first time it was talked about generally  
6 in the scientific community that I had dealings with.

7 Q If in the fifties you had done chronic studies  
8 on PCBs, would you not have discovered the storage of  
9 PCBs in tissue?

10 A Not necessarily.

11 Q Why not?

12 A In the fifties we did not have analytical methods  
13 that would be sufficient to find PCBs in animal tissues.  
14 That was just developed in 1967, 1968, 1969, 1970.

15 Q That is your opinion, is that correct, or have  
16 you studied the literature to determine whether or not  
17 that capability existed?

18 A That was my opinion and the opinion of the  
19 analytical chemists of the company that made the PCBs.

20 Q Doctor Kelly, you so indicated that the concentration  
21 of PCB was two thousand parts per million.

22 A Two to three thousand, yes, sir.

23 Q Two to three thousand parts per million of what?

24 A Of PCBs in the rice oil, is my impression.

25 Q If it's parts per million, it had to be relative

1 to some other entity.

2 A Yes, two to three thousand parts per million of

3 PCBs in nine hundred ninety-seven thousand parts of rice

4 oil in a million parts, parts in the rice oil.

5 Q Parts of the rice oil?

6 A Of three thousand parts of the rice oil or PCBs,

7 yes, sir.

8 Q When you talk about PCBs in parts per million of

9 water, then you are talking about the number of PCBs --

10 A And units.

11 Q -- in a million units of water?

12 A Yes, sir.

13 Q What are the sizes of those units?

14 A Well, if you have a gallon of water and you have

15 one part PCBs per million units of water, whether its a

16 million quarts of water or a million ounces of water or a

17 million grams of water, its the same. It's one part

18 per million -- one unit in a million units of the other

19 material.

20 Q So, if you say there is ten parts per million

21 in fish tissue --

22 A Yes, sir.

23 Q -- then, you are talking about ten PCBs in a

24 million units of fish?

25 A That's correct.

1 Q And it's not material what the size of those  
2 units are?

3 A No. It's the concentration -- no, it is not  
4 material.

5 Say that sentence over. I am not unscientific  
6 about this.

7 Q I am saying it's not relevant when you quote  
8 ten parts per million in a tissue of fish, the size of the  
9 units you used for the fish tissue?

10 A No, as long as the ten and the million are the  
11 same.

12 Q Right.

13 That's all I have.

14 (Witness excused)

15

16

R. EMMET KELLY

17

18

Subscribed and sworn to before this \_\_\_\_\_ day  
19 of \_\_\_\_\_, 1981.

20

My commission expires \_\_\_\_\_

21

Notary Public

22

23

24

25

1 STATE OF MISSOURI )  
CITY OF ST. LOUIS )

2 I, Susan M. Rick, a Notary Public duly commissioned  
3 and qualified in and for the City of Saint Louis, State  
4 of Missouri, do certify that, pursuant to the Federal Rules  
5 of Civil Procedure, there came before me on the twenty-sixth  
6 and twenty-seventh days of March, 1981, at nine a.m. thereof,  
7 at the office of the United States Attorney, the following  
8 named person, to wit:

9 R. EMMET KELLY,

10 who was by me duly sworn to testify to the truth and nothing  
11 but the truth of his knowledge touching and concerning  
12 the matter in controversy in this cause; that he was  
13 thereupon carefully examined upon his oath and his examination  
14 reduced to writing under my supervision; that the deposition  
15 is a true record of the testimony given by the witness;  
16 and that the said witness read the same and subscribed  
17 his name thereto.

18 I further certify that I am neither attorney or  
19 counsel for, nor related to or employed by, any of the parties  
20 to the action in which this deposition is taken, and further  
21 that I am not a relative or employee of any attorney or  
22 counsel employed by the parties hereto or financially  
23 interested in the action.

24 In witness whereof I have hereunto set my hand  
25 and affixed my notarial seal this \_\_\_\_\_ day of \_\_\_\_\_, 1981.

\_\_\_\_\_  
Notary Public

My commission expires December 26, 1982.

1 UNITED STATES DISTRICT COURT  
2 NORTHERN DISTRICT OF ILLINOIS  
3 -----

4 UNITED STATES OF AMERICA, )

5 Plaintiff, )

6 vs. )

No. 78-C-1004

7 OUTBOARD MARINE CORPORATION )

8 and MONSANTO COMPANY, )

9 Defendants. )  
10 -----

11 I, Susan M. Rick, a Notary Public within and  
12 for the State of Missouri, hereby certify that on the  
13 twenty-sixth and twenty-seventh days of March, 1981, there  
14 came before me R. EMMET KELLY, a witness of lawful age,  
15 who was by me first duly sworn to testify the whole truth  
16 of his knowledge touching the matters in controversy in  
17 the above-entitled cause; that thereafter, the witness  
18 was examined, and during the course of said examination,  
19 the following question was asked and proceedings had:

20 Q 1.) In your evaluation of a chemical referred  
21 to your department from research and development, first of  
22 all in the fifties, was the disposal of the product or  
23 the anticipated disposal of the product  
24 information that should have been provided to your  
25 department for evaluation?

MR. FEATHERSTONE: May I hear that, please?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

(Whereupon, the court reporter read back  
the previous question.)

MR. FEATHERSTONE: Are we talking about  
PCBs?

MR. HYNES: I am talking about any product,  
first.

MR. FEATHERSTONE: Well, that's the last  
"any product" question you get, Mr. Hynes.

A No, sir.

Q (By Mr. Hynes) Would your answer be the same if  
I just changed the time frame to the 1960s?

MR. FEATHERSTONE: Is it any product, still?

MR. HYNES: Yes, any product.

MR. FEATHERSTONE: I instruct you not to  
answer the question, sir.

Q (By Mr. Hynes) Do you mean the disposal of a  
chemical product isn't a consideration in the evaluation  
of the product?

MR. FEATHERSTONE: Well, the instruction is  
not to answer.

Is that a question to me or him?

MR. HYNES: That's a question to him.

Is the disposal --

MR. FEATHERSTONE: He is instructed not  
to answer the question.

1 MR. HYNES: What is your basis for him not  
2 to answer the question?

3 MR. FEATHERSTONE: Why don't you establish  
4 the relevancy of it.

5 MR. HYNES: I want to find out why you are  
6 instructing him not to answer.

7 MR. FEATHERSTONE: It's irrelevant.

8 MR. HYNES: I don't think irrelevance is  
9 a basis to instruct someone not to answer.

10 MR. FEATHERSTONE: You can take that up  
11 with the judge. We have been there before, and you attempted  
12 that argument, and you lost.

13 Thereupon, counsel for Plaintiff requested  
14 that the foregoing question be Certified to this Honorable  
15 Court, and in accordance with said request this matter is  
16 now Certified for the Court's ruling and further direction.

17 IN WITNESS WHEREOF, I have hereunto set my hand  
18 and Seal this \_\_\_\_\_ day of \_\_\_\_\_, 1981.

19  
20  
21 Susan M. Rick, Certified  
22 Court Reporter and Notary Public  
23 State of Missouri  
24  
25