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IN THE CIRCUIT COURT OF MILWAUKEE COUNTY
STATE OF WISCONSIN

STROH DIE CASTING COMPANY,)
)
 Plaintiff,)
)
)
 vs.)
)
MONSANTO COMPANY,)
)
)
 Defendant.)

Case No. 639887

DEPOSITION OF WILLIAM B. PAPAGEORGE

Taken on behalf of Plaintiff
August 10 and 11, 1988



Perry Reporting, Inc.

Stenotype Reporters

818 Olive Street

Suite 402

St. Louis, Missouri 63101

(314) 621-4790

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Plaintiff,	)	
	)	
vs.	)	Case No. 639887
	)	
MONSANTO COMPANY,	)	
	)	
Defendant.	)	

DEPOSITION OF WILLIAM B. PAPAGEORGE, produced, sworn and examined on behalf of Plaintiff, August 10 and 11, 1988, between the hours of eight o'clock in the forenoon and five o'clock in the afternoon of that day, at the Paul Brown Building, 818 Olive Street, St. Louis, Missouri 63101, before KATHRYN T. O'NEILL, a Registered Professional Reporter and a Notary Public within and for the State of Missouri.

A P P E A R A N C E S

The Plaintiff was represented by Mr. Donald H. Carlson and Mr. John R. Pendergast, Jr. of the law firm of Messrs. Riordan, Crivello, Carlson & Mentkowski, 710 North Plankinton Avenue, Milwaukee, Wisconsin 53203.

The Defendant and Mr. Papageorge were represented by Mr. James H. Schink of the law firm of Messrs. Kirkland & Ellis, 200 East Randolph Drive, Chicago, Illinois 60601.

1 IT IS HEREBY STIPULATED AND AGREED by and
2 between Counsel for the Plaintiff and Counsel for the
3 Defendant, that this deposition may be taken in shorthand
4 by KATHRYN T. O'NEILL, a Registered Professional Reporter
5 and Notary Public, and afterwards transcribed into
6 typewriting and signed by the Witness.

7
8 o-o-o

9
10 WILLIAM B. PAPAGEORGE,
11 of lawful age, being produced, sworn, and examined on the
12 part of the Plaintiff, deposes and says:

13 DIRECT EXAMINATION

14 QUESTIONS BY MR. CARLSON:

15 Q. Would you be kind enough for our record to
16 state your full name and your home address, please?

17 A. William B. Papageorge, 321 Pebble Valley
18 Drive, Creve Coeur, Missouri 63141.

19 Q. Thank you. As you know, I'm Don Carlson, and
20 I represent Stroh Die Casting in this matter. During the
21 course of the deposition, if any of my questions don't
22 make any sense to you, either grammatically or
23 technically, let me know, and I'll try to rephrase them.
24 If Mr. Schink makes an objection to a question, please
25 wait until we resolve the objection. He may object and

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1 ask you not to respond, and I suspect you'll take his
2 advice, or he may object to the form of question and ask
3 you to respond. Remember, and I'm sure you will, to let
4 me get the complete question set forth before you give
5 your response. I'll try not to ask another question until
6 you complete your answer, and that way we won't be talking
7 at the same time, and the court reporter will get a
8 complete transcript. If you want to make a yes or no
9 answer, use the words rather than a nodding of the head or
10 and "uh-huh" or "uh-uh," again so we have a good
11 transcript. Okay?

12 A. I understand.

13 Q. Okay. Are you currently employed?

14 A. Self-employed.

15 Q. Okay. And do you do business under any
16 business name other than your own name?

17 A. No.

18 Q. Okay. And what is the nature of your
19 self-employment now?

20 A. I help Monsanto Company in matters similar to
21 the one we are discussing today.

22 Q. Okay. And how long have you been
23 self-employed in such a capacity?

24 A. April, 1987.

25 Q. Have you helped any other companies that have

1 been involved in any litigation since April of 1987?

2 A. Indirectly, yes.

3 Q. Can you tell me what companies indirectly you
4 have helped?

5 A. Sangamo Electric Company and Westinghouse
6 Corporation.

7 Q. And what was the nature of the help in just
8 very general terms -- I don't want to go into the
9 specifics of your work -- that indirectly helped Sangamo?

10 A. I was involved in depositions regarding PCB
11 matters, and I was requested by those companies to
12 participate.

13 Q. Okay. That was true for both Sangamo and
14 Westinghouse?

15 A. Yes.

16 Q. Was Monsanto a party to either of the cases
17 in which you were deposed by those companies?

18 A. I believe at one time they were, but not when
19 I was deposed.

20 Q. Okay. By any chance do you have any
21 recollection of how many depositions you have given in
22 litigation in which the subject of PCBs was at issue?

23 A. I don't have an exact record, but it's
24 approaching a couple dozen by now. This is trials and
25 depositions.

1 Q. How many of those would be trials?

2 A. Five of them.

3 Q. In any of the trials that you have testified
4 in, was an issue whether or not PCBs -- strike that. In
5 any of the trials that you testified in, was there at
6 issue whether or not a product containing PCBs was
7 defective and unreasonably dangerous? And I differentiate
8 that between a claim of negligence.

9 A. I have to question -- I'm not totally
10 familiar with the legalistic meanings of some of these
11 words.

12 Q. Sure. I appreciate that.

13 A. As to the product being flawed, not that I --
14 as best as I can determine, no, that was not an
15 allegation.

16 Q. Okay. Have you heard of Section 402(a) of
17 the Restatement of Torts 2nd? Is that a name of a section
18 that means anything to you?

19 A. No.

20 Q. Are you aware of any litigation that has been
21 brought against Monsanto by a die cast company, other than
22 my client, in which the company was seeking to recover
23 damages it had incurred as the result of use or disposal
24 of PCBs?

25 A. Die cast company? No.

1 Q. Just prior to -- I presume it was your
2 retirement at Monsanto?

3 A. Yes.

4 Q. What was your position with the company?

5 A. I was manager, occupational health, for
6 Monsanto Chemical Company, an operating unit of Monsanto
7 Company.

8 Q. And how long had you held that position?

9 A. One year.

10 Q. And prior to that, what position did you
11 hold?

12 A. I was director of environmental operations
13 for Monsanto Industrial Chemicals Company, an operating
14 unit of Monsanto Company.

15 Q. And how long did you hold that position?

16 A. From about 1983, to the end of 1985.

17 Q. And prior to that your position with the
18 company?

19 A. Prior to that I was director of environmental
20 operations for Monsanto Intermediate Chemicals Company, an
21 operating unit of Monsanto Company.

22 Q. And how long did you hold that position?

23 A. From 1977 to 1983.

24 Q. And prior to that position?

25 A. I was manager, product acceptability, for

1 Monsanto Intermediate Chemicals Company.

2 Q. And how long did you hold that position?

3 A. Oh, I held that about a year, late '76 to
4 late '77.

5 Q. Prior to that?

6 A. I was manager, product acceptability, and I
7 believe at that time it was called process chemicals
8 division of Monsanto Industrial Chemicals Company.

9 Q. And how long did you hold that position?

10 A. That was about 1973 to 1976.

11 Q. And prior to that?

12 A. Manager, product acceptability, functional
13 fluids group of the organic chemicals division of Monsanto
14 Company. That was --

15 Q. From what period of time?

16 A. About 1972 to 1973.

17 Q. Prior to that?

18 A. Manager, environmental protection of the same
19 division.

20 Q. And you held that post for how long?

21 A. From about '71 to '72.

22 Q. Okay. Prior to '71?

23 A. I was manager, environmental control from
24 1970 to '71.

25 Q. When did you start with Monsanto?

1 A. 1951.

2 Q. Okay. Going back in time then prior to
3 becoming manager of environmental control in 1970.

4 A. I was plant manager at the Monsanto plant at
5 Anniston, Alabama.

6 Q. How long did you hold that position?

7 A. From 1965 to 1970.

8 Q. Prior to that?

9 A. I was general superintendent in manufacturing
10 at the W. G. Krummrich, K-r-u-m-m-r-i-c-h, plant in
11 Sauget, S-a-u-g-e-t, Illinois, from '63 to -- '64 to '65,
12 I'm sorry, about a year.

13 Q. Okay. And prior to that?

14 A. Prior to that I was at the John F. Queeny
15 plant, Q-u-e-e-n-y, in St. Louis, Missouri, of Monsanto
16 Company.

17 Q. And what was your post there?

18 A. Going backward, I was general superintendent
19 of distribution warehousing, utilities, from about 1962 to
20 1964.

21 Q. Okay. And the other positions there?

22 A. Prior to that I was technical services
23 superintendent at that same plant.

24 Q. And at what time period?

25 A. About 1960 to '62.

- 1 Q. Okay. Prior to that?
- 2 A. Maintenance superintendent at the same plant.
- 3 Q. And what time frame was that?
- 4 A. '58 to '60.
- 5 Q. And prior to that?
- 6 A. Prior to that I was maintenance supervisor.
- 7 Q. And --
- 8 A. That's about 1956 to '58.
- 9 Q. Prior to that time?
- 10 A. Production supervisor, same plant.
- 11 Q. Okay. Time frame?
- 12 A. About '55 to '56.
- 13 Q. And prior to that?
- 14 A. Prior to that, I was design engineer, same
- 15 plant, from my starting date, '51 to '55.
- 16 Q. Okay. Did you have an appointment within
- 17 your profession prior to 1951?
- 18 A. Yes.
- 19 Q. And where were you working?
- 20 A. I was with the Phillips Petroleum Company in
- 21 Bartlesville, Oklahoma.
- 22 Q. And for how long a period of time?
- 23 A. Four years.
- 24 Q. What kind of work were you doing there?
- 25 A. The first two years, '47 through '49, I was

1 in the research department as a research engineer on oil
2 field secondary recovery and in evaluating drilling
3 fluids. From 1949 'til 1951, I was a design engineer in
4 the refining department.

5 Q. Any other employment within your profession
6 prior to that time?

7 A. No.

8 Q. And what degrees do you hold?

9 A. I have a bachelor of science in chemical
10 engineering and a master of science in chemical
11 engineering, both from Washington University in St. Louis.

12 Q. Have you done any work towards a Ph.D?

13 A. I have about 15 credit hours earned at the
14 then Oklahoma A & M. I believe it's now Oklahoma State.

15 Q. Have you taught any courses?

16 A. No.

17 Q. Have you given any seminars to academic
18 groups in any of the areas of your expertise?

19 A. I have given seminars relating to PCBs to
20 groups that included representatives of the academic
21 field.

22 Q. How many seminars do you think you have given
23 on that subject? Lots?

24 A. I have never kept count; three or four.

25 Q. Okay. Were the seminars that you gave

1 sponsored by your employer?

2 A. No.

3 Q. Do you have some recollection of who may have
4 put on these seminars?

5 A. I recall a seminar in the -- let me think, in
6 Lansing, Michigan. I was under the impression it was
7 given by a -- sponsored by the Great Lakes Governor's
8 Conference or some such title.

9 Q. Okay.

10 A. There was another conference in Madison,
11 Wisconsin on the university premises. To this day I don't
12 recall who sponsored it. I just don't remember that, who
13 sponsored it.

14 Q. Okay. How about the others? Do you have any
15 recollection?

16 A. Let me see if I can recall them. There was a
17 meeting in Duluth, Minnesota in March of 1970, sponsored
18 by the director of the Federal Water Laboratory there.
19 There were some scientific professors in the audience.

20 There were two meetings in North Carolina, as I
21 recall, about 1971 and again in '73, sponsored by the
22 National Institute of Environmental Health, at which
23 academic people were attending. There was a meeting --
24 the dates escape me. I believe about 1974 -- held in New
25 Orleans, at which there were many academic people,

1 scientists as well as economists and a variety of
2 backgrounds. I've forgotten who sponsored that one. I
3 just don't recall.

4 Q. Any other seminars that you have participated
5 in or given that you recall?

6 A. Well, I suppose this fits under seminars. I
7 have talked before the Federal Interdepartmental Task
8 Force on PCBs. I've participated in the National
9 Symposium on PCBs held in Chicago in November, 1975,
10 sponsored by the EPA.

11 Q. Let me ask you to go back. Do you remember
12 when the meeting was with the Federal Interdepartment Task
13 Force on PCBs?

14 A. There were two occasions. One occurred, as
15 best I remember, in early '71. The second occurred in May
16 of 1972.

17 Q. Any other talks that you have given or
18 presentations that you have made that you would believe
19 would fall into these same categories?

20 A. I have given these presentations before
21 customer and industry groups.

22 Q. Any presentations to the Association of Die
23 Casting, die cast houses?

24 A. No.

25 Q. When was the Lansing, Michigan presentation?

1 A. As best I recall, it was in 1970.

2 Q. And the conference that was apparently on the
3 grounds, anyway, of the University of Wisconsin?

4 A. 1973, '74.

5 Q. Okay. In any of the presentations that you
6 have made, did you as a part of your presentation give out
7 handout material?

8 A. I had handout material at the second session
9 with the Interdepartmental Task Force. I don't recall
10 having handouts at any of the others.

11 Q. Were any of the presentations given from a
12 prepared script?

13 A. Yes.

14 Q. Do you have copies -- strike that. Were each
15 of those from a prepared script?

16 A. I'm sorry?

17 Q. Were each of those presentations from a
18 prepared script?

19 A. Not all of them.

20 Q. Can you tell me which ones were?

21 A. The presentations to the industry and
22 customer groups was made from a prepared script.

23 Q. When was that?

24 A. Those were 1971. I didn't have prepared
25 scripts for the other presentations. I just don't believe

1 I had, no.

2 Q. Okay. Were the presentations to the
3 customers and industry groups sponsored by Monsanto?

4 A. No.

5 Q. Can you tell me who did, which industry
6 groups we're talking about?

7 A. One of them was the National Electrical
8 Manufacturers Association, along with the American
9 National Standards Institute. Another was the PCB Ad Hoc
10 Committee of the Electronic Industries Association.

11 Q. Any others?

12 A. Those two.

13 Q. Okay. When was the presentation to the
14 National Electrical Manufacturers Association?

15 A. As best I recall, that was September, '71.

16 Q. And the presentation to the PCB Ad Hoc
17 Committee?

18 A. I believe that came about either the latter
19 part of '71 or early '72.

20 Q. Okay. Was the prepared script used for
21 giving the presentation to NEMA?

22 A. Yes.

23 Q. Have you written any articles that have been
24 published in any scientific journals or in any other
25 publications that were distributed publically?

1 A. No.

2 Q. Your first contact with PCBs in any working
3 capacity was when?

4 A. It was when I was maintenance supervisor at
5 the St. Louis plant at Monsanto.

6 Q. And what was your -- or how did your job
7 function bring you in contact with PCBs at that time?

8 A. I supervised the electricians in the plant,
9 who on occasion would do maintenance work or install
10 electrical equipment containing PCBs.

11 Q. Was that back beginning in what, 1956?

12 A. Yes.

13 Q. Okay. When you were a production supervisor,
14 you were not involved in the production of PCBs?

15 A. I was not.

16 Q. Okay. Did your position as -- I'm not too
17 sure I have the title down here right -- technical service
18 supervisor or superintendent from 1960 to 1962, bring you
19 in contact with PCBs?

20 A. No.

21 Q. How about when you -- I think there were a
22 number of responsibilities you had as general
23 superintendent of the distribution warehousing utilities
24 back in '62 through '64. Did that bring you in contact
25 with PCBs?

1 A. Yes.

2 Q. And in what respect?

3 A. In two ways. The utilities department, which
4 distributes electrical power throughout the plant, was the
5 unit that operated the electrical equipment that contained
6 PCBs. Also, as part of that assignment, I was responsible
7 for a department that blended different chemicals to make
8 products for Monsanto. Some of that blending involved the
9 production of hydraulic fluids that contained PCBs.

10 Q. Which of the Aroclors were utilized in the
11 production of hydraulic fluid at that time?

12 A. As best I remember, there were Aroclor 1242,
13 Aroclor 1248.

14 Q. Do you remember which of the -- strike that.
15 Was Monsanto marketing under the name Pydraul at that
16 time?

17 A. Yes.

18 Q. Do you remember which of the Pydraul fluids
19 were being blended where you were?

20 A. As best I remember, all of the product line
21 at different times in different amounts.

22 Q. If Pydraul was a 1242, would that mean that
23 1242 was the only isomer that would be present in that
24 particular fluid?

25 A. I'm confused by your use of the word "isomer"

1 to describe Aroclor 1242.

2 Q. Would there be other PCBs present besides
3 1242 in a hydraulic fluid marketed as 1242?

4 MR. SCHINK: Object to the form of the
5 question.

6 A. I'm confused.

7 Q. (BY MR. CARLSON) 1242 is 42 percent
8 chlorine?

9 A. Yes.

10 Q. Would there be PCBs with different
11 percentages of chlorine present in the hydraulic fluid
12 marketed as 1242?

13 MR. SCHINK: Object to the form of the
14 question.

15 A. I think I understand your question. If so,
16 the answer is no. The ingredient that's added is known as
17 Aroclor 1242.

18 Q. (BY MR. CARLSON) Does that mean that is the
19 only PCB that would be present?

20 A. That is correct.

21 Q. When you were at the Krummrich plant in
22 Sauget, did that bring you in contact with PCBs, also?

23 A. No.

24 Q. And you were plant manager in Anniston before
25 that date?

1 A. Yes.

2 Q. Were various Aroclors produced in the
3 Anniston plant?

4 A. Yes.

5 Q. All of them?

6 A. All of them.

7 Q. Was anything else made in the Anniston plant
8 besides PCBs?

9 A. Yes.

10 Q. Just in rough terms, what other kinds of
11 products?

12 A. I'll name a few that I recall.

13 Q. Sure.

14 A. Biphenyl, terphenyls, chlorine, caustic soda,
15 phosphorus penta sulphide, and the pesticide parathion,
16 p-a-r-a-t-h-i-o-n, and a similar material, niran,
17 n-i-r-a-n. We also made chlorinated terphenyls and
18 hydrogenated phenyls.

19 Q. Okay.

20 A. I believe that covers the list.

21 Q. Have you, during the course of your
22 professional life, taken any courses in toxicology?

23 A. No.

24 Q. Have you taken any courses in epidemiology?

25 A. No.

1 Q. Monsanto obtained the right to manufacture
2 PCBs in its purchase of Swan Chemical?

3 A. Yes.

4 Q. Do you know if Swan Chemical had done any
5 either animal or human studies on the potential effects of
6 PCBs prior to Monsanto buying the company?

7 A. It's my understanding they had done the acute
8 animal studies in the late 1930's. I do not recall the
9 laboratory that they used.

10 Q. Do you know if Swan Chemical, prior to
11 Monsanto purchasing the company, did any health surveys of
12 its employees?

13 A. I'm not aware of any such study.

14 Q. Can you tell me the first time that Monsanto
15 did a health survey of its employees that came in contact
16 with PCBs?

17 A. Would you help me define "survey"?

18 Q. Determining whether or not the employees who
19 came in contact with PCBs were experiencing health
20 problems different than what would be generally expected.

21 A. Well, this would be done as part of the
22 annual medical physical examination --

23 Q. Okay.

24 A. -- conducted on all employees in the plant.
25 If any problem unique to each operation would show up, it

1 would be evident to the plant physician.

2 Q. All right. Do you recall whether or not
3 Monsanto at any time specifically looked at the medical
4 records or the results of the examinations of the
5 employees that were in contact with PCBs to determine
6 specifically whether or not they were experiencing any
7 increased health abnormalities?

8 A. Well, my exposure to that activity would
9 indicate that this was an ongoing activity on the part of
10 the plant physician. I'm not aware of any effort of when
11 the files were segregated and Swan sat down and addressed
12 specifically looking for anything. That doesn't mean it
13 didn't happen.

14 Q. Who was your plant physician or who were the
15 plant physicians when you were at Anniston?

16 A. Dr. James Francis.

17 Q. Was he a Monsanto employee?

18 A. No.

19 Q. Do you know if he's still in practice?

20 A. I understand he's retired.

21 Q. Do you know where he lives?

22 A. No, I do not.

23 Q. Do you know what state he lives in or at
24 least where he lived the last time you heard?

25 A. The last time he was in Anniston, Alabama.

1 Q. As the plant physician -- strike that. As
2 the plant physician, was Dr. Francis charged with the
3 responsibility of reviewing the results of the
4 examinations of plant employees to see if there was any
5 increased rate of a particular disease or health problem?

6 A. Yes, sir.

7 Q. Would he issue an annual report or any report
8 on that particular subject?

9 A. I did not see one.

10 Q. Do you have any understanding as to whether
11 or not he did issue such a report, although you may not
12 have been privy to it?

13 A. Dr. Francis reported professionally to the
14 Monsanto medical director, who would make frequent visits
15 to the plant. They communicated in health matters
16 regarding the plant. I was not present at those meetings.
17 I don't know what exchanges took place or what reports
18 were issued from one doctor to the other.

19 Q. Who was the medical director at that time?

20 A. R. E. Kelly.

21 Q. Were there any other plant physicians when
22 you were at Anniston?

23 A. No.

24 Q. When you were at Anniston, did Monsanto
25 monitor any waste water discharge or other plant effluents

1 for the presence of PCBs?

2 A. Yes.

3 Q. Can you tell me when that practice began?

4 A. I'm sorry?

5 Q. When did that practice start?

6 A. I don't know.

7 Q. Was it prior to you being there?

8 A. That is right. Yes.

9 Q. Did they monitor for PCBs and plant effluent
10 at Krummrich as well?

11 A. At what point in time?

12 Q. At any time that you're aware of.

13 A. At any time. Yes, I was aware of it starting
14 in 1970.

15 Q. Do you know if they did it prior to that?

16 A. I was told they did it.

17 Q. Were you told when they started that?

18 A. No. I just don't remember the dates. They
19 had been ongoing for years.

20 Q. More than a decade?

21 A. Yes.

22 Q. What were the detection limits for your
23 monitoring equipment when you were at Anniston?

24 A. I don't recall an exact number, but they were
25 in the high parts per million or tenth of a percent kind

1 of numbers.

2 Q. Who had responsibility for monitoring at your
3 Anniston plant when you were there?

4 A. Initially it was the responsibility of the
5 quality control chemist in the plant laboratory, and as
6 best I remember, about 1966 or '67, we appointed an
7 environmental engineer who took on that responsibility.

8 Q. Who was the Q.C. chemist when you were there,
9 or who were they if there was more than one?

10 A. His last name was Dunlap, D-u-n-l-a-p. I've
11 forgotten his first name.

12 Q. Okay. Any others that served in that
13 capacity?

14 A. Not while I was there.

15 Q. And who was the environmental engineer that
16 was appointed in '66 or '67?

17 A. His name escapes me. I just don't remember.

18 Q. While you were plant manager at Anniston, at
19 any time did you have to alter manufacturing practice or
20 practices with regard to discharge of plant effluent as
21 the result of PCBs being found in the effluent?

22 A. Yes.

23 Q. Can you tell me when that first occurred, as
24 best you can recall, and what happened?

25 A. Sometime in about 1966 -- I can't recall the

1 exact period -- we changed the way we maintained the
2 limestone pits that were present at the plant for
3 neutralizing the acid water, and we put greater emphasis
4 on keeping the department clean, the floors clean,
5 stairwells.

6 Q. Why was that?

7 A. About 1966, about a year after I arrived.

8 Q. Okay. Why was that effort made?

9 A. We found that more PCBs were ending up in the
10 pits, and the frequency at which the pits were dug up and
11 refurbished wasn't adequate for the additional amount of
12 PCBs that were getting into the pits. So, we increased
13 the frequency and reduced the amount leaving the
14 department.

15 Q. The function of limestone pits was to
16 neutralize the acid water?

17 A. That was one of its functions.

18 Q. And was it also to act as a filter for PCBs?

19 A. It acted as a crude filter as well as a
20 collecting pit, a sump, because they are heavier, will
21 sink to the bottom of the pit.

22 Q. How did Monsanto dispose of PCB's in those
23 years?

24 A. We had a Monsanto operated landfill on
25 Monsanto property.

1 Q. Where was that located?
2 A. At the plant site.
3 Q. Okay. Does Monsanto still own the site?
4 A. Yes.
5 Q. Between 1965 and 1970, did Monsanto have any
6 other landfill sites other than the one at Anniston which
7 received PCBs?
8 A. Yes.
9 Q. And where were they?
10 A. I don't claim to know all of them.
11 Q. Okay.
12 A. I'm positive there was one at the W. G.
13 Krummrich plant, at least one. They may have had several
14 through the years. I cannot speak for all the other 50
15 Monsanto plants. Many of them have their own landfills.
16 Q. Did Monsanto at any time incorporate a
17 program of incinerating its own PCBs?
18 A. Yes.
19 Q. When did it start that?
20 A. They started incinerating in 1971.
21 Q. Was that program ever discontinued?
22 A. Yes.
23 Q. And when was that?
24 A. 1977.
25 Q. Do you know why it was discontinued at that

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1 time?

2 A. Principally because Monsanto terminated the
3 manufacture and sale of PCBs. They used the incinerator
4 to dispose of any residual that was still at the plant
5 site, and the unit had reached the point where it needed
6 extensive maintenance and renewal. It became inefficient
7 and was a good time to dismantle it.

8 Q. Did Monsanto make the incineration facility
9 available to its customers that had been using
10 Monsanto-produced PCB fluids?

11 A. Yes.

12 Q. Did it make it available to all customers?

13 A. Yes.

14 Q. Did Monsanto continue to make the
15 incineration of the facility available to all customers
16 through 1977?

17 A. Yes.

18 Q. Do you know how the customers were made aware
19 of the existence of and their access to this incineration
20 facility?

21 A. I do.

22 Q. And how was that?

23 A. Three different ways that I recall. One is
24 by letters mailed to customers on record. Another is by
25 specific instructions on product labels with telephone

1 numbers and department designations. Another is via the
2 Monsanto salesmen, who carried copies of these letters
3 with them, as well as special labels that he would leave
4 with the customer to affix to the container before
5 shipping it back to Monsanto.

6 Q. Were the letters mailed to customers of the
7 Monsanto products that utilized all or any of the
8 Aroclors?

9 A. Yes.

10 Q. So a product that had a 1242 Aroclor
11 incorporated in it -- strike that. A customer who
12 purchased a product that had the 1242 Aroclor would get a
13 letter advising that customer that the incinerator was
14 available?

15 A. Yes.

16 Q. Were there -- do you know whether or not
17 there were other incinerators available in the country
18 besides the one at Monsanto?

19 A. At what point in time?

20 Q. I'm sorry. You started that in 1971, '71
21 through '77?

22 A. Yes.

23 Q. Were there any available prior to that?

24 A. Not to my knowledge.

25 Q. Why did Monsanto build the first incinerator

1 for incinerating PCBs?

2 A. Primarily because there were none available
3 commercially that we knew of. In fact, we feel that we
4 helped develop some of the technology in designing the
5 unit, and we felt that this was the best way to destroy
6 the liquid PCBs.

7 Q. Did Monsanto incinerate PCBs for some of its
8 customers at no cost to the customer?

9 A. I believe in some instances, yes.

10 Q. And was there a cost to some of the other
11 customers?

12 A. Yes.

13 Q. Do you know what the criterion was in
14 determining whether or not there would be a cost charged
15 to the customer?

16 A. I don't know the details. It had to do with
17 the purchase of material that was tied in with selling
18 price, a package kind of deal. I really don't know the
19 details.

20 Q. Can you tell me the names of some of the
21 companies that had their PCBs incinerated by Monsanto for
22 free?

23 A. None really comes to mind at the moment.
24 There were a few. I know there were some cases, but the
25 names don't come to mind.

1 Q. Is it your understanding that the
2 availability of the incinerator free of charge to a
3 customer was tied or contingent upon the customer
4 purchasing certain Monsanto products in the future?

5 A. That was my understanding, yes.

6 Q. Does that somewhat go along with the idea
7 that there's really no free lunch?

8 A. One could say that, yes.

9 Q. Okay. Were the products containing PCBs
10 monitored to determine whether or not dioxins were
11 present?

12 A. At what point in time?

13 Q. At any time.

14 A. At any time? As best I recall, in the middle
15 '60s, gas samples were taken off of Monsanto's incinerator
16 checking for the products of combustion, and dioxins were
17 looked for. And if my memory serves me right, this had to
18 do with the Illinois Environmental Protection Agency and
19 the permitting procedure and confirmation that the unit
20 was meeting the permit requirements. As best I recall,
21 also, no dioxins were found.

22 Q. Do you know what the detection limits were at
23 that time?

24 A. In the middle '70s, they were two parts per
25 billion, something like that.

1 Q. Do you know if any time later any dioxins
2 were found?

3 A. At no time do I know of any Monsanto data
4 that showed dioxins were found.

5 Q. Whether or not it's true, I don't want to try
6 to get into that, but have you heard allegations made that
7 dioxins are formed in electrical fires where PCBs are
8 present?

9 A. I've heard that allegation, yes.

10 Q. Have you seen any scientific work that would
11 either confirm or refute that?

12 A. I have seen no work that confirms it, and
13 traditionally, reports are not made for negative results.
14 So, at the same time I have not seen any reports saying it
15 won't happen.

16 Q. Have you seen studies of which the author has
17 claimed it happened?

18 A. Yes, and let me correct my previous answer.
19 There have been allegations of the presence of dioxins in
20 fires in which PCBs were present, but at the same time
21 there were other chemicals present --

22 Q. Okay.

23 A. -- like chlorinated benzene. So, there's a
24 scientific question yet as to what is the source, if in
25 truth the dioxins were discovered.

1 Q. Are there some researchers who have concluded
2 in their own mind, again regardless of whether or not they
3 are right or wrong, it is the combustion of the PCBs which
4 produced the dioxins?

5 A. There are some that claimed that, yes.

6 Q. Do you know the names of some of those
7 researchers?

8 A. Gosh. I'm trying to remember a lady
9 scientist or spokesman for one of the environmental
10 groups.

11 Q. Ellen Silbergeld?

12 A. Ellen Silbergeld, yes. She is convinced that
13 they were formed. I'm sure there are others, but their
14 names don't come to mind now.

15 Q. When is the first time that you had heard
16 that an Aroclor was found in the environment?

17 A. I first heard about it in the summer of '69.

18 Q. What was the source of your knowledge?

19 A. My supervisor.

20 Q. And at that time who was that?

21 A. That was Raymond Stratmeyer,
22 S-t-r-a-t-m-e-y-e-r.

23 Q. And did he indicate to you the source of his
24 knowledge?

25 A. As best I remember, he referred to Monsanto's

1 medical department along with Monsanto's research people
2 and informed them of these findings in the environment of
3 a material that looked like PCBs.

4 Q. Had either the medical department or the
5 research people, to your knowledge, informed Mr.
6 Stratmeyer by that time of the results of the Jensen
7 study?

8 A. I believe that was the topic of discussion.

9 Q. Was the Yusho incident also a topic of
10 discussion at that time, that is, when you first heard
11 about potential for PCBs being in the environment?

12 A. It was not mentioned at that time, not to me.

13 Q. Were you given a copy of the Jensen study?

14 A. No.

15 Q. Were you given any written material at that
16 time which referenced the Jensen study or the findings of
17 anyone else with regard to PCBs in the environment?

18 A. In 1969, we're talking about?

19 Q. Yes.

20 A. No.

21 Q. When were you first given any documents of
22 any sort which referenced PCBs in the environment?

23 A. In January, 1970.

24 Q. And what documents were you given at that
25 time?

1 A. It was a collection of articles in a
2 three-ring notebook that the medical department put
3 together, and most of the articles had to do with DDT, but
4 there were references to PCB. I recall a document
5 referring to the Jensen work. As best I remember, it
6 didn't appear to be a finished document. It appeared to
7 be a rough draft, typewritten, with many typographical
8 errors, spelling errors. I do not know the source of
9 that, but that was my first exposure to the instant work.

10 Q. The rough draft that you were given, was it
11 your understanding that that was a rough draft of the
12 Jensen study, or was that a rough draft of someone else's
13 analysis of the Jensen study, or was it some other study
14 all together?

15 A. I was led to believe it was an English
16 translation of the Swedish work. I do not know who the
17 translator was.

18 Q. Do you have some recollection of what the
19 conclusions were as set forth in that study?

20 A. As best I recall, the authors were convinced
21 that what they saw was not DDT, and they were fairly
22 certain, but not totally certain, that it was
23 polychlorinated biphenyls.

24 Q. Did the company -- did they come to any
25 conclusion or offer any opinions as to the source of the

1 PCBs if, in fact, that's what they were?

2 A. No.

3 Q. When is the first time Monsanto did any work
4 to your knowledge on the biodegradability of PCBs?

5 A. I believe they started in 1969.

6 Q. Prior to -- strike that. Are you aware of
7 any studies appearing in scientific literature addressing
8 the question of whether or not PCBs were biodegrading
9 prior to the beginning of Monsanto's work in 1969?

10 A. I'm not aware of any.

11 Q. Do you know why Monsanto in 1969 looked at
12 the subject or began a study of biodegradability of PCBs?

13 A. I think I do, yeah.

14 Q. Why was that?

15 A. The reports up to that point kept referring
16 to what Monsanto called Aroclor 1254 and 1260 as being
17 found in the environment. This was puzzling to Monsanto
18 because those two materials, although they were not sold
19 in -- they were not the large volume products. There were
20 greater volumes of 1232, 1242, 1248. The puzzling part
21 was why weren't these being reported? So then again, the
22 scientists began some scientific speculation as to could
23 they be degrading? If so, what's the mechanism? What
24 creates this loss or this disappearance? So in order to
25 establish that in truth degradation was taking place, they

1 went to the laboratory and conducted these tests or
2 started to conduct the tests at that time.

3 Q. Which of the Aroclors did they look at at
4 that time?

5 A. Oh, they looked at 1242, 1248, 1254 and 1260.

6 Q. And do you know who developed the test
7 protocol?

8 A. The test protocol was developed by the
9 detergent industry. At the time there was a scientific
10 dispute about, you may recall, hard detergents and soft
11 detergents. So, that detergent protocol was taken and
12 used on PCBs.

13 Q. Was the study completed with regard to any or
14 all of the various Aroclors?

15 A. The work was eventually terminated, but it
16 was established that some of the PCBs do disappear.

17 Q. Which ones?

18 A. The monochlorals, the dichlorals, many of the
19 trichlorals, some of the four chlorines, but very few of
20 the 5, 6 and higher.

21 Q. With regard to the 1242 and 1248, were they
22 biodegradable or found to be biodegrading?

23 A. Members within that group?

24 Q. Within that group.

25 A. Yes, they were degrading.

1 Q. I see. Were members within the group not
2 biodegrading?

3 A. That is correct. Yes.

4 Q. Prior to 1969, did Monsanto have reason to
5 believe or did the company believe to your knowledge that
6 various Aroclors were under some circumstances escaping
7 into the environment?

8 A. Yes.

9 Q. Was it the thought of the company prior to
10 1969, that those that were escaping to the environment
11 were biodegraded?

12 A. No.

13 Q. Can you tell me what the company's thought
14 was prior to 1969, as to what was occurring with regard to
15 Aroclors that were escaping to the environment?

16 A. They were perceived to be so stable
17 chemically and biologically and every other measure
18 available at that time, that they were perceived to be, if
19 I can use an expression, like pebbles on the beach.
20 They're there, but nothing happens. That was the common
21 understanding of these chemicals.

22 Q. When did Monsanto first -- strike that.
23 Prior to 1969, did Monsanto understand that or believe
24 that various Aroclors were getting into the food chain?

25 A. No.

1 Q. It may not be a particularly good analogy.
2 If it's so far-fetched that it doesn't make any sense, let
3 me know. We'll try again. With regard to lead shot and
4 shotgun shells and ducks ending up getting lead poisoning,
5 if PCBs were present in the environment like pebbles on
6 the beach, why didn't Monsanto think it would get into the
7 food chain or was getting into the food chain?

8 MR. SCHINK: I object to the form of the
9 question. It implies that the frequency of PCBs in the
10 environment was equivalent to either shot in birds or the
11 number of pebbles on the beach. I don't think there's
12 been any indication of that, particularly given the kind
13 of product that it was and its intended use.

14 Q. (BY MR. CARLSON) You can answer the
15 question.

16 A. Well, again, it goes back to the
17 understanding that these are so inert, and if they do
18 enter the environment in quantities, they just sit in the
19 soil if they are spilled; and the chances of moving from
20 that point into the food chain were perceived to be so
21 remote, that problems in getting into a food chain were
22 just inconceivable.

23 Q. Prior to 1969, how did Aroclors get into the
24 environment?

25 A. How did they?

1 Q. Yes.

2 A. Primarily through accidental spills.

3 Q. Okay. And secondarily?

4 A. Secondarily, I guess, since there was no way
5 to measure in very, very low amounts at that time, it's
6 conceivable that they could have gotten into the
7 environment, because it was assumed that there were none
8 there in the water stream, for example. If it was
9 analyzed from a plant, for example, it analyzed and found
10 no PCBs, and they would discharge it.

11 Q. I guess I'm not looking right now at whether
12 or not anybody should have found them. What I'm just
13 looking at with hindsight, how did the PCBs get into the
14 environment at that time, by effluent?

15 A. That's one way it could happen. It could be
16 in plant effluent, but nobody knew then.

17 Q. I'm not saying they did, and I'm not trying
18 to imply that they did. I'm just saying that one of the
19 ways, that one way it's possible, and years later you
20 could go out and with the fine tuned instruments, you see
21 it. In your opinion, did that occur prior to 1969?

22 MR. SCHINK: Did what occur?

23 Q. (BY MR. CARLSON) Did PCBs get into the
24 environment as a result of discharge of plant effluent?

25 A. Yes.

1 Q. Has Monsanto ever established its own
2 criterion? Forget about DPA and Ellen Silbergeld and lots
3 of others, but has Monsanto ever established its own
4 criterion as to what the company will use as a safe level
5 of PCBs in the environment to be?

6 A. Monsanto established early on a goal of 10
7 parts per billion in waste water leaving its plant that
8 was considered to be environmentally acceptable.

9 Q. When was that established?

10 A. When?

11 Q. Yes.

12 A. About 1970, early 1970.

13 Q. Did Monsanto ever change that goal?

14 A. I'm not aware of a change in that target, but
15 I do know they better than achieved it. They did better
16 than that, but as a goal, that still seemed to be a
17 responsible one to Monsanto.

18 Q. Do you know what work that goal was based on?

19 A. Several things. One is the medical
20 department's opinion that at those levels, the probability
21 of health risks was acceptable. Another is the ability of
22 most laboratories to be able to take samples and analyze
23 for that level and do it consistently so the numbers have
24 true meaning. And the third one was the engineering
25 feasibility of systems that could treat waste waters to

1 reach such a level; and then, of course, engineering
2 feasibility is coupled with economic feasibility.

3 Q. What potential or possible health risks did
4 the medical department think may occur if the target was
5 not reached?

6 A. Well, I can't speak for Dr. Kelly and his
7 staff personally, but I had many discussions with them.
8 They were concerned with entering into the food chain in
9 the '70s, early '70s, and building up via what is known as
10 bioaccumulation and biomagnification up the food chain.
11 Examples given were such as fish caught by fishermen and
12 consumed, and by that time, as best I recall, Dr. Kelly
13 had reached the conclusion that based on the information
14 he had at the time, that 10 parts per billion is all
15 right. I don't know what else he thought professionally
16 or medically.

17 Q. Did he share with you the particular health
18 risks that he thought may occur if the accumulation was
19 greater -- strike that, if there was an abnormally high
20 accumulation of PCB's in the chain?

21 A. He just reminded me of the previous
22 discussions we had about chloracne at certain levels,
23 which varied again from person to person. That's the skin
24 symptom. And he also reminded me if you get enough of
25 these, you get liver damage, and if that liver is damaged

1 severely, it could result in death. That was not new
2 information. It was just reaffirmation of what was well
3 known.

4 Q. Was it your understanding that chloracne
5 would occur if someone were consuming food high in PCB
6 content?

7 A. It's possible if it's high enough and long
8 enough.

9 Q. Did Dr. Kelly share with you his thoughts as
10 to any criterion that one could look to to determine how
11 much PCBs would have to be present in order to induce
12 liver damage?

13 A. Not that type of criteria, no. He just told
14 me about what he called the early warning symptoms that
15 were noticeable long before the liver was damaged.

16 Q. What were some of those symptoms?

17 A. As far as skin exposure was concerned, time
18 and time again he said look for redness of skin. If
19 you've got that, you're getting too much. That's long
20 before the liver has been damaged. If you continue that
21 chapped skin, red skin, you're going to next see
22 chloracne. That's another warning.

23 As far as breathing too many approximate PCBs, you
24 were cautioned to look for the breathing respiratory
25 symptoms, which were described to me as resembling severe

1 chest cold, painful, difficulty breathing, irritated. If
2 you reach that point, you're breathing too much. Step
3 back and get away from that exposure. These were
4 considered to be very good indicators to avoid the
5 exposure, whether by skin or breathing or ingestion,
6 before you get to the point where liver is threatened.

7 Q. Are you aware of anyone, have you ever been
8 told of anyone ever developing chloracne as a result of
9 eating foods high in PCB content?

10 A. No. Let me correct that. I have an
11 understanding that the Japanese rice bran oil incident,
12 there were reports of chloracne, observed chloracne, which
13 was attributed to this ingestion of the contaminated oil.

14 Q. Has Monsanto formed any opinions within the
15 company or does it hold company opinions with regard to
16 safe levels of PCBs in fish?

17 MR. SCHINK: Currently? He's not employed by
18 Monsanto.

19 Q. (BY MR. CARLSON) Whatever you know.

20 A. I don't really know what their current
21 position is.

22 Q. When you left the company, did you know what
23 their position was?

24 A. At that time we were concurring with the FDA
25 approach.

1 Q. Do you remember what the acceptable level was
2 at that point?

3 A. As I remember, it was five parts per million
4 in the edible filets.

5 Q. And can you tell me why Monsanto thought or
6 concurred with the EPA that more than that would be
7 inappropriate?

8 A. No, I can't.

9 Q. Are there PCBs in the American environment
10 that didn't come from Monsanto?

11 A. I personally suspect yes.

12 Q. Do you have some suspicion as to where they
13 may have come from?

14 A. I suspect they came from all over the world
15 carried by wind currents, Japanese sources, European
16 sources.

17 Q. Have there been any works that you have seen
18 addressing that particular issue?

19 A. No.

20 Q. Were PCBs manufactured in Japan, at any time
21 manufactured pursuant to an agreement between the Japanese
22 company and Monsanto?

23 A. Yes.

24 Q. How about for PCBs manufactured in Europe?
25 Were some of those manufactured by companies who did not

1 have agreements with Monsanto?

2 MR. SCHINK: Excuse me. Could you clarify
3 what you mean by "agreement"?

4 Q. (BY MR. CARLSON) Either a licensing
5 agreement, royalties are paid, or just an informal
6 agreement that Monsanto would share technology.

7 A. There were manufacturers in Europe that were
8 producing PCBs independent of Monsanto.

9 Q. Have you done any work in the area of how die
10 cast companies may have added to the PCBs in the
11 environment?

12 A. Have I personally?

13 Q. Yes. Have you done any work on that subject
14 to determine what it is about die cast operations which
15 may result in PCBs getting into the environment?

16 A. I attempted to get familiar with that type of
17 operation by talking to Monsanto individuals whose job it
18 was to be familiar. These are primarily the marketing
19 people and the applications research people. And I was
20 made aware of some of the conditions that existed at the
21 die cast plants, of course, the high temperatures
22 associated with molten metals, the equipment that is
23 operated to perform the various tasks required, the fact
24 that this equipment is under pressure. And like all
25 industrial equipment, it will fail occasionally, and you

1 will get the leaks, and it's a question then of coping
2 with that leak, whether you shut down the line and repair,
3 or you capture the spillage, whatever is appropriate for
4 the particular operation. I was aware that cooling waters
5 are involved, and there's always the threat of water and
6 PCBs being mixed, which always causes problems because
7 they are difficult to separate. I don't know how else to
8 answer the question.

9 Q. I can appreciate that. At some point in time
10 did you form an understanding as to whether or not
11 discharge of cooling water by die cast companies absent
12 PCBs would be permissible?

13 A. Yes.

14 Q. Did Monsanto embark on a program to educate
15 customers using products containing PCBs -- I'm talking
16 about die cast companies now -- on the necessity of
17 containing cooling water which may contain PCBs?

18 A. Yes.

19 Q. And when did it do that?

20 MR. SCHINK: I object to the form of the
21 prior question. You say embark upon a program. It
22 implies that there was no prior program.

23 Q. (BY MR. CARLSON) Okay. Sometime in the life
24 of the product I suspect there was no prior program. Go
25 ahead. I guess I was trying to find out when Monsanto

1 started to tell customers utilizing Pydraul in die cast
2 machines of ways to contain -- strike that. What I was
3 looking at, I guess, was when Monsanto began to advise die
4 cast companies utilizing Pydraul with PCBs that waste
5 water that could have PCBs in it should be contained.

6 A. Well, there was always a reference to keeping
7 an industrial chemical like Pydraul out of water. This is
8 pretty general, even if the oil would have been mineral
9 oil. So, that kind of advice existed from the first pound
10 sold --

11 Q. Okay.

12 A. -- as a replacement for a mineral oil in a
13 unit or whatever was used at the time. Beginning in 1970,
14 when it was well established that PCBs were being found in
15 the environment, there was additional emphasis made
16 centering on PCBs, per se, and that took place. That took
17 many forms. The primary one was proper disposal such that
18 it doesn't get into the environment, which is a very broad
19 sentence or statement, but it's an attempt to cover any
20 possible condition of use. So, it's up to the user to
21 decide if his practices will lead to environmental escape,
22 because Monsanto could not be in a position of knowing
23 what its thousands of customers were doing with a material
24 and write the right paragraph to cover them all.

25 Then that branched out into a little more specifics

1 in terms of it's recommended that you curb any area that
2 contained a spill, direct the spill to some controllable
3 pit, or capture it in some absorbent material like sawdust
4 or clay or something that can be easily managed, rather
5 than get away from you down sewer. Now, that evolved
6 through the years.

7 Q. Okay. Do you recall when Monsanto advised
8 its customers using Pydraul in die cast machines to curb
9 areas and to direct spills to a controllable pit?

10 A. That was taking place in 1970, as best I
11 remember.

12 Q. Okay. Prior to 1970, did Monsanto understand
13 that spills were occurring and hydraulic leaks were
14 occurring which resulted in, on occasion, Pydraul getting
15 into the sewer?

16 MR. SCHINK: Now, you're saying into the
17 sewer, not into the environment, but into a sewer that
18 might go into a treatment plant?

19 MR. CARLSON: That's right.

20 A. I did understood that incidents like that
21 were noted, yes.

22 Q. (BY MR. CARLSON) And you understood, too,
23 that incidents like that were understood to occur in the
24 die cast industry?

25 A. Yes.

1 Q. Was there some belief or understanding on
2 Monsanto's part that PCBs that would get into a sewer
3 system would not get into the environment?

4 MR. SCHINK: By sewer system, you're
5 referring to a collection system of some sort; is that
6 right, Mr. Carlson? I object to the form of the question
7 unless you clarify.

8 Q. (BY MR. CARLSON) Go ahead.

9 A. It was Monsanto's understanding that the
10 frequency of this happening was not so great that it was
11 intolerable.

12 Q. Okay.

13 A. It was happening. The amount it was getting
14 out was acceptable. The impact on the environment was not
15 known, but it was assumed that the materials were so inert
16 that that impact would be difficult to measure.

17 It was also believed at that time that when it went
18 to systems such as municipal waste treatment, waste water
19 treatment systems, that the PCBs, being heavy, would end
20 up in sludges, and the sludges in turn would be properly
21 disposed of. Even though the amounts were probably very
22 erratic, it wouldn't happen every day, and the amounts
23 would also be rather small, relatively speaking. So, it
24 was never perceived to be a problem that required any
25 specific and particular attention.

1 Q. What work did Monsanto do to determine that
2 the frequency of such events and the amount getting out
3 was not intolerable?

4 A. This was primarily -- in fact, the only
5 source, really, was the personal contact by Monsanto
6 representatives with the customer, with the user.

7 Q. Is that particular subject something that
8 Monsanto's salespeople would report on to the company?

9 A. This was a judgment call on the part of the
10 representative of Monsanto. If he perceived it to be
11 noteworthy, he would call his supervisor, or he would put
12 it in what Monsanto calls a call report or trip report.

13 Q. Sure.

14 A. It was not mandated that each and every one
15 of these be reported. It was a judgment call on the part
16 of the Monsanto representative, whether to discuss it or
17 whether just talk to the customer and resolve it there, or
18 whether it was so small that he didn't feel it was an
19 issue.

20 Q. Did the trip reports or sales call reports
21 have a particular section designated for them to report on
22 unusual spillages or leakages of hydraulic fluid?

23 A. No.

24 Q. Were the salespeople directed to determine
25 the frequency that die cast companies were experiencing

1 hydraulic leaks and having spills?

2 A. I'm not aware of any direction of that kind,
3 that specific kind. I don't know.

4 Q. Is it your understanding that almost all die
5 cast machines experience some leakage during the course of
6 a week of the hydraulic fluid?

7 A. Yes.

8 Q. Was there ever an attempt made prior to 1970,
9 to quantify the amount of leakage from any die cast house
10 prior to 19 -- let's start over. At any time prior to
11 1970, was there ever an attempt by Monsanto to quantify
12 the amount of leakage?

13 A. I'm not aware of any such attempt.

14 Q. Was there any study performed by Monsanto to
15 determine where the Pydraul would end up that did leak
16 from a die cast machine or as a result of a spillage?

17 A. I'm not aware of any study that addressed
18 that, no.

19 Q. Prior to 1970, did Monsanto conduct any
20 studies to determine what the impact would be of Pydraul
21 being discharged from a die cast company that previously
22 had leaked from a die cast machine or had leaked as a
23 result of spillage?

24 A. I'm not aware of any study like that.

25 Q. Did Monsanto pay for any studies to be

1 conducted by others on that particular subject prior to
2 1970?

3 A. I do not know.

4 Q. Did Monsanto at any time ever own any
5 companies whose principal business was conducting either
6 health tests on animals, either human or animal tests or
7 environmental studies?

8 A. No.

9 Q. If the PCBs ended up in the sledge in a
10 municipal waste water treatment system as the company
11 believed, how were the municipalities disposing of that
12 sludge?

13 A. It's my understanding that they ended up in
14 landfills.

15 Q. Do you know whether or not that sludge has
16 ever been used as a fertilizer?

17 A. Yes. In a few instances, yes.

18 Q. Do you know when it was first started to be
19 used as a fertilizer?

20 A. No.

21 Q. Do you know whether or not it was being used
22 as a fertilizer in the mid-1960's?

23 A. I suspect it was. Now, we're talking about
24 sludges from municipal sewage treatment plants --

25 Q. That's correct.

1 A. -- which may or may not have hydraulic fluids
2 in them?

3 Q. That's right.

4 A. All right.

5 Q. I'm not saying they do. I just want to know,
6 you know --

7 A. Okay.

8 Q. Okay. Do you know, were they being used in
9 the 1960's? Was sludge being used in the 1960's as
10 fertilizer?

11 A. I'm aware, for example, of Milorganite, but I
12 don't know what year that was introduced to the
13 marketplace. I just don't know the dates.

14 Q. To your knowledge, did Monsanto, prior to
15 1969, actually go through that thought process? Now, I
16 appreciate that Monsanto's got a lot of employees, and you
17 can't be responsible for knowing what everybody is
18 thinking about, and I'm not trying to impose that
19 responsibility on you, but to your knowledge, were there
20 people at Monsanto that actually sat down and thought out
21 the process of where spillage of hydraulic fluid in die
22 cast houses ended up?

23 MR. SCHINK: Are you talking about spillage
24 that was not properly collected in Wisconsin, or are you
25 talking about spillage that was properly collected by

1 using the means he discussed?

2 Q. Can you answer the question as it's phrased?

3 MR. SCHINK: I object to the question.

4 Q. (BY MR. CARLSON) Secondly, do you remember
5 the question?

6 A. I believe I do.

7 Q. Okay.

8 A. There were individuals in Monsanto that sat
9 down, as you say, and thought about it.

10 Q. Okay. Can you tell me --

11 A. They addressed those cases where control was
12 appropriate, the use of sawdust and clay and proper burial
13 and the proper kinds. And there were instances where they
14 were aware it was permitted to enter a municipal sewage
15 system, and they could speculate as to where that might
16 end up. They had no hard data to work from.

17 There were other instances where they frankly
18 didn't know. That went through their thought process.
19 They could come up with examples of excellent control and
20 to the other extreme of sloppy control. And so to answer
21 your question, yes, there were people in Monsanto that
22 went through this thought process, and this is really what
23 led to the conclusion that although most of the customers
24 are doing a good job, there are those few that can't or
25 won't lead us to replace that product.

1 Q. Okay. I'm not saying you didn't answer my
2 question, but I want to refresh my own recollection.

3 Would you read my question back for me.

4 (Reporter read from record as directed.)

5 A. I have a correction to make in that last
6 answer. You mentioned 1969 and prior to. I would suggest
7 that starting in 1969, those thoughts were addressed.

8 Q. (BY MR. CARLSON) Okay. I thought that's
9 what you meant to say, but I wanted to be sure.

10 A. Yes.

11 Q. Okay. Starting in 1969 then, who did go
12 through that effort in the company?

13 A. I can recall individuals that were involved.
14 There's Howard Bergen, the director of the business group.

15 Q. I'm sorry. His last name is?

16 A. Bergen, B-e-r-g-e-n.

17 Q. I keep calling it Bergen, so now I will
18 pronounce it right.

19 A. He preferred Bergen, soft "g." A Norman
20 Johnson, who was the marketing manager for the hydraulic
21 fluids; a Bill Richard, the director of research for those
22 fluids.

23 Q. Were those fluids generally categorized as
24 functional fluids?

25 A. They were part of the functional fluids,

1 which included hydraulic fluids as one category.

2 Q. Okay. Was Bill Richard director of research
3 for the hydraulic fluids?

4 A. For functional fluids.

5 Q. For functional fluids.

6 A. Now, working for Dr. Richard were individuals
7 like Lou Stark. I remember Mr. Stark was involved. So,
8 the names I have given you represent the business
9 function, the marketing function, the research function.

10 Q. Okay. Prior to 1970, was it generally
11 permissible -- and every time I use "generally," I'm going
12 to catch an objection, so I'll stipulate it will help me
13 into the subject. Was it generally permissible for
14 spilled hydraulic fluids to be flushed down storm sewer
15 drains?

16 MR. SCHINK: I object to the form of the
17 question. Are you talking about was it lawful in terms of
18 the Refuse Act, you're saying?

19 MR. CARLSON: Yes.

20 MR. SCHINK: You're asking for a legal
21 conclusion. I don't think he's qualified to give one.

22 A. It's my understanding prior to '70, before
23 EPA, states had statutes which described the kinds of
24 material permitted into public waterways in the states.
25 Industrial chemicals as a group were generally outlawed

1 throughout the 48 states at a time, so a material like a
2 hydraulic fluid would be an industrial chemical that just
3 shouldn't be flushed down the sewer.

4 Q. (BY MR. CARLSON) Okay.

5 A. Generally.

6 Q. Did you have -- strike that. Do you have an
7 understanding of acceptable separation techniques used in
8 the die cast company to separate hydraulic oils from waste
9 water?

10 MR. SCHINK: When?

11 Q. (BY MR. CARLSON) Any time prior to 1970.

12 A. The only technique I'm aware of prior to
13 1970, was gravitation where the heavier fluid would sink
14 to the bottom and have a water layer on top, and you
15 separate the two that way.

16 Q. Prior to 1970, did Monsanto recommend to its
17 customers utilizing a secondary or other separation
18 technique to separate PCBs from the water?

19 A. I'm not aware of any.

20 Q. In those circumstances where there's a
21 mixture of kinds of oil that have, as a result of leakage
22 or spillage, worked their way into the waste water of a
23 plant, and there's an attempt to separate by skimming,
24 would the PCBs stay with the water?

25 A. To a degree. Some PCBs are in the water

1 layer, in the parts per billion range, but they would not
2 be visible to the naked eye.

3 Q. PCBs are heavier than water?

4 A. Yes.

5 Q. Would some of the PCBs be suspended in oil?

6 A. If there's -- you're talking now mineral oil?

7 Q. Yes.

8 A. If there's mineral oil, they would be very
9 much in the oil. They blend very perfectly.

10 Q. Okay. Who was responsible for marketing of
11 Pydraul F-9 and Pydraul 312 from '65 through '71?

12 A. The only individual I know was Norman
13 Johnson. I do not know who his predecessor was.

14 Q. Without going into the details, it may become
15 of interest to me later on, but right now were there other
16 fluids utilizing PCBs other than the hydraulic fluids --
17 strike that. Prior to 1969, were there customers of
18 Monsanto using fluids utilizing PCBs which were given
19 specific directions with regard to cleanup -- strike that.
20 The question is never going to come out right. I'll try
21 one more time. Well, let me approach it this way. What
22 are some of the other liquids Monsanto manufactured which
23 utilized PCBs prior to '69?

24 A. Well, there were liquids used in turbines,
25 gas turbines, liquids used in vacuum pumps, liquids used

1 in electrical equipment, as well as liquids used in heat
2 transfer assistance. I believe I've covered them all.

3 Q. Okay. Were the liquids with PCBs utilized in
4 gas turbines prior to 1969, to your knowledge, did
5 Monsanto conduct studies as to whether or not the PCBs
6 used in that circumstance would potentially get out into
7 the environment?

8 A. I don't know of any formal study other than
9 the precautions about skin and breathing and the like that
10 called for responsible handling and use and disposal.

11 Q. Okay.

12 A. I don't know if that's what you had in mind.

13 Q. That's close. Is that answer also true with
14 regard to liquids used in heat transfer systems?

15 A. Yes.

16 Q. And the same would be true with regard to
17 vacuum pumps?

18 A. Yes.

19 Q. And electrical equipment?

20 A. Correct.

21 Q. Prior to 1969, and for lack of a better way
22 of approaching it, when you use the terminology that you
23 had used earlier, I think it was sloppy controls and very
24 tight controls. The terminology is fine. What would
25 Monsanto's criterion be as to what would be an acceptably

1 tight control versus one which was unacceptable? We're
2 talking about now with regard to PCBs that get into the
3 waste water system.

4 A. I don't know that Monsanto had any
5 quantifiable criteria in mind in terms of so many pounds
6 or what have you, and Monsanto was never in a position to
7 know all of the circumstances that surrounded each
8 customer's particular situation. So it would be very
9 difficult to come up with a Monsanto concept of what's
10 acceptable. It depends on the total situation.

11 If the customer, as an example, had an agreement
12 with the local sewage treatment plant to discharge a given
13 amount of waste, and the local treatment plant handled it
14 properly, used the proper landfills or whatever, that
15 would be one set of circumstances that would call for "X"
16 pounds of material could go into the system. In another
17 situation where there just was no such agreement or the
18 local treatment plant could not tolerate it for reasons
19 that are unique to them, a much lesser amount would have
20 to serve as acceptable. So, it's a long way of going
21 around saying that I'm not aware of Monsanto, first of
22 all, being in a position to quantify it. So, no such
23 number ever evolved.

24 Q. Okay. Each case would have to be judged
25 independently?

1 A. Correct. Yes.

2 Q. Are there die cast companies, other than my
3 client, that you're aware of, that you have heard about,
4 which have had to remove soil from around the premises
5 because of PCB content?

6 A. This is the first one I've heard of and the
7 only one I've heard of.

8 Q. Okay. Are there any die cast companies
9 you're aware of, manufacturers who are using die cast
10 systems as a part of the manufacturing operation which
11 have incurred liability to either a state or to the
12 Federal Government as the result of discharge of PCBs?

13 MR. SCHINK: Are you talking about deliberate
14 discharges like the one involved in this case, deliberate
15 or accidental? Otherwise, I object to the form of the
16 question.

17 MR. CARLSON: You can make your objection to
18 the form of the question, and the question stands as it's
19 phrased.

20 MR. SCHINK: He wants to know either a
21 deliberate discharge or an accidental discharge.

22 Maybe you want to read the question back.

23 (Reporter read from record as directed.)

24 MR. SCHINK: I don't know whether he knows
25 whether you incurred liability.

1 MR. CARLSON: Yeah, I know. I appreciate
2 that.

3 A. I'm kind of fuzzy.

4 Q. (BY MR. CARLSON) You can ask me. I'll
5 rephrase the question if you've got a problem, and I'm
6 willing to admit the phrasing of that question isn't the
7 greatest, but --

8 A. All right. I'm not aware of all the details
9 of the Milwaukee Harbor situation.

10 Q. That's an example where there was a problem?

11 A. There were some cleanup possibilities talked
12 about. I don't know whether they had a die casting
13 operation inside that operation, so I'm kind of fuzzy in
14 terms of answering your question. Other than that, I
15 don't know of any other die casting related situation.

16 Q. Would it be more correct to say you don't
17 know with regard to my client what its responsibilities or
18 liabilities have been in the past, do you?

19 MR. SCHINK: You have to answer audibly.

20 Q. (BY MR. CARLSON) You have to answer yes or
21 no.

22 A. I'm sorry. No, I don't.

23 Q. So when you say, "I'm not aware of any other
24 situation," actually what you're saying is, "I'm not aware
25 of any situation where a die cast company has incurred

1 liability to either a state or to a governmental agency as
2 a result of discharge of PCB's?

3 A. That's correct.

4 Q. Okay. Other than the translation of the
5 Jensen study, have you reviewed any other studies which
6 addressed the question of potential adverse health effects
7 of PCB's? Strike that. Have you reviewed any studies
8 addressing the question of potential adverse health
9 effects of PCB's?

10 A. Yes, I have.

11 Q. Okay. Can you tell me of those that you have
12 read?

13 A. There's a report that was issued by Dr.
14 Risebrough, University of California at Berkeley, in which
15 he claimed that his study showed that the brown pelicans
16 off the southern coast of California were being affected
17 by PCBs. There was a report issued out of Cornell
18 University by Dr. Peacall, P-e-a-c-a-l-l. As I remember
19 there, he was alleging that the PCBs were harming wild
20 birds, as I remember, the peregrine falcon in particular.

21 There were reports that came out of an incident
22 that occurred in the North Sea up near Great Britain
23 involving seals and sea birds, sea fowl. There was a
24 report issued out of the Commercial Fisheries Laboratory
25 in Gulf Breeze, Florida, in which they reported that the

1 juvenile shrimp were extremely sensitive to PCBs. At the
2 moment I can't think of any more.

3 Q. Any human health studies that you have
4 reviewed?

5 MR. SCHINK: You're asking now whether they
6 showed adverse effects or no effects?

7 MR. CARLSON: That's right. I'm not looking
8 just for --

9 A. I'm aware of some epidemiology studies made
10 on workers in the electrical equipment industry that were
11 exposed to PCBs in their places of employment. I have to
12 confess I haven't read the reports, per se. I have just
13 heard of these reports. I was informed that they were
14 conducted. I'm aware, of course, of Monsanto's animal
15 studies that were sponsored by Monsanto.

16 Q. (BY MR. CARLSON) Have you read those?

17 A. I'm sorry?

18 Q. Have you read those?

19 A. The Monsanto's?

20 Q. Yes.

21 A. I have read the summaries. I have not read
22 the full technical report.

23 Q. Okay. Any others?

24 A. I can't recall at the moment any other
25 reports that I've seen or have heard of.

1 Q. Has Monsanto, to your knowledge, accepted
2 that the presence of PCBs in the environment has damaged
3 reproduction of certain birds?

4 MR. SCHINK: At what level?

5 MR. CARLSON: At any level.

6 MR. SCHINK: Object, vague.

7 A. Monsanto, because of its leghorn chicken
8 studies and the results from those studies, concluded that
9 birds can have problems with eggs and reproduction when
10 exposed to PCBs. The levels are unknown regarding wild
11 birds.

12 The studies that were reported in early '70s by
13 investigators such as Peacall and Risebrough, I later was
14 informed by Government authorities in Patuxet, Maryland,
15 and they published a report on this, that the problem
16 chemical there was for DDT, not the PCB. So, there is no
17 good, hard data associating PCBs with wild birds, but
18 Monsanto's conclusion based on the chicken study is that
19 it's very likely that wild birds could be harmed.

20 Q. (BY MR. CARLSON) It's hard to find birds
21 that aren't exposed to the DDT alone or the PCBs alone?

22 A. That is correct.

23 Q. Has anybody done any work to determine
24 whether there's a synergistic effect of DDT with PCBs or
25 vice versa?

1 A. I'm not aware of any.

2 Q. Do you know if Monsanto agrees or disagrees
3 with the idea that the gulf shrimp is particularly
4 sensitive to PCBs?

5 A. Monsanto accepted that study and findings of
6 that study. There's no reason not to.

7 Q. Did the Commercial Fisheries Laboratory study
8 address the effects of PCBs on those shrimp that were
9 sensitive? What were the effects of PCB's?

10 A. Well, it killed them.

11 Q. Okay. In the study which addressed the
12 question of PCBs and seals, apparently looking at what
13 occurred in the North Sea, what was the effect of PCB's on
14 the seals there?

15 A. As I understand it, they found bodies of dead
16 seals washed up on the shores. The seals were emaciated,
17 and there were many pups involved. The tissues were
18 analyzed, and PCBs were found, so PCBs were the suspect.

19 The last I recall is that the authorities in charge
20 of that study concluded that it's very likely that the
21 seals, especially the new mothers, were not getting enough
22 nourishment from wherever their surroundings were; and
23 therefore, they became emaciated, and this is why the pups
24 were in turn affected. They couldn't nurse. And then
25 unfortunately, they found themselves in a violent sea

1 storm. All of those impacts combined killed them. That's
2 my understanding of the final analysis.

3 Q. Was there some relationship thought to exist
4 between the levels of the PCBs and the eventual death?

5 A. No. There was no relationship established,
6 because what had happened, they were so emaciated and lost
7 so much weight, that it was difficult to come up with a
8 number that says so many PCBs were present in the living,
9 healthy animal to start with. They just could not make
10 any good conclusions from their data.

11 Q. Did they make some conclusions, regardless of
12 whether or not they were good?

13 A. Well, like I said earlier, they concluded
14 that it was a lack of food that led to malnutrition, and
15 then the storm came along, and that killed them.

16 Q. Was the lack of food related, at least in the
17 author of the study's mind, to the presence of PCBs?

18 A. No. They didn't associate that with PCBs.

19 Q. Were the presence of the PCBs coincidental to
20 the lack of food? I'm not talking about specifically what
21 happened. What was being reported as happened, though,
22 was that coincidental to what had occurred in the North
23 Sea?

24 A. That's the conclusion, yes.

25 Q. As expressed by those authors?

1 A. Yes.

2 Q. The Monsanto animal studies began when? And
3 let me back up. Monsanto, I presume -- and I know they
4 conducted tests periodically, you know, skin type tests on
5 animals on PCBs.

6 A. Yes.

7 Q. Did Monsanto conduct any studies looking at
8 the long-term effect of exposure to PCBs in the food chain
9 of the animals?

10 A. Yes.

11 Q. And when did they start doing that?

12 A. They started about 1968, with some studies to
13 establish feeding levels for the long-term study.

14 Q. Who actually was doing that work?

15 A. Industrial Bio Test Laboratories, Northbrook,
16 Illinois.

17 Q. Were they doing that on contract to Monsanto?

18 A. Yes.

19 Q. Do you know who owned Industrial Bio Test at
20 that time?

21 A. I believe it was a NALCO company, N-A-L-C-O.

22 Q. Do you know who owned NALCO?

23 A. No, I don't.

24 Q. What was Industrial Bio Test -- strike that.
25 To your knowledge, was there a contract entered into

1 between Monsanto and Industrial Bio Test, a written
2 contract?

3 A. I've never seen one.

4 Q. What is your understanding of specifically
5 what Industrial Bio Test was to do originally when they
6 were first commissioned to do this study? I think you
7 already answered that for me, and if I'm being repetitive,
8 I apologize. I'm looking really what their first charge
9 was.

10 A. Their first charge?

11 Q. Yes.

12 A. Was to treat a small group of animals at as
13 high a dose level as possible without killing the animal
14 to help establish a level that could later be fed to
15 another group of test animals for their lifetime, and have
16 as many survivors as possible to be able to study the
17 effects.

18 Q. Okay. And the specific animal being looked
19 at was the chicken?

20 A. It was the white rat, the beagle dog, and the
21 leghorn chicken.

22 Q. Did Industrial Bio Test determine the amount
23 that could be fed to each of the animals and to the bird
24 without killing them?

25 A. They determined an amount that would give

1 this survival rate that was suitable for a good study.

2 Q. Okay. Do you know about how long it took
3 them to arrive at these numbers?

4 A. That's called a 90-day study. So given a
5 normal follow-up, I would suggest that it took them about
6 four months.

7 Q. Okay. And then what was done with that data?

8 A. That data then was used to establish feeding
9 levels for the two-year rat study and the 18-month dog
10 study, and I believe it was 18 months for the chicken
11 study.

12 Q. Were the results of the original work, that
13 is, the results of the 90-day study, published in a report
14 to Monsanto?

15 A. There is a report to Monsanto, yes.

16 Q. Okay. And do you know, were the two-year,
17 18-month and 18-month studies carried out?

18 A. Yes.

19 Q. And do you know what the results were
20 generally with regard to those studies?

21 A. In the rat studies, the higher chlorinated
22 types of PCBs at the high dose level, which was 100 parts
23 per million in their total daily diet, lifetime diet,
24 produced enlarged livers and decreased gain in weight, and
25 had some reproduction problems in terms of number of pups

1 that were born.

2 In the chicken study, they seemed to tolerate the
3 higher chlorinated PCBs better. The effect was noted with
4 the lower chlorinated PCB, the 1242, and somewhere between
5 the one and 10 part per million feeding level there was an
6 effect on the egg shell thickness and on the hatchability
7 of the eggs. The tests were then rerun, and it was
8 established that at about three parts per million in the
9 diet of the chicken, this effect on eggs was noted. So,
10 it took less than three parts per million to be
11 acceptable.

12 MR. SCHINK: Three parts per million?

13 A. Per million, yes. In the dogs, the dogs
14 seemed to suffer from gastric problems. As I remember,
15 they had at the higher levels bleeding ulcers or the
16 equivalent of that. That's all I remember about the dog
17 study.

18 Q. (BY MR. CARLSON) Do you know if they seemed
19 to tolerate the higher chlorinated or the lower
20 chlorinated Aroclors better?

21 A. I'm sorry?

22 Q. I'm talking about the dogs now. Did they
23 seem to tolerate the higher or the lower chlorinated --

24 A. There didn't seem to be that much difference
25 in the materials tested.

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1 Q. Okay.

2 A. But it was the higher doses that, of course,
3 gave that effect.

4 Q. In response to the results of this study, did
5 Monsanto take any specific action with regard to either
6 continuing or discontinuing sales of PCB products or
7 advice given to customers handling PCB products?

8 A. No. This data confirmed that what we had
9 been saying on the labels and literature and all was still
10 appropriate.

11 Q. Okay. And that study was completed when?

12 A. The final reports were available in '71 or
13 '72.

14 Q. To your knowledge, has any human health
15 researcher opined that exposure to PCBs has or causes any
16 particular form of cancer?

17 A. I've read and heard that allegation. I have
18 seen no formal report supporting that.

19 Q. Where have you read the allegation?

20 A. Mostly in the popular press.

21 Q. The press has an interesting role I'm sure
22 that we're all aware of with regard to industrial
23 chemicals, but do you have some recollection of what
24 studies or what it was that the press was latching on to
25 that they used to -- or the press used to support the

1 stories that there was a cause/effect demonstrated?

2 MR. SCHINK: You're talking now about human
3 health?

4 MR. CARLSON: That's right, human health.

5 A. I don't recall any specific reports or
6 specific person mentioned. It is a belief held by some
7 scientists. They have expressed this belief in meetings.
8 The press picked it up, and it's been my observation that
9 now any time a PCB article appears in the popular press,
10 in the newspapers, it's followed by the word "cancer," the
11 cancer-causing chemical or a probable cancer causer; but
12 anyway, the word "cancer" is associated with PCBs, but I
13 don't recall any scientific report that deals with human
14 cancer and PCBs.

15 Q. (BY MR. CARLSON) Do you recall any case
16 reports in which the author linked exposure to PCBs and
17 cancer?

18 A. Case reports?

19 Q. Do you recall any epidemiological work such
20 as you referenced for me with regard to the electrical
21 workers?

22 A. I don't recall any.

23 Q. Can you give me the names of some of the
24 scientists that you have heard express the opinion or have
25 read that have expressed the opinion that there's a

1 cause-effect relationship between exposure to PCBs and
2 cancer?

3 A. This Mrs. Silbergeld stands out in my mind.
4 There are others, but I really can't remember. Barry
5 Commoner is another name that comes to mind. There are at
6 times, as I remember, some of Mr. Ralph Nader's team that
7 made statements of this type. I've forgotten their names
8 now. I just can't think of them anymore.

9 Q. Do you have some understanding or have you
10 heard what these people are basing their contentions on?

11 A. I don't know what they're basing them on.

12 Q. Other than the -- strike that. Did Biotest
13 do the second stage of the study that you have referenced
14 for me?

15 A. The chicken study?

16 Q. Yes, the chicken, rat and dog.

17 A. They did all those studies, yes.

18 Q. Did all of them. Okay. Has Monsanto
19 commissioned any other animal studies looking at
20 potentially adverse health effects of PCB's?

21 A. I wasn't involved, but I understand that
22 there was a study placed somewhere with Monsanto
23 companies, and that's all I personally know.

24 Q. Was it your understanding that Monsanto paid
25 for the study or did it in-house or --

1 A. No, they did not do it in-house. It was done
2 elsewhere.

3 Q. Any idea what part of the country it was done
4 in, or perhaps what laboratory it was?

5 A. Just east is all I remember.

6 Q. Do you remember when that was?

7 A. It was after 1977, 1980.

8 Q. And have you heard just in general terms what
9 the results of that study were?

10 A. No, I haven't. I don't know either the
11 conditions of the test or the results.

12 Q. At the time Monsanto decided to discontinue
13 manufacturing and sale of Pydraul 312 that contained -- I
14 think it was what, Aroclor 1242, wasn't it?

15 A. Yes.

16 Q. Did you agree with that decision or disagree?

17 A. Yes.

18 Q. Was in part your agreement based on any
19 concerns that you had with regard to the effect of
20 Aroclors on the environment?

21 A. Yes.

22 Q. And was it also in part based on concerns you
23 had about potential or at least possible health effects of
24 the Aroclor?

25 A. Yes.

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1 Q. And was the information you had at your
2 disposal at that time that allowed you to come to an
3 opinion, that in this particular case you agreed with
4 Monsanto's action that was developed between 1969 and
5 whenever that decision was made?

6 A. Yes.

7 Q. If Monsanto solely, as the result of the
8 Jensen work in 1966, had decided to discontinue
9 manufacturing and sale of Pydraul 312 with the 1242
10 Aroclor, would you have disagreed with the decision based
11 on that information?

12 A. Yes.

13 Q. You would have thought it appropriate to have
14 more data available before either agreeing or disagreeing?

15 A. Yes.

16 Q. Was Monsanto -- strike that. Do you know
17 when Monsanto was first aware of the Swedish study?

18 A. The Swedish study?

19 Q. Yes, the Jensen study.

20 A. It's my understanding we were first aware of
21 it in late '66, early '67.

22 Q. It may be difficult to pin down, but do you
23 have some idea or do you have some understanding of who it
24 was at Monsanto that first became aware of the study?

25 A. I have an understanding.

1 Q. Who was it?

2 A. The best I recall, there was a Monsanto
3 representative in the United Kingdom named Don Cameron,
4 who was marketing sales representative, heard about a
5 report from somewhere -- I don't know where -- that
6 referred to chlorinated biphenol, spelled p-h-e-n-o-l
7 instead of p-h-e-n-y-l. And at first the thought was that
8 this is an entirely different chemical than the one we
9 were selling, but as I understood it, Mr. Cameron then
10 arranged through the Swedish Monsanto representative to
11 get a copy of that report, which in turn was translated,
12 and this is the report I mentioned earlier. It finally
13 got to Monsanto-St. Louis, like I said, late '66, early
14 '67.

15 Q. Okay.

16 THE WITNESS: Can we take a break?

17 MR. CARLSON: Oh, sure. This is not an
18 endurance contest. I didn't mean to imply that it was.

19 (A brief recess was taken.)

20 Q. (BY MR. CARLSON) When we were discussing
21 PCBs found in the environment, found in the food chain, I
22 guess one of the questions that comes to my mind is how do
23 birds end up with PCBs in their tissue? In other words,
24 are they eating foods that have PCBs in them, or are they
25 getting it from the dirt? Do you have some understanding?

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1 A. I'll give you my understanding.

2 Q. Okay.

3 A. The birds that seem to have the most trouble
4 with PCBs or chemicals like PCBs are the fish-eating
5 birds, falcons and the like, and the pelicans. And the
6 way this happens is that PCB, once it finds its way into
7 waterways, is, of course, present in that water. Then you
8 have the different species of aquatic life from the water
9 on up to the big fish. The big fish eat the little fish.
10 The little fish eat the smaller ones. Each one has some
11 PCBs in it started from the water flea, which is the
12 daphnea. You may have heard of it.

13 Anyway, the PCB accumulates in each creature and
14 concentrates in the fatty tissue of that creature such
15 that when it's eaten, all the PCBs go into the next
16 creature. So by the time you get to the top of the food
17 chain, the PCBs have been concentrated, sometimes quite
18 dramatically. They have found -- some studies show that
19 75,000 times more PCBs are in the fish than there was in
20 the water that the fish lived in.

21 So, that fish now has the PCBs in it. It's eaten
22 by the bird, pelican or falcon or hawk. It in turn builds
23 it up in its tissues. Some of it is eliminated. Some of
24 it is retained. Some of it is metabolized, and it then
25 begins to affect its reproduction, its ability to use

1 calcium properly to make the egg shells and so on. That's
2 my understanding of how it can happen in the food chain.

3 Q. Okay.

4 A. If it is dirt, as you indicated earlier, it's
5 really a dirt particle that gets into the water and is
6 suspended in the water, gets into the fish gills, and the
7 PCB off of that dirt then is extracted by the fish gill,
8 gets into the bloodstream that way, in addition to the
9 eating process.

10 Q. Okay. PCBs aren't being picked up by plant
11 roots, are they?

12 A. I haven't heard of any plants that pick up
13 PCBs, except that they were found in the pine needles in
14 Sweden, which many investigators suspect were from fallout
15 rather than from the soil.

16 Q. Has Monsanto undertaken some studies to
17 determine either where in the world or where in this
18 country most of the PCB problem is?

19 A. No.

20 MR. SCHINK: What do you mean by "problem,"
21 the presence?

22 Q. (BY MR. CARLSON) When we were talking about
23 a target of 10 parts per billion in discharge of waste
24 water as being an acceptable limit, first of all, am I
25 correctly stating Monsanto's position at the time you were

1 with the company?

2 A. Yeah, where discharged. It's not into the
3 environment. It's into a sewer system, leaving the plant
4 in the sewer system.

5 Q. All right. Leaving the plant in the sewer
6 system. Is there or was there an expectation that
7 further, after the material left the plant, it would then
8 result in the PCBs either being filtered out or breaking
9 down?

10 A. Yes. Those thoughts were considered, yes.

11 Q. We get into the subject of the municipal or
12 treatment of municipal sewage.

13 A. Correct.

14 Q. Okay. Has there been work done which shows
15 that this does or does not occur?

16 A. What doesn't occur?

17 Q. That treatment of municipal sewage will cause
18 biodegradation of PCBs.

19 A. Yes.

20 Q. All right. And does it?

21 A. Yes.

22 Q. Okay. When was that determined?

23 A. The biodegradation studies that Monsanto
24 conducted simulated in the laboratory what happens in a
25 municipal treatment plant that uses bacteria to digest the

1 sludge. In fact, the culture for these studies was
2 obtained from the St. Louis municipal sewage plant, taken
3 to the laboratory, and inoculated each of the test stands
4 for each of the products, and that demonstrated that yes,
5 bacteria from the treatment plant do digest some of the
6 PCBs. And also, they demonstrated during the analyses
7 that the PCBs had adhered to the particles in that test
8 system.

9 Q. Do the remainder of the PCBs, those that were
10 not digested, adhere to the particles?

11 A. Yes.

12 Q. And when was that done? When was the work
13 completed on that?

14 A. It was completed in early '72.

15 Q. From this could I infer that if companies
16 using the PCB hydraulic fluid had a waste water treatment
17 plant on their premises comparable to a municipal plant,
18 and could contain PCBs and treat them as the
19 municipalities were doing, that Pydraul with the PCBs
20 would still be a viable product today?

21 A. I suspect not, because the PCBs that are not
22 degraded would still be detectable with the analytical
23 methods now available, and as long as they are detected,
24 that just doesn't seem to be acceptable anymore. PCBs are
25 just not desirable.

1 Q. Okay. Because of the potential impact on the
2 environment?

3 A. That's the probability of an impact, is
4 really the thought that controls this undesirability of
5 PCB's.

6 Q. Prior to 1969, did Monsanto think that all
7 die cast waste water discharge was going into a sewer
8 system where there would be municipal treatment of the
9 water?

10 A. No. Many did, but there are others that did
11 not.

12 Q. What were the other -- I hate to use the word
13 "acceptable," but I guess I will, either acceptable or
14 common ways that the waste was being discharged by die
15 cast companies prior to '69?

16 A. Well, I understand that some companies had
17 their own discharge system before they discharged to a
18 local stream, and some thought that they controlled the
19 losses to the point where the water that did get away
20 could be discharged without any further treatment. Just
21 release it to the nearest creek bed and so on. And then
22 there were some that, as I said earlier, either could not
23 or did not understand the need to be careful, and they
24 would discharge.

25 Q. For a die cast company that was skimming off

1 oil, okay, mineral oil from the water, from waste water,
2 and then seeing if one saw the remaining water in the
3 tank, if it's relatively clear, typically would that,
4 prior to 1969, be thought to be waste water which could be
5 discharged into a local ditch or a stream bed?

6 MR. SCHINK: Now, is this a die caster using
7 Pydraul or not?

8 MR. CARLSON: Yeah, Pydraul 312.

9 MR. SCHINK: Along with mineral oil?

10 MR. CARLSON: No, not along with, but mineral
11 oils in the plants that have gotten into that same waste
12 water.

13 MR. SCHINK: And is this an open tank?
14 What's the depth of the tank? I object to the form of the
15 question.

16 Q. (BY MR. CARLSON) Go ahead.

17 A. Prior to 1969?

18 Q. Yes.

19 A. Any PCB type fluids that were with water
20 would be visible, because it would form a separate layer,
21 and the two would be separated. In fact, there was
22 literature that told the customer how to reclaim that
23 hydraulic fluid at the bottom of the water and reuse it to
24 save himself some money.

25 Q. Okay.

1 A. Now, there's an oil machine that you
2 mentioned. Mineral oil would float. You remove that, and
3 if you looked at the water and didn't see a bottom layer,
4 that would tell you that there were no heavy PCB hydraulic
5 fluids present. There was none present.

6 Q. And if you saw that bottom layer?

7 A. If you saw that bottom layer, you better be
8 careful. It very likely has PCB because it is heavy,
9 unless it's a mud or metal waste or some other types of
10 material. You have to determine that.

11 Q. Did Monsanto, prior to '69, know the various
12 methods that die cast companies were using to treat their
13 waste water?

14 A. In most cases, the Monsanto sales
15 representative knew quite a bit about the operation,
16 because they have -- that was a responsibility. "Know
17 your customers and his operations so you can help them
18 better to use your product, continue to use our product,"
19 that sort of thing. So, most of them were quite familiar
20 with the operation. Now, this does not mean that he knew
21 every minute of the day what was taking place.

22 Q. Oh, no. But he knew generally how the plant
23 plant worked?

24 A. Yes. Yes.

25 Q. And if a plant had a procedure for separating

1 mineral oils from waste water, but didn't have a separate
2 procedure for separating waste water from Pydraul, would
3 that salesman then recommend that another separation
4 system be employed?

5 A. Very likely, yes, sir, because that fluid
6 that was being lost was higher cost than that oil that
7 they were recovering. It would behoove them to recover
8 that heavier layer.

9 Q. Okay. And in some of your earlier literature
10 with Pydraul, that's set out?

11 A. Yes.

12 Q. Would it be recommended to the customer as a
13 cost savings measure that you could reclaim that Pydraul
14 fluid and reuse it in your system?

15 A. Oh, yes, because Pydrauls are more expensive
16 than other competitive fluids. This is one way to balance
17 out the costs.

18 Q. Would the recommendation have been made for
19 any other reason?

20 A. Well, it's the overriding reason, "Don't put
21 industrial chemicals down the sewer."

22 Q. Do you know if, in fact, your salespeople
23 calling on customers did make those recommendations to die
24 cast companies?

25 A. Yeah.

1 Q. Are you aware of any particular instance
2 where that occurred?

3 A. It was throughout the industry. There is no
4 one case that stands out.

5 Q. I appreciate that, and that may have been.
6 I'm not saying it wasn't. I'm just wondering if you can
7 point me to a situation where you know, in fact, that
8 occurred?

9 A. No. I don't remember any salesman telling me
10 specifically a customer by name, no. This was sort of
11 like breathing. They do it all the time.

12 Q. Were salesmen directed to tell their
13 customers this?

14 A. Yes. That's part of their training, to sell
15 this product.

16 Q. And they were directed to tell the customers
17 to put in a separation system which would draw out the
18 Pydraul that had been lost through leakage or spillage
19 from the waste water?

20 A. They were directed to discuss with the
21 customer the advantages of doing so and sharing with them
22 some ideas, but let the customer design his system,
23 depending on his factory, and the layout, and his
24 resources, what have you.

25 Q. In situations where salespeople were calling

1 on new customers, but old plants, that you were able to
2 pick up from, you know, your salesman was able to get in
3 there and sell Pydraul as a replacement hydraulic fluid
4 for something made by one of your competitors, if there
5 wasn't a separate system in place for drawing out Pydraul
6 from the waste water at the bottom, would that be a
7 recommendation that would be made for a new account?

8 A. Sure, yeah, but in something to catch the
9 loss or the drippage or the spill or the broken pipeline,
10 trap it and treat it as follows, and as I remember, the
11 brochures had even some sketches in some schemes of work
12 somewhere.

13 Q. In any of the brochures or publications
14 Monsanto had prior to '69, demonstrating ways of
15 accomplishing the separation, did Monsanto reference this
16 as a way to alleviate discharge of the material into
17 either a sewer system or the waterways?

18 A. I don't recall the wording. I just don't
19 remember the exact words. I do remember this emphasis on
20 reclamation and the mixture of water and Pydrauls and
21 separating them.

22 Q. It could well be that the separation system
23 that we're talking about for separating Pydraul from waste
24 water was only advanced by Monsanto as a technique for
25 reclamation to save money by the consumer so that fluids

1 could be used, rather than to aid in treating of waste
2 water that was going to be discharged either into a
3 system, a sewer system or a waterway?

4 MR. SCHINK: I object. It asks for the
5 witness to speculate.

6 A. It could be as you say.

7 Q. (BY MR. CARLSON) Okay.

8 A. At the same time, I find that hard to believe
9 that the thought of "Don't expose people" isn't there
10 somewhere, "Don't get it out there where others can be
11 exposed." I'm thinking of the label and the handling
12 section in these brochures we talked about.

13 Q. Well, the label doesn't have anything on it
14 about reclaiming using the kind of system we're talking
15 about?

16 A. No. No.

17 Q. I'm talking about particular --

18 MR. SCHINK: Let him finish his answer.

19 MR. CARLSON: I'm sorry. I thought he did.

20 A. The label refers to waste that human beings
21 can be exposed.

22 Q. (BY MR. CARLSON) All right.

23 A. The idea being that once you get that
24 message, then you control how it's handled in this
25 workplace, how it might get down the sewer, what affect it

1 will have on the sewage plant people, and what might
2 happen later if they dump it in the wrong place and out in
3 the local lake. The people might be swimming or fishing.
4 Just don't expose people to this chemical, and that
5 includes the whole bit from handling, use, disposal.

6 Q. Going back to the original thought, that is,
7 the brochures which demonstrated ways of reclaiming
8 Pydraul from waste water, that was as a reclamation method
9 to aid the customer in treating his waste water?

10 A. I'd have to reread it. I don't remember the
11 exact words. I do remember the sections on reclamation.
12 I remember schematic sketches of how it might be done. I
13 remember a reference to, "You can reuse this."

14 It seems to me I also remember even a
15 recommendation where you might send it to have it cleaned
16 up a little more to some companies that were in this
17 business, but a specific wording as it relates to, "Don't
18 put it down the sewer," I don't know if that was in that
19 section or some other section. I just don't remember
20 those words.

21 Q. Do you remember when the brochure first came
22 out that we're discussing?

23 A. I think the earliest brochures came out when
24 the product was first introduced in the middle '50s.

25 Q. Do you remember about how many revisions

1 there were of it?

2 A. I'm under the impression about three.

3 Q. Just a few minutes ago in responding to a
4 question you had discussed the label and its advising the
5 customer of what would happen to people, for example, who
6 were exposed to this material when they were fishing or
7 swimming or that kind of thing. What hazards were there
8 to people that were fishing or swimming that were exposed
9 to this particular product after it had already been
10 disbursed in a lake or a river?

11 A. Well, hopefully, none, but it's again a
12 matter of quantity and periods, prolonged exposures. And
13 if it's just a water solution, as I said earlier, if it's
14 in a part per billion, I would not expect any effect.

15 On the other hand, if it's down in the bottom
16 sediment in high concentrations, and people wade or walk
17 in that too often, and it will vary from the small child
18 to the adult, and even between adults and children, it's
19 possible, for example, to get a reddening of the skin on
20 the feet that were in this muck too long. Exaggerating
21 somewhat, continuing in that, you might start getting some
22 chloracne appearing on your cheek bones because you did
23 this too often every day all summer long, maybe, again to
24 make the point. So, in order to avoid any of that, just
25 don't even get close to exposing people. Just don't

1 dispose of it improperly.

2 Q. If the 10 parts per billion of -- I suppose
3 we ought to talk about which of the Aroclors we want to
4 address. Is the 10 parts per billion any of the PCBs?

5 A. Any of them.

6 Q. Okay. If that target is being met by a
7 company discharging waste water into a waterway for over a
8 period of 20 years, is there a potential then for the
9 sediment in the bottom of the receiving stream, receiving
10 lake, receiving pond, whatever it may be, then to reach an
11 unacceptable high level?

12 MR. SCHINK: I object to the form of the
13 question. The 10 part per billion figure that the witness
14 testified, I thought, was with reference to discharges to
15 municipal treatment plants, not discharges to streams.

16 Q. (BY MR. CARLSON) Let's discuss that for a
17 second. Does Monsanto have a different recommendation if
18 there was discharge into holding ponds?

19 MR. SCHINK: I object to the form of that
20 question. I don't think Monsanto had a recommendation. I
21 thought you asked him with reference to an internal goal
22 that Monsanto set for discharges from its plants to sewage
23 treatment plants.

24 Q. (BY MR. CARLSON) You can answer the
25 question.

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1 A. We did not have a goal for free discharge
2 into a public waterway. We shared with our customers our
3 goal, telling them that this in turn goes to a treatment
4 plant, and we expect in that treatment plant for some of
5 it to be degraded and the rest to be trapped by the
6 sludge, and the sludge has to be properly disposed of.
7 And we anticipate that the water that is finally
8 discharged is acceptable, you know, measurable in terms of
9 analytic, current analytical methods.

10 Q. And that was first the goal as of
11 approximately when?

12 A. 1970.

13 Q. Okay. How did you feed that information to
14 your customer?

15 A. Word of mouth, these presentations I
16 mentioned earlier. In some instances I recall responding
17 to a letter, answering back in that kind of language,
18 Monsanto's goal is 10 parts per billion in their
19 discharge, so on.

20 Q. Into the sewer systems where it was going to
21 the waste water treatment plant?

22 A. Yeah.

23 Q. Was that ever put on the label of any of your
24 products?

25 A. No.

1 Q. Was that ever put in the brochure that was
2 mailed generally to the known customers?

3 A. No.

4 Q. Prior to 1970, did Monsanto make
5 recommendations to its customers with regard to different
6 handling of waste water that was going to be discharged
7 into a municipal sewer system and waste water which would
8 be discharged into a waterway?

9 A. I'm not aware of a distinction being made.
10 Word of caution was, "Don't mix the two. Don't dump it
11 freely. If it does get mixed, salvage." That was the
12 message prior to '69.

13 Q. How was that message conveyed? I mean, was
14 that an important message Monsanto wanted to get to the
15 customer?

16 A. Which message is this?

17 Q. The one you just mentioned to me that if
18 you're going to have a mixing of the water and the PCBs,
19 don't mix, salvage.

20 A. Salvage, yeah.

21 Q. Okay.

22 A. That was a pretty important message.

23 Q. Okay. Do you know who had the responsibility
24 of determining the appropriate labels that would be put on
25 the Pydraul products to convey that message?

1 A. The primary responsibility was the medical
2 department.

3 Q. Would they, that is, would people in the
4 medical department draft the original label in that
5 regard?

6 A. Yes. In the majority of cases, they would
7 make the original draft, would consult with the marketing
8 people, the research people, the label people. There was
9 a label department, and, of course, the lawyers, get a
10 consensus, but the medical department had the control.
11 They could overrule any other suggestions that they didn't
12 feel were appropriate.

13 Q. Okay. And they would originate the label,
14 the warning aspects of the label?

15 A. In most cases, nine out of 10. Once in a
16 while someone would start something with his
17 understanding, go by the medical department, say, "Here's
18 what I'm thinking. What do you think?" And they would
19 sit down and revise it if appropriate.

20 Q. How about for the Pydraul 312 prior to
21 reformulation? Do you know where that label came from?

22 A. That label was a copy of the PCB wording, and
23 that wording originated in the medical department.

24 Q. Okay. I don't know if it's either fair or
25 possible to approach it this way, but if Monsanto was

1 still manufacturing and selling Pydraul 312 with the 1242
2 Aroclor, do you have some opinion as to what the label
3 language looked like, that is, what language you had on
4 it?

5 A. Yeah, I have an opinion.

6 Q. Can you tell me what it would be?

7 A. I would say the label that existed prior to
8 determination is today still appropriate, because if those
9 words of caution are followed, I think it would achieve
10 what you're trying to achieve. Avoid exposing people.
11 Avoid harm to the environment. All of those things are
12 there, and they still are appropriate today.

13 Q. Do you remember how many revisions of the
14 Pydraul 312 label there were from '65, through the
15 termination of the product?

16 A. '65 to '71, I'm aware of only one addition.

17 Q. And when was that?

18 A. This was in 1970.

19 Q. And what was the addition?

20 A. We had a paragraph referring or
21 re-emphasizing, really, the impact, the possible impact on
22 the environment, and to keep it out of waterways, properly
23 handling and disposing.

24 Q. In 1970, were there landfills that existed
25 that would have approval from some governmental agency,

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1 whether it be a local, state or Federal agency, for the
2 receipt of PCB material?

3 A. Yes.

4 Q. First of all, were they sites that were
5 approved Federally in 1970?

6 A. No.

7 Q. Sites that were approved locally by states?

8 A. Most of them were locally approved. A few
9 states were approving, but most of them were municipally
10 approved, county or city approved.

11 Q. Over the years have there been sites that
12 were municipally approved that later had to themselves be
13 cleaned up?

14 A. Yes.

15 Q. Why was that happening? Can you give me a
16 brief background of what occurred and why sites which
17 originally apparently were licensed or were approved to
18 receive PCB materials then later on had to go through
19 another cleanup process?

20 A. Oh, I can only attribute that to a changing
21 perception of the potential hazards of PCBs with time.

22 Q. Okay.

23 A. Back before '70, it was innocuous, perceived
24 to be innocuous, and free dumping was permitted. As the
25 public became more aware of PCB's and the regulatory

1 agencies began asking questions and scrutinizing, the
2 permitting procedure changed, and some of the landfills
3 that at one time would permit PCBs would no longer do so.

4 Q. And if they were weren't, they would have to
5 be cleaned up in some instances?

6 A. In some instances, yes.

7 Q. Do you have any understanding as to whether
8 or not the originators of the PCBs, that is, the company
9 that used the PCBs, in this case a manufacturing
10 operation, would still be responsible for the cleanup?

11 A. I'm aware of at least one case, yes, sir.

12 Q. If a company -- strike that. Is it possible
13 for a company to have believed it was disposing of PCBs in
14 an appropriate manner by having them taken to a licensed
15 landfill and then subsequently being found financially
16 responsible for the then removal of the PCBs from that
17 landfill?

18 A. You say is it possible?

19 Q. Yes.

20 A. The answer is yes.

21 Q. Are you personally familiar with the
22 landfills that were accepting PCBs in Wisconsin in 1970?

23 A. No.

24 Q. Are you aware of landfills in Wisconsin that
25 received PCB material prior to 1970, which have

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1 subsequently been ordered to be cleaned up?

2 A. I'm not aware of any.

3 Q. You're not aware that it didn't happen,
4 either? You just don't have any knowledge?

5 A. That is correct.

6 Q. Okay. As has Monsanto had to pay for cleanup
7 costs for any landfills that it used prior to 1970, for
8 disposal of PCBs?

9 A. Would you help me with the word, your
10 understanding of the word "cleanup".

11 Q. Where the material, that is, the actual soil
12 had to be removed and taken somewhere else.

13 A. No.

14 Q. When is the first time you recall there being
15 a maximum amount of PCB's that could be present in
16 hydraulic flood and die cast machines?

17 MR. SCHINK: Are you talking about when there
18 was a regulation?

19 MR. CARLSON: Yes.

20 A. I first became aware of this about 1980, '81.

21 Q. (BY MR. CARLSON) Do you recall what the
22 standard was at that time?

23 A. If I have my dates correct, I believe, as
24 best I remember, it was 50 parts per million.

25 Q. Do you know whether or not Monsanto

1 provided -- that was set by the EPA?

2 A. Yes.

3 Q. Did Monsanto provide any information to EPA
4 which EPA, to your knowledge, relied upon in part in
5 coming to that standard?

6 A. A Monsanto representative participated in
7 those discussions. I cannot personally say that I am
8 aware exactly what he proposed, but I do know he acted.

9 MR. SCHINK: His question is what EPA relied
10 on.

11 A. I don't know.

12 Q. (BY MR. CARLSON) Did Monsanto produce any
13 such information for EPA to review and take into account?

14 A. I don't know.

15 Q. Who was the person for Monsanto that had that
16 responsibility of providing information to EPA?

17 A. Dr. Craddock, C-r-a-d-d-o-c-k.

18 Q. What was his position at that time?

19 MR. SCHINK: He's already been deposed by you
20 in this proceeding.

21 Q. (BY MR. CARLSON) What was his position at
22 that time?

23 A. I believe he was product director, safety and
24 environment, some such title. That's not exactly it,
25 but --

1 Q. Did you participate in the decision for Dr.
2 Craddock to be the person to have contact with EPA?

3 A. No.

4 Q. Have the standards for allowable PCBs and
5 hydraulic fluid in die cast machines changed since 1980?

6 A. I don't know.

7 Q. Do you know what the standard is today?

8 A. No, I don't.

9 Q. Okay. Did Monsanto ever recommend to
10 customers that die cast machines which had Pydraul 312 in
11 it at one time be cleaned in an attempt to limit the
12 amount of PCBs present?

13 A. I would only be speculating. I don't know.

14 Q. The hydraulic fluid which followed the
15 Pydraul 312 would have been the terphenyl?

16 A. Yes.

17 Q. Was that a hydraulic fluid which could be
18 added to the Pydraul 312 which had the 1242 Aroclor?

19 A. Yes.

20 Q. At that time did Monsanto make any
21 recommendation that the 1242 Aroclor be drained from the
22 machine and then the 312 -- was it 312-A?

23 A. No.

24 Q. Which one was it? Oh, okay. The answer was
25 no, you didn't have to drain it?

1 A. That's correct.

2 Q. The next Pydraul 312 that came was which?

3 A. 312-A, I believe was the designation, which
4 was the terphenyl. Is that what you mean?

5 Q. Okay. And which followed the terphenyl?

6 A. One of them followed, but I don't remember
7 the designation.

8 Q. Do you remember, was that a phosphate ester?

9 A. Yes.

10 Q. Could that be used with the Pydraul 312 or
11 312-A?

12 A. I understood it can, yes.

13 Q. If a die cast company were to clean a die
14 cast machine and get the PCB concentration and the
15 hydraulic fluid down below the 50 parts per million, will
16 it stay at that level, or will it be at less, or can it
17 get more without the introduction of new PCBs?

18 A. This depends really on the procedure used to
19 clean up the system before the next, the new fill. If
20 there are pockets where liquid can collect that aren't
21 drained properly, if there are gaskets that soak up, if
22 there are old porous metal surfaces that act like sponges
23 where the PCBs can be trapped, all of these can be sources
24 of PCBs. The PCBs from these sources would be extracted
25 into the new oil and eventually, if analyzed, it could

1 exceed the 50 part per million. So, it all depends on how
2 thorough the cleanup job was done and the condition of
3 that piece of equipment at the time the cleanup was done.

4 MR. SCHINK: I think his question was if all
5 that's done, if all the PCBs were removed and you put in
6 the new fluid, could you have more than 50 parts per
7 million of PCB?

8 A. Where would it come from? If it's all
9 removed, there is nowhere it would come from. Therefore,
10 you shouldn't see it.

11 MR. CARLSON: Why don't you go back and read
12 my original question for me.

13 (Reporter read from record as directed.)

14 MR. CARLSON: Move to strike counsel's
15 comment, the witness' further voluntary discussion and
16 response to counsel's comment. If he moves it stands,
17 then that's fine.

18 In your opinion, is it possible to clean a die cast
19 machine that's over 10 years old of all PCBs if the die
20 cast machine was using Pydraul 312 for five years?

21 MR. SCHINK: When?

22 A. I'll qualify my response by reminding you I
23 don't know an awful lot about die cast machines. I do
24 know about Monsanto's system that made the Pydrauls. It
25 includes pipelines, steel tanks, reservoirs, pumps, hoses,

1 and the like. Our experience has shown when we cleaned
2 out that unit, our first attempt was not successful until
3 we went back and did an extremely thorough job, virtually
4 dismantling the whole system and rebuilding it. Then we
5 succeeded. If the similarities are there, I personally
6 believe a machine can be cleaned up properly.

7 Q. (BY MR. CARLSON) Do you think it could be
8 economically cleaned up towards the value of the machine?

9 A. That I don't know, because I don't know the
10 value of the used machinery.

11 Q. Do you have opinions on exactly what a die
12 cast company should do to properly clean the machine?

13 A. I have some opinions, yes.

14 Q. Okay. Can you tell me what those are?

15 A. Well, such things as --

16 Q. When I say "properly," can we limit that to
17 being realistically proper?

18 A. That's correct. Yes.

19 MR. SCHINK: This is not with reference to
20 the 50 part per million standard?

21 MR. CARLSON: That's right. That's right.

22 A die cast company wants to clean up a machine to
23 the best that it's possible, that's realistic. How should
24 that be done?

25 A. I would look for the obvious traps in the

1 system where liquid can accumulate and resist drainage. I
2 would look for ways to get to that point in the system. I
3 would look at the piping system to see if there's material
4 in there that acts as a sponge, if you will, of the
5 liquid, such as gaskets, rubber hoses and the like. I
6 would use a solvent of the petroleum nature, and needless
7 to say, it should be a safe solvent that wouldn't explode
8 or catch fire. And I would circulate it through that
9 system and, if necessary, drain it and do it several
10 times, and before each drainage, I would take a sample and
11 analyze it for the presence of PCBs to the point where
12 it's non-detectable.

13 If time permitted, I would allow that solvent to
14 stay in the system as long as I can, over a weekend or
15 something, if possible, circulate it. And, of course, I
16 would drain it entirely, put in new gaskets, new hoses,
17 and then put in my new fluid. I would then set up a
18 program for taking samples of this new fluid on some basis
19 periodically, and have it analyzed to see if PCBs are
20 still at work showing up again. Now, the number of
21 flushes, rinses and refills of the solvent and the number
22 of samples will vary from system to system, but I think
23 that procedure will eventually lead to a clean system.

24 Q. The reason for setting up the program for
25 samples after the first or second or third time, though,

1 is to ensure yourself that indeed you have gotten all the
2 PCBs?

3 A. That is correct, yes.

4 Q. Because even if you go through the procedure
5 as you outlined carefully a couple of times, you do not
6 necessarily have all the PCBs out, do you?

7 A. That's very possible. I'm talking about the
8 machine. Let's not forget the reservoir fluid, the whole
9 system --

10 Q. Right.

11 A. -- from beginning to an end.

12 Q. Has the company ever outlined for customers
13 the appropriate cleaning procedures that you outlined?

14 A. I do not know.

15 Q. In your opinion, is the cleaning procedure
16 that you have outlined necessary for machines that have in
17 the past used the Pydraul 312 with the Aroclor 1248 as the
18 hydraulic fluid?

19 MR. SCHINK: I object to the form of the
20 question. By "necessary," do you mean necessary to comply
21 with the applicable regulation or necessary for some other
22 reason.

23 MR. CARLSON: Necessary for any reason.

24 MR. SCHINK: Object to the form of the
25 question. It's purposely vague, misleading.

1 A. Well, if there's a regulation, naturally it's
2 necessary to comply with that regulation. My personal
3 opinion regarding the -- other than the need to comply
4 with statutes and regulations, this depends quite a bit on
5 how carefully the system is maintained. What happens when
6 it starts to leak? Where does that material end up, and
7 is it carefully managed? If so, then I see no problems
8 personally. If it's mismanaged and could lead to other
9 problems, certainly we ought to do a better job in
10 cleanup.

11 Q. Even if it's managed properly, though, you
12 still have a risk of something occurring which will allow
13 the PCBs to escape, wouldn't you?

14 A. Well, it could escape, but how would it
15 escape? It might escape through a pump plan. It might
16 escape through a ruptured hose, but I'd like to think that
17 by now we have been sensitized enough to PCBs that we've
18 got a curb and a concrete floor and a curb basin
19 somewhere. It's just not going to flow across the floor
20 into a sewer or out in the backyard somewhere.

21 Q. By now based on the literature that's come up
22 between 1969 and today?

23 A. That's right, yes. Our perception today is
24 such that the chance of it getting away from us is quite
25 remote.

1 Q. But if a company were to spend -- forget the
2 EPA exists. Okay. We're just looking at handling
3 machines that previously had the Pydraul 312. Even, you
4 know, with a good curbing and dike system and management,
5 the owner of the equipment could be better served by
6 cleaning the equipment than simply building a wall around
7 it, wouldn't it?

8 A. Is it one or the other?

9 Q. If you had to make that choice.

10 A. That choice? Yes, I would concentrate on
11 cleanup first, but at the same time I can't forget that
12 the new fluid is an industrial chemical. It shouldn't be
13 sloshed around into the environment, either.

14 Q. Okay.

15 A. So that curbing would help me in any event.

16 Q. And the curbing is going to help because
17 whatever fluid is in there now, even if it doesn't have
18 any PCBs, it shouldn't go out the door?

19 A. That's right. Mineral oil, you can't just
20 dump your motor oil out of your car anywhere. You
21 shouldn't.

22 Q. But because of the nature of the PCBs, you
23 would still recommend cleaning up the machine?

24 A. Yes.

25 Q. Has Monsanto at any time made a program

1 available to customers to aid in the cleaning up of die
2 cast machines of PCBs?

3 A. I don't know that I recall a program so much,
4 but it's the continuing assistance from the sales
5 representative in matters relating to the proper handling
6 of these fluids.

7 Q. I guess what I'm looking for is have you had
8 any customers that you have paid for the cost of the
9 cleanup in return -- for example, we had the incineration
10 program where if they burned, I mean, you would burn for
11 them if they bought from you?

12 MR. SCHINK: I think he testified they made
13 package deals with some customers that included that, yes.

14 Q. (BY MR. CARLSON) All right. And what I'm
15 looking for is did you have any package deals where you
16 cleaned or paid for the cost of cleanup of the machines if
17 they continued to buy?

18 A. I'm not aware of any.

19 Q. Was there any other component of Pydraul 312
20 besides the Aroclor 1248 which had a potential for causing
21 some adverse human health reaction, regardless of how
22 slight?

23 A. Well, I'm a proponent that all chemicals
24 eventually at some dose can cause some effect.

25 Q. Sure. Was there anything in Pydraul that was

1 of particular significance?

2 A. Not that I'm aware of.

3 Q. Do you know particularly what input the
4 labeling department had on the language that was on the
5 Pydraul 312 label?

6 A. Oh, their input was primarily one of
7 appearance, graphics and printing ease and legibility and
8 layout, not the words.

9 Q. I might have asked you, and you might have
10 said you don't remember. I don't recall anymore, but who
11 was in charge of the labeling department at any time that
12 the Pydraul label was being reviewed?

13 A. Oh, that was Robert Sido, S-i-d-o.

14 Q. Anybody else you recall in that capacity?

15 A. Mr. Sido had some assistance, but he's the
16 principal person. I don't recall his assistance.

17 Q. Do you know what filing system, if any, the
18 labeling department had for the different products?

19 A. No. It was a numbering system cataloging,
20 very much like a library, but I never became familiar with
21 it.

22 Q. Where was the labeling department located?

23 A. In St. Louis at the headquarters, Monsanto
24 headquarters.

25 Q. The script that you had for one of the

1 presentations, and I think it was one of the industry
2 groups, do you have a copy of that yourself?

3 A. I don't have a copy, no.

4 Q. When was the last time -- strike that. Do
5 you know where any copies are?

6 A. No, I don't.

7 Q. When is the last time you did know where a
8 copy was?

9 A. When I turned over my assignment to my
10 successor back in '76, it was in my file cabinet.

11 Q. Was it in a folder that had a title to it?

12 A. Yes, it was in a folder. The title would be
13 under "ANSI," A-N-S-I, on the tab of the folder.

14 Q. When you made your other presentations, did
15 you do those from prepared notes?

16 A. Well, as I indicated, some were prepared, and
17 some were from handwritten notes, key words that I would
18 look at and then talk extemporaneously.

19 Q. Did you keep any of your handwritten notes?

20 A. No.

21 Q. Do you know if any of your presentations were
22 tape recorded or taken down by a stenographer?

23 A. They were not.

24 Q. What was the reason labels were submitted to
25 the legal department for review?

1 A. It's Monsanto practice for all labels. I
2 don't know the reason.

3 Q. Okay.

4 A. They are part of the reviewing team is all I
5 know.

6 Q. With regard to any of the labels on 312 that
7 were used for 312, do you know what input, if any, the
8 legal department had?

9 A. I don't recall any input other than their
10 approval. They didn't change anything.

11 Q. Did you correspond with people at EPA
12 regarding PCBs?

13 A. Yes, sir.

14 Q. Do you remember the names of the people at
15 EPA that you corresponded with?

16 A. Oh, there was Dr. John Buckley, Kenneth M.
17 Kenthum, K-e-n-t-h-u-m. I've forgotten most of them.
18 Thomas Kopp, K-o-p-p. There were so many, I've forgotten
19 them all. There must be a dozen more.

20 Q. Okay.

21 A. Those are the key people, though, program
22 managers and so on.

23 Q. Did you have more than one file set up for
24 your correspondence with EPA, both to and from?

25 A. No. As I recall, I just had one tag, "EPA,"

1 but it became several sections because it got too thick.

2 Q. About how thick was it at the time you left?

3 A. Oh, gosh. I would suggest that it was about
4 three folders, each about, oh, roughly two inches deep.

5 Q. Were they in the file drawer when you last
6 left the company?

7 A. Yes.

8 MR. SCHINK: Did you say when he left the
9 company or when he left his position in '76?

10 Q. (BY MR. CARLSON) When you left your position
11 in '76, is what I meant to say.

12 A. Yes. That's right. Yes.

13 Q. Okay. Did you make any presentations to any
14 Congressional committees?

15 A. Yes.

16 Q. How many?

17 A. One.

18 Q. And when was that?

19 A. '74 or '75.

20 Q. Was your presentation from a prepared script?

21 A. Yes.

22 Q. And do you currently have a copy of that?

23 A. I don't.

24 Q. Where was it the last time you saw it?

25 A. In my files that I turned over.

1 Q. Okay. What was that file entitled, or what
2 was the file entitled that had that script in it?

3 A. As best I recall, just plain "Congress."

4 Q. Did Monsanto have a manufacturing plant in
5 Pensacola for producing?

6 A. Yes.

7 Q. Were PCBs used in that plant?

8 A. Yes.

9 Q. Did you ever visit the plant?

10 A. Yes.

11 Q. Did you ever visit the plant prior to a
12 discharge of PCBs from the plant?

13 A. Yes.

14 Q. Did you have an opinion prior to the
15 discharge as to whether or not the plant was well run with
16 regard to maintenance and attempts to contain fluids?

17 A. Yes.

18 Q. Did you think it was a well run plant?

19 A. Yes.

20 Q. How did the fluids get out?

21 A. There was an accidental leak out of a
22 compressor.

23 Q. But where was --

24 A. Pipeline.

25 Q. Pipeline failure?

1 A. Pipeline break, yes.

2 Q. And what was it discharged into?

3 A. It eventually ended up through a dry creek
4 bed, sort of drainage ditch, into the estuary there, the
5 channel, the Scambia Bay.

6 Q. Did Monsanto have to clean up that area?

7 A. Yes. They didn't have to. They did it.

8 Q. They did it?

9 A. Yeah.

10 Q. Okay. And when was that?

11 A. '69 or '70.

12 Q. Have you been at some die cast companies
13 where Pydraul was being used?

14 A. No.

15 Q. Have there been changes in proper disposal
16 methods by die cast companies of residual fluids
17 containing PCBs over the years? I guess that's
18 self-evident. There have been changes over the years in
19 how you are legitimately or reasonably to dispose of PCBs,
20 haven't there?

21 MR. SCHINK: Well, he hasn't been in a plant.
22 I don't see how he has a foundation.

23 A. I have no basis for evaluating personally the
24 changes that have taken place, but there have been
25 regulations and all, so there must be attempts in

1 complying.

2 Q. (BY MR. CARLSON) Do you have a working
3 knowledge of current regulations regarding disposal of
4 PCB's?

5 A. No.

6 Q. Have you at some time in the past had that
7 knowledge that was then current?

8 A. Yes. Up to 1976, I was up to date. Since
9 then I don't believe I'm up to date.

10 Q. Okay. As of '76, or in 1976, what were
11 permissible ways of disposing of PCBs?

12 A. In early '76, February, '76?

13 Q. Right.

14 A. All right. At that time liquids could be
15 incinerated in approved units, incinerating units. Solid
16 materials such as rags, sawdust, contaminated clay,
17 equipment that was used with PCBs, could be deposited in
18 approved landfills. I think that takes care of both the
19 solids and the liquids.

20 Q. Okay. Do you remember or do you have some
21 recollection of how many incinerators there were that were
22 permitted to incinerate PCBs in February of '76?

23 A. '76, Rollins Company had three units. There
24 was one located in Arkansas, Eldorado, Arkansas, and there
25 was one located in Illinois. I believe it was Sheffield,

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1 Illinois. And for a while there was a unit up in New
2 York, Blasdel, B-l-a-s-d-e-l-l, New York, near Niagara.

3 MR. SCHINK: This is in addition to the
4 Monsanto unit, I assume?

5 MR. CARLSON: Right.

6 Monsanto had it until '77?

7 A. Yes.

8 Q. When we're talking about -- when you're
9 talking about approved landfills, the landfills would be
10 approved by who for receipt of PCB's?

11 A. In 1976, the states certainly, and I believe
12 EPA became active at that time.

13 Q. When were the rules with regard to disposal
14 of PCB's and landfills -- strike that. Do you know if
15 Monsanto had looked at alternatives for Pydraul with the
16 1242 Aroclor prior to 1969?

17 A. Not to my knowledge.

18 Q. Were there other companies selling products
19 that would have the same function as the Pydraul 312 prior
20 to 1969?

21 MR. SCHINK: What do you mean by "the same
22 function"?

23 Q. (BY MR. CARLSON) The hydraulic fluid in die
24 cast machines in this instance.

25 A. There were competitive hydraulic fluids, yes,

1 other companies manufacturing these other products.

2 Q. Do you know what the principal components of
3 those were?

4 A. I'm aware of two components. Actually, it's
5 three. A mixture of water and ethylene glycol was quite
6 popular, and then there were some phosphate esters used.
7 That's the extent of my knowledge of the competitive
8 fluids.

9 Q. Did Monsanto make a hydraulic fluid utilizing
10 a phosphate ester prior to 1969?

11 A. Some of the Pydrauls in addition to PCBs had
12 phosphate esters in them.

13 Q. I'm going to switch subjects entirely just
14 for a second. Why didn't any other company in the United
15 States ever make PCBs, or did they?

16 A. Well, there's rumors that some tried it.
17 I've been asked that question. Are we on the record?

18 Q. Yeah, we're on the record, but I can tell you
19 that I haven't read it from any transcript. I was
20 curious.

21 A. The PCB business was driven primarily by the
22 dielectric applications. The big ones, General Electric
23 and Westinghouse, had put so much in the way of resources
24 in making sure this dielectric fluid was just right for
25 their uses. They had worked with Monsanto and its

1 predecessor, Swan Chemical, for so many years, and they
2 had gotten the relationship such that they were getting
3 what they wanted at a price that they felt was reasonable.
4 They were not willing to start a competitor down that same
5 road of experience producing the right quality
6 consistently, and they were satisfied that Monsanto,
7 starting in the '40s, had two plants. So if one exploded
8 or had a fire, there would still be a continued source.
9 So, they were quite satisfied, and they were not willing
10 to give business to anyone else. Anyone else getting into
11 that business could not make a profitable product line
12 without the dielectric business, so they were discouraged
13 from even trying it. That's my understanding.

14 Q. How about importing of some of the PCBs for
15 hydraulic fluid? Apparently they were being made in
16 Europe.

17 A. Yes, they were. I was never able to
18 establish from the records kept by the tariff people
19 whether any liquids came in for that purpose, because they
20 were not identified as such. They would always be marked
21 what's known as NOI chemicals, not otherwise identified.
22 There's some indication, in my opinion kind of strong,
23 some of the hydraulic fluids were brought in for use in
24 mining equipment because of the tie-in with the machinery
25 and the source of supply. That's all I know. I've never

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1 been able to substantiate that.

2 Q. Have there been studies addressing themselves
3 to PCBs becoming airborne and moving about in the world's
4 atmosphere and being deposited in different locations?

5 A. Not to my knowledge.

6 Q. Earlier this morning we talked a little bit
7 about monitoring of effluent from Anniston and Krummrich
8 for the presence of PCB's. What kind of analytical
9 equipment was being used for analysis of the PCBs at
10 Anniston starting as far back as you can recall?

11 A. By today's standards they are very crude. It
12 was based on, first of all, a big, bold assumption that
13 the material you're looking at is PCBs.

14 Q. Okay.

15 A. Then you analyzed for the chlorine that's in
16 that material, and by my arithmetic, you calculate back
17 how much PCBs would create that much chlorine. This is
18 why the detection level was high or in the thousands of
19 parts per million or tenths and hundredths of a percent.
20 It's a very crude method, but that was the method used up
21 until the Swedish work came along.

22 Q. What development was used prior to the
23 Swedish protocol being published?

24 A. Oh, there was no single piece of equipment.
25 It was a matter of taking the unknown material --

1 Q. All right.

2 A. -- and in essence burning it in a crucible, a
3 platinum crucible, converting the organic chloride to a
4 sodium chloride or calcium chloride, and then they would
5 analyze for the chlorine with water chemistry.

6 Q. When did Anniston get more sophisticated
7 equipment then?

8 A. Anniston never did get the latest. They took
9 a step in the right direction in about early 1970, but the
10 unit was shut down in '71. So, no further refinements
11 were made. So at best they got what you may have heard of
12 as a GLC unit, gas liquid chromatogram.

13 Q. How about Krummrich? Prior to 1970, were
14 they using the same technique as Anniston?

15 A. Correct.

16 Q. And what additional equipment did they get
17 there?

18 A. They got -- starting in about 1970, they got
19 a GLC unit. In about 1974, they added to that a mass
20 spectrophotometer.

21 Q. Did people from Monsanto talk to those --
22 talk to Jensen and others that worked with them in the
23 Swedish study?

24 A. Yes.

25 Q. When did that occur, or if it was more than

1 one time --

2 A. There was a discussion held, as best I
3 recall, in about 1968, and then --

4 Q. Who was involved with your company?

5 A. At that time it was Mr. Elmer Wheeler,
6 medical department, and Robert Keller, Monsanto's
7 analytical services center. And I joined those two
8 individuals for another visit in 1970, and we talked to
9 Mr. Widmark or Dr. Widmark, Dr. Jensen's supervisor.

10 Q. The visit in 1968, was that with Jensen?

11 A. I understand Jensen was in the audience, yes.

12 Q. Okay. Did Elmer Wheeler and Robert Keller go
13 over to Sweden to meet with Dr. Jensen in 1968?

14 A. Yeah.

15 Q. Okay. And were there others in attendance at
16 that meeting other than the people from your company and
17 Dr. Jensen?

18 A. I'm not aware of any others, just the
19 university people, Widmark and Jensen and the Monsanto
20 people; and then Mr. Wheeler and Dr. Keller were
21 accompanied by a Monsanto from Europe, representative from
22 Europe, but I don't know who that individual was.

23 Q. Did that meeting generate any reports?

24 A. Not to my knowledge, no.

25 Q. Did you discuss with Elmer Wheeler and/or Bob

1 Keller the results of the 1968 meeting?

2 A. Yes.

3 Q. And when you went over in 1970, was there any
4 new information given to you by Dr. Widmark which you did
5 not receive or your company did not receive, to your
6 knowledge, at the 1968 meeting?

7 A. No.

8 Q. Did Monsanto ever fund any additional studies
9 to be performed by Dr. Widmark, Dr. Jensen, or others who
10 participated in that study --

11 A. No.

12 Q. -- as it followed? Did Monsanto try to
13 reproduce that study?

14 A. Yes.

15 Q. In Sweden?

16 A. No. I misled you there.

17 Q. Okay.

18 A. We tried to reproduce their protocol, their
19 methodology. That was the intent of the first visit, was,
20 "Let's get a copy of their method, go back to St. Louis,
21 and try it."

22 Q. What were they using for their analytical
23 equipment in looking for PCBs in 1966, when Jensen was
24 doing his work, or prior to?

25 A. Who was, Dr. Jensen?

1 Q. Yes.

2 A. He was using a GLC with mass spec
3 confirmation.

4 Q. Okay. In 1966, did Monsanto own a GLC?

5 A. We had a GLC, but not in mass spec.

6 Q. Did Monsanto have a testing laboratory that
7 it would refer material to if mass spec analysis was
8 necessary?

9 A. That I don't know. I do know that they
10 purchased a mass spec.

11 Q. Do you know when they bought it, the first
12 one?

13 A. The first one arrived in about, as best I
14 remember, in '67, sometime in '67, and it was replaced
15 with a more sophisticated unit in about 1974.

16 Q. Without my dragging out the letters, do you
17 have a working knowledge of the series of letters that
18 were sent in 1970, 1971, to Monsanto customers who used
19 the Pydraul 312?

20 A. I believe I do, yes.

21 Q. Okay. Did the author of those letters
22 actually draft them, or at least the person who signed the
23 letters actually draft them? I guess the author always
24 drafts them, but did the person who signed the letters
25 actually draft them?

1 A. As best I recall in these letters, he
2 prepared the initial draft, had it reviewed starting in
3 1970. I was one of the reviewers and would make my
4 comments. He had had it reviewed by the key functions
5 associated with PCBs, the research representative, the
6 medical representative, the public relations guy, and the
7 legal people, and the business people. Anyone who had an
8 interest in the product was involved. In most cases they
9 couldn't contribute much, but at least they were informed
10 of what was being proposed. Occasionally there would be a
11 suggested paragraph added or a word change here and there.

12 Q. Did Monsanto ever go out into the field and
13 seek to have the Pydraul 312 with the 1242 Aroclor
14 returned to the company, that is, the material that was
15 unused?

16 A. No.

17 Q. Why not?

18 A. Keep in mind in 1970, our state of knowledge
19 then. The PCBs that seemed to be on the environment were
20 the 1254, 1260, not the 1242. This was 1970, when we
21 first informed our customers that, "There's a presence out
22 there. You ought to be aware of it. Your product
23 contains PCBs."

24 Shortly after that went out, we embarked, Monsanto
25 embarked on a program of finding a replacement, and it

1 looked promising. So we had a target then of phasing out
2 of that application by the end of '70. Now, we missed
3 that, as I remember, by a couple, three months. But
4 anyway, by early '71, we had no longer any hydraulic fluid
5 with PCBs in them that we were marketing or selling.

6 Still through '71 and all, there was no evidence,
7 no information that says 1242 is a problem to anybody.
8 So, there was no perceived need to do anything unusual and
9 upset the whole industry, have to drain machines, ship
10 material on the highways back to Monsanto. It looked
11 irrational. That's really the principal reason.

12 Q. Okay. When the replacement fluid was being
13 developed, were there studies done on the potential
14 environmental effects of the product?

15 A. Yes. If you include animal testing as part
16 of that knowledge with potential impact to the
17 environment, yes. The replacement esters were tested.

18 Q. Okay. What test protocol did the replacement
19 esters go through?

20 A. It was the lifetime rat feeding study was the
21 best test available.

22 Q. We're looking at this in 1970?

23 A. In '70, yes.

24 Q. Okay.

25 A. And then some biodegradation studies to

1 confirm that these phosphate esters would degrade.

2 Q. Why was that important?

3 A. We didn't want to have any experience --
4 having experienced the PCB issue, we didn't want to
5 introduce another chemical that was fairly stable and
6 would again be an environmental contaminant. We wanted to
7 avoid that.

8 Q. Did Monsanto make DDT?

9 A. No.

10 Q. Okay. Who did the biodegradation studies on
11 the phosphate ester hydraulic fluid?

12 A. It was the same laboratory in Monsanto that
13 did the PCB biodegradation studies.

14 Q. Okay. Were lifetime rat feeding studies done
15 when the terphenyl was apparently marketed for a short
16 period of time?

17 A. No.

18 Q. Were biodegradation studies done?

19 A. Some, yes.

20 Q. Why were the terphenyls discontinued?

21 A. The biodegradation studies showed that they
22 were kind of persistent. They didn't degrade too readily,
23 and since the phosphate esters looked promising, at least
24 suitable, Monsanto decided that it preferred going to the
25 more degradable material.

1 Q. Were the terphenyls marketed for that short
2 period of time while the company was still looking at the
3 phosphate ester hydraulic fluid? Was it kind of a stop
4 gap measure?

5 A. Yes.

6 Q. Were there any products that you're aware of
7 that were manufactured by Monsanto prior to 1969, which
8 had been looked at for the ability of the product to
9 biodegrade?

10 MR. SCHINK: You're talking now any product?

11 MR. CARLSON: Any product.

12 MR. SCHINK: Not just hydraulic fluids?

13 MR. CARLSON: That's right.

14 A. The only one I'm aware of is the detergents
15 that I mentioned earlier today.

16 Q. (BY MR. CARLSON) Okay. Why was
17 biodegradation looked at with regard to the detergents?

18 A. There was a period of time when synthetic
19 detergents were manufactured that didn't degrade in the
20 environment, and the consumption increased to the point
21 where there were many small rivers and streams that
22 started to foam because the detergent was still active,
23 would not degrade. This became quite a problem, and the
24 industry then had to go back to the research bench and
25 find a detergent that would degrade, leading to today's

1 so-called soft detergents.

2 Q. When did the biodegradation studies occur in
3 the detergents?

4 A. I'm going to say 1960's, early '60s.

5 Q. Technically, could biodegradation studies of
6 PCB's have been done in the early '60s if Monsanto had
7 chosen to do so?

8 A. I would suggest that if once the detergent
9 degradation protocol was in place and demonstrated to be
10 reliable, if there had been an indication that PCBs or any
11 chemical other than detergents should be tested, yes, that
12 protocol could have been applied.

13 Q. Okay. It's not terribly relevant, but do you
14 remember when the DDT issue came about?

15 A. I'm trying to remember when "Silent Spring"
16 was published.

17 Q. I remember spraying it with my little pump
18 gun, but --

19 A. '54 comes to mind.

20 Q. Okay.

21 MR. SCHINK: I think the book was published
22 in 1962, Rachel Carson's book, but in any event --

23 A. Somewhere I've got 1954 in mind here.

24 Q. (BY MR. CARLSON) Okay. Sometime in the
25 early '60s, or sometime in the mid-'50s to early '60s?

1 A. That's my understanding, yes.

2 MR. CARLSON: Let's mark these. Off the
3 record.

4 (A brief recess was taken.)

5 [Plaintiff's Deposition Exhibit Papageorge
6 Nos. 1 through 16 marked for identification.]

7 Q. (BY MR. CARLSON) Why don't you, if you
8 would, start with Papageorge Deposition Exhibit No. 1, and
9 the first page of that is, if you could describe for for
10 me generally, what, sir?

11 A. The first page is a Monsanto memorandum
12 addressed to six individuals, dated April 7, 1970, and
13 signed by me.

14 Q. And attached to that memo is there a
15 "Management Plan, Polychlorinated Biphenyl Environmental
16 Problem"?

17 A. Yes.

18 Q. Did you draft that document?

19 A. Yes.

20 Q. The problem is stated in the first section of
21 the paper?

22 A. Yes.

23 Q. And in the second section of the paper
24 entitled "Basic Strategy," the second full paragraph, the
25 last sentence reads, "We are deliberately assuming an

1 aggressive posture and working closely with customers,
2 co-producers, and regulatory agencies to prevent
3 precipitous action." First of all, did I correctly read
4 that sentence?

5 A. Yes.

6 Q. Can you tell me, first of all, what
7 precipitous action was it that you were attempting to
8 prevent?

9 A. Primarily the total ban of the use of PCBs in
10 those applications for which there were no acceptable
11 fire-resistant substitutes.

12 Q. And can you tell me specifically which
13 applications those would be at that time?

14 A. At that time, the hydraulic fluids and the
15 dielectric application.

16 Q. With regard to the hydraulic fluids, how did
17 your competitors' phosphate ester-based fluids compare
18 with your PCB-based fluids in performance?

19 A. They were not quite as good as the PCB types.
20 PCB types were considered the premium product and the
21 preferred product in terms of fire retardants and all the
22 other properties, corrosion resistance to the parts of the
23 machinery, the lubricating, the lubricity characteristics,
24 stability under all kinds of conditions.

25 Q. How did your company's phosphate ester

1 hydraulic fluid compare to your competitors when you put
2 it on the market?

3 A. The final?

4 Q. Yes.

5 A. They were equivalent, basically.

6 Q. Have there been any studies, reports
7 demonstrating increased costs incurred by die cast
8 companies as a result of not having PCB fluid available?

9 A. I have not seen any.

10 Q. There is also reference to working closely
11 with customers and co-producers. Who were some of the
12 co-producers that you were working closely with?

13 A. Bayer in Germany, Rhone-Poulenc in France,
14 Kuhlman, and Caffaro in Italy.

15 Q. Did Bayer, to your knowledge, do any work on
16 biodegradability of PCBs?

17 A. Not to my knowledge.

18 Q. Did any of the others that you referenced?

19 A. No.

20 Q. Had any of them, to your knowledge, either
21 conducted or paid for long-term health effect studies for
22 people exposed to PCBs?

23 A. Not to my knowledge.

24 Q. When you indicate that you are working
25 closely with them, what was the nature of the working

1 relationship with Bayer on this subject?

2 A. Well, we took the initiative to go and ask
3 for an audience with their representatives. We shared
4 with them our understanding of the issue, tried to
5 convince them of the seriousness of the matter as it
6 regards that product line and the applications, and tried
7 to get them to -- we were hoping that they would conduct
8 some studies on their own. As it turned out, they
9 preferred to have Monsanto lead the way, and they chose
10 not to take any initiative on their own.

11 Q. Were there any reports of the meetings that
12 Bayer prepared?

13 A. No.

14 Q. Did you participate in any of those meetings?

15 A. Yes.

16 Q. How many meetings with Bayer did you have on
17 that subject?

18 A. I personally attended only that one. There
19 were other contacts with Monsanto representatives in
20 Europe and Bayer people in Germany at industry association
21 meetings and telephone conversations and the like,
22 informal contacts.

23 Q. Did Rhone-Poulenc perform any studies?

24 A. No.

25 Q. Did you participate in conferences with any

1 of their representatives?

2 A. Yes.

3 Q. Did you also with Kuhlman?

4 A. Yes.

5 Q. And Caffaro?

6 A. And Caffaro.

7 Q. Did any of them provide any funds that were
8 used for studies that were conducted?

9 A. No.

10 Q. They seemed to think this was an American
11 problem, and the Americans should take care of it?

12 A. Well, to be more blunt, they thought it
13 was -- Monsanto was making a problem, that it really
14 wasn't anybody's problem.

15 Q. Okay. Back in 19 -- let's see. The memo was
16 April of 1970. What regulatory agencies were you working
17 with?

18 A. Oh, in 1970, the Department of Agriculture;
19 the Department of Interior, through their fish and
20 wildlife people; the beginnings of EPA, which had just
21 been approved and not fully organized as of yet; the Food
22 and Drug Administration; the Department of Commerce; the
23 Council of Environmental Quality; the Office of Science
24 and Technology of the Executive Office of the President;
25 and I was in contact with regulatory people in Michigan.

1 I believe I had started some initial contacts with
2 regulatory people in Wisconsin, the DNR, primarily their
3 laboratory people. That's all I can think of now.

4 Q. For each of the agencies that you had contact
5 with, did you have a separate file set up?

6 A. Yes.

7 Q. And when you left your post in 1976, were
8 those files referable to those agencies still in the files
9 where the other ones were that we mentioned?

10 A. Yes.

11 Q. Was there a separate file for each of those,
12 separate file for the Department of Agriculture, a
13 separate file for the Department of Interior, et cetera?

14 A. Yes.

15 Q. What did those files consist of? What would
16 be in those generically?

17 A. What would be in them?

18 Q. Yeah. Was it correspondence back and forth
19 to the agencies --

20 A. Yes.

21 Q. -- or notes of telephone conferences? I'm
22 not saying that that was in there. I'm just trying to
23 give you an idea of the things I'm looking for.

24 A. Primarily letters, memoranda to and from the
25 agencies. Occasionally I would put in to that file a copy

1 of the "Federal Register" that referred to the agency and
2 PCBs, so that I would have a "Federal Register" file, in
3 addition a copy in, say, the FDA file or the U.S.D.A.
4 file. There might be clippings from journals, the popular
5 press that referred to that agency and to PCBs. That
6 would be --

7 Q. Okay. Did you use a numbering system for the
8 pages in your file?

9 A. No. It was chronological.

10 Q. Did your office ever make up an index for the
11 contents of any of the files?

12 A. No.

13 Q. Do you know whether or not the files exist
14 today in the same format as they were when you left that
15 position?

16 A. I do not.

17 Q. Do you have some recollection with regard to
18 what specifically your correspondence with the Wisconsin
19 Department of Natural Resources was about?

20 A. As best I remember, I don't remember the
21 specific documents, but the subject was primarily one of
22 analytical methods and findings in some of their samples,
23 water samples, fish samples, and that was trying to get
24 their laboratory in touch with Monsanto's laboratory so
25 the labs could talk to each other, compare notes and

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1 exchange samples. I have copies of the correspondence
2 that took place between the two labs, and I would get a
3 carbon copy. It was that type of thing, primarily
4 analytical at that time.

5 Q. When you say "at that time," was there a
6 change in the subject of the correspondence later on?

7 A. Later on, it became -- oh, there were, as I
8 remember, some meetings called by the DNR, and in that
9 file would be the notice of the meeting and the invitation
10 to attend. These kinds of things would appear. I can't
11 remember any other specifics, but that's in general the
12 kinds of things that would appear in any of these files.

13 Q. Okay. If you would be kind enough to take a
14 look at page 2 of the paper, beginning two-thirds of the
15 way through the fourth line on the top paragraph,
16 beginning with the phrase, "It appears that."

17 A. I see it.

18 Q. Okay. The sentence reads, and correct me if
19 I read it incorrectly, "It appears that in those uses
20 where control of spillage and disposal can be rigidly
21 exercised and the Aroclors are in sealed containers; e.g.
22 capacitors and transformers, the manufacture of Aroclor
23 1254 and 1260 should be continued." That's the end of
24 that particular sentence. With regard to 1242, does this
25 sentence mean that you thought the 1242 should be

1 discontinued?

2 A. No.

3 Q. Okay. At the time that this paper was
4 prepared, was the 1242 still thought to be not a problem?

5 A. Correct.

6 Q. When did the status of the 1242 change?

7 A. I'm assuming by "status," you mean the
8 decision?

9 Q. To treat it as the 1254 and 1260.

10 A. It occurred really at about this time. I
11 don't know if it's in this particular write-up, but a
12 meeting following this one, that the corporate management
13 committee -- there's a program outline for phasing out of
14 such uses as the hydraulic fluids, irrespective of the
15 type of PCB. So, I would say in response to your question
16 at about this time it was decided, whether or not 1242 was
17 being identified in the environment, where we can, we will
18 discontinue selling to some uses.

19 Q. In Section III, there are a series of
20 objectives which are stated. First was, "Reduce and
21 effectively control the PCB content of all effluent from
22 Monsanto plant." At that time, that is, at the time this
23 paper was prepared, in your opinion, did the Monsanto
24 plant effluents contain higher amounts of PCBs than were
25 desirable?

1 A. Yes.

2 Q. Okay. Was that true for both Anniston and
3 Krummrich?

4 A. Yes.

5 Q. Was it true for any other Monsanto plants?

6 A. No.

7 Q. The phrase "all effluent," I suppose, is
8 somewhat all encompassing. Does that include effluents
9 that went into municipal sewer systems as well as into the
10 waterways of the country?

11 A. Yes, anything that left the plant fence.

12 Q. Okay.

13 MR. SCHINK: I think he's asking you about
14 specifically Anniston and Krummrich.

15 Q. (BY MR. CARLSON) No, I'm talking more about
16 the phrase, "all effluent."

17 A. This is all Monsanto plants.

18 Q. I'm a little bit puzzled, and I think maybe
19 you can help me. Earlier today we discussed the concept
20 that die cast companies, prior to 1970 and post 1970, but
21 die cast companies at all times should have been cognizant
22 of the chemicals that were being used and take steps to
23 see that they did not get into the open waterways, or, I
24 guess, into the open waterways as a concept. We discussed
25 that, didn't we?

1 A. In concept, yes, but I'd like to suggest that
2 we're not talking zero molecules, either.

3 Q. I appreciate that.

4 A. It's controlling the discharge to a point
5 that the environment can tolerate or the neighborhood can
6 tolerate, the community.

7 Q. Sure.

8 A. Yes.

9 Q. I'm not saying, you know, one molecule, you
10 know, that kind of thing. What I am looking at is the
11 question of in 1970, how was Monsanto determining what
12 would be an acceptable discharge level, PCB discharge
13 level, into the waterways from its own plants?

14 A. It wasn't addressing the nation's waterways.
15 It was addressing the amount that left its plant --

16 Q. Okay.

17 A. -- going into the municipal treatment plant.

18 Q. But you were also discharging some that were
19 going into the waterways, weren't you, waste water?

20 A. With PCBs in them?

21 Q. Yes.

22 A. I'm not aware of any.

23 Q. Okay. All of the waste water discharge from
24 any Monsanto plant prior to 1970, went into municipal
25 treatment systems or your own company's treatment system?

1 MR. SCHINK: Are you talking about the plants
2 where it was manufactured?

3 MR. CARLSON: No, where PCBs were present.

4 A. If PCBs were present in the water effluent,
5 I'm only familiar with those systems that did go to
6 municipal treatment plants.

7 Q. (BY MR. CARLSON) Okay.

8 A. I'm not aware of any plant that discharges
9 into creeks and river beds freely that had PCBs in that
10 effluent.

11 Q. Okay. When you used the phrase "discharged
12 into the creeks and river beds freely," does that mean
13 that on occasions it would occur when there were flood
14 conditions, or valves that broke, or what have you?

15 A. That's a poor choice of words. What I meant
16 is it did not go into a system for further treatment.

17 Q. Okay.

18 A. It got some preliminary treatment. It might
19 have gotten filtered. It might have gotten aerated, and
20 then it goes out into the public waterways. It doesn't go
21 to a municipal treatment system.

22 Q. Okay.

23 A. Under those conditions I'm not aware of any
24 plant that had PCBs in that effluent.

25 Q. In those plants effluent was looked at for

1 the purpose of seeing whether or not PCBs were present?

2 A. If PCBs were in that plant in the first
3 place, yeah.

4 Q. Okay. For example, in Pensacola where they
5 are using it in compressors, you check the effluent to see
6 whether it made its way into those waters?

7 A. Right; downstream from that compressor. You
8 wouldn't check the effluent going out the other end of the
9 plant where nylon is made and no PCBs are present.

10 Q. Why was it necessary at that point to then
11 reduce the PCB content of all effluent?

12 A. I don't know that it was necessary; only
13 because Monsanto's management as represented by this group
14 of us working felt that this was the prudent thing to do.

15 Q. Was that sparked by a concern that there
16 could be a potential adverse effect on the environment?

17 A. Could be, yes.

18 Q. The third objective is stated to be, "Develop
19 products to replace Aroclors for those uses in which
20 Aroclors have been demonstrated to be harmful to the
21 environment and cannot be prevented from escaping into the
22 environment." First of all, did I correctly read that
23 objective?

24 A. Yes.

25 Q. Did that include developing products to

1 replace the then PCB-based hydraulic fluid?

2 A. Yes.

3 Q. Including the Pydraul 312?

4 A. Yes, which is a more conservative
5 interpretation of the intent if it goes further.

6 Q. On page 3, under number 1 of the action plan,
7 first it's stated the objective and then the status, and
8 in the status it says, "A tentative target of 10 ppb in
9 PCB in plant liquid effluent has been established." First
10 of all, I guess I've got to stop right there. Did I
11 correctly read the sentence?

12 A. Yes.

13 Q. And the target of 10 ppb is the same as we
14 discussed earlier this morning?

15 A. That is correct.

16 Q. There were no regulations which required you
17 to limit PCB discharge to 10 ppb at that point?

18 A. That is correct.

19 Q. Did you advise any customers that were
20 purchasing PCB fluids from you of any nature that if they
21 were using those fluids, they should try to limit their
22 effluent to 10 ppb of PCBs?

23 A. Yes.

24 Q. Were these just particular customers that
25 received that information, or was there an attempt to get

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1 that information to all customers?

2 A. The intent was to get it to all customers.

3 Q. And how was that to be --

4 A. I personally don't know how well that was
5 done.

6 Q. How was it to be done?

7 A. The marketing representatives, who were the
8 primary contact, when discussing PCBs and control, were to
9 use this as an example of a good target that Monsanto had
10 established and that Monsanto was striving for, and we
11 recommended that they might consider it.

12 Q. Was there consideration given to providing
13 this information to customers in written form?

14 A. Yes; by some of the marketing managers, yes.

15 Q. Can you tell me why that wasn't done?

16 A. Oh, I didn't say it wasn't done.

17 Q. I'm sorry. I thought you did, and maybe I
18 misinterpreted.

19 A. I know that I recall definitely that in the
20 electrical applications it was done. I was personally
21 involved in that one.

22 Q. Okay.

23 A. I do not recall at this moment the specifics
24 of how it was done for hydraulic fluids. That's why I
25 made the earlier remark that I don't know the extent that

1 this was carried out.

2 Q. Okay. When the technology to detect PCBs
3 down to the 10 part per billion level or lower was
4 available at Monsanto, do you recall, when they checked
5 the effluent from Anniston, what that level was for PCBs?

6 A. The numbers escape me. As I remember, the
7 best I remember, the parts per million range, and it was
8 above the solubility, which would indicate that the water
9 was turbid, had particulate matter in it, and the PCBs
10 were associated with that particulate matter. I just
11 don't recall the numbers, but it was hundreds of times
12 bigger than the 10 parts per billion.

13 Q. Was that true, also, for the Sauget plant?

14 A. Yes.

15 Q. Was the soil around the manufacturing
16 facility ever checked by Monsanto to determine PCB
17 content?

18 A. I believe it was, yeah.

19 Q. Do you know how that came up?

20 A. It was in the percent level.

21 Q. Oh, was it?

22 A. One percent, very high, thousands of parts
23 per million.

24 Q. How was it getting outside the building?

25 A. This is not a building. It's an outdoor

1 structure.

2 Q. I'm sorry. Okay. Every time there's a
3 leak --

4 A. In the old days it used to kind of dribble on
5 to the concrete pad and on to the soil, until the curbs
6 were built later.

7 Q. But in those days there really was no concern
8 about what was going to happen to it?

9 A. No. It just stayed there.

10 Q. Do the records of each of the plants
11 somewhere have the effluent PCB studies?

12 A. They did. I don't know what they have today.

13 Q. When you had the accidental pipe rupture in
14 Pensacola, did any of the PCBs get into the soil outside
15 the building?

16 A. Yes. Yes, and it formed, of course, a trail
17 on down, so that that whole area was dug up, carried away.

18 Q. Switch subjects again. I'm not trying to
19 deceive you, but if I don't remember to ask you now, I may
20 never remember. By any chance do you happen to know who
21 was calling on customers for Monsanto and selling
22 hydraulic fluid back in the middle '60s and early '70s?

23 A. No.

24 Q. See, I wouldn't have missed anything, anyway.

25 A. There were just too many salesmen. I

1 couldn't remember. And there was turnover.

2 Q. How was the sales organization structured?
3 Would there be a salesman assigned to Milwaukee or
4 Wisconsin, and would he report to some regional manager?
5 I'm not trying to suggest that's how it was done, but I'm
6 just trying to find out.

7 A. That's very close. There would be a salesman
8 assigned the hydraulic fluid accounts in a geographic
9 area, and as best I recall, he would report
10 administratively to the regional manager in the Chicago
11 office, and he would report functionally to a marketing
12 manager in St. Louis assigned to that product. In some
13 instances these salesmen would handle more than one
14 product line, depending on the volume of business, the
15 area covered, the number of customers, and so on.

16 Q. Thank you. Monsanto didn't deliberately dump
17 any amount of PCBs on the ground outside their plants or
18 manufacturing areas?

19 A. Not that I'm aware of. They had their own
20 landfill. They wouldn't need to do that.

21 Q. Okay. But are those circumstances where they
22 would be -- I'm talk about pre-1969 now, where there would
23 be spillage on to your own soil, that wouldn't be of any
24 concern to you because you didn't think that would cause
25 any problem, anyway?

1 A. No. They would just cover it with crushed
2 rock. That's it.

3 Q. If you go to page 4, we're on the third
4 objective now, and I'll just read it for the record.
5 "Develop products to replace Aroclors for those uses in
6 which Aroclors have been demonstrated to be harmful to the
7 environment, are resistant to biodegradation, and cannot
8 be prevented from escaping to the environment." Again,
9 have I read that properly?

10 A. Yes.

11 Q. And again, that included the 1242?

12 MR. SCHINK: What included the 1242?

13 Q. (BY MR. CARLSON) I'm sorry. Developing
14 products to replace the 1242 Aroclor.

15 A. It did by a very conservative interpretation
16 of that statement you just read.

17 Q. If we could turn to page 6, the fifth
18 objective, it reads at the top of the page, "Develop
19 methods for effective disposal of wastes containing PCB
20 without contaminating the environment." First of all,
21 have I correctly read the sentence?

22 A. Yes.

23 Q. And from this would I be correct in inferring
24 that, in your opinion, at that time better methods were
25 needed for effective disposal of PCB waste?

1 A. Well, I don't know so much better as a
2 variety of ways were to be explored to give much more
3 flexibility for different circumstances that might arise.

4 Q. Which methods were explored besides the
5 incineration and landfill?

6 A. Oh, sand bed filtering, carbon bed filtering,
7 removal by centrifuging, all of these. I don't claim to
8 know them all. The laboratory tried everything that came
9 to mind. Many of them were failures.

10 Q. Any of them that proved to be economically
11 effective?

12 A. Not really. The best way was to prevent it
13 from mixing with water to start with. That was the best
14 way.

15 Q. If we could turn to page 7, at the top it
16 reads, "Evaluate alternate methods of disposal by
17 incineration - Monsanto operated vs. contract." Again, I
18 correctly read the sentence?

19 A. Yes.

20 Q. Did Monsanto ever have a contract with other
21 concerns for incineration of PCBs?

22 A. Eventually.

23 Q. When was that?

24 A. We had arrangements with the Rollins unit in
25 Baton Rouge and in Deer Park, Texas. As best I remember,

1 there were contractual arrangements, and this was in
2 addition to the Monsanto-operated unit in Illinois.

3 Q. Can you tell me when those contracts were
4 first entered into?

5 A. Starting in about 1977, as best I recall.

6 Q. Did you enter into those contracts about the
7 time that you were phasing out your own incinerating?

8 A. About that time, yes.

9 Q. Did Monsanto pay for the incineration of PCBs
10 of any of its customers at those plants?

11 A. I don't know.

12 Q. Were the incinerators of Rollins ever checked
13 for determining whether or not dioxin had been formed in
14 the combustion process of the PCBs?

15 A. I don't know.

16 Q. Page 8, item number 7, the top line reads,
17 "Objective - Determining effects of PCB's on birds,
18 aquatic life, animals and humans." Again, I read it
19 correctly?

20 A. Yes.

21 Q. In your opinion, has Monsanto satisfactorily
22 now determined the effects of PCBs on the birds, aquatic
23 life, animals and humans?

24 A. In my opinion, yeah. I think there's enough
25 good basic data that can lead to the conclusions that were

1 arrived at.

2 Q. Okay. Who at Monsanto, if you know, with a
3 background in toxicology and/or epidemiology now believes
4 that he or they, he, she or they have sufficient
5 information to finally conclude what the effects of PCBs
6 are?

7 A. Well, two individuals that I can think of,
8 Dr. William Gaffey, the epidemiologist, G-a-f-f-e-y, and
9 Dr. George Levinskas, L-e-v-i-n-s-k-a-s, the toxicologist.

10 Q. Do you happen to know if Dr. Gaffey has
11 testified in any litigation regarding PCBs?

12 A. No, I don't.

13 Q. Do you happen to know if Dr. Levinskas has
14 testified in any litigation regarding PCBs?

15 A. Yes, he has, in depositions.

16 Q. Can you tell me which cases, or are there a
17 lot of them?

18 A. I don't know that I know all the cases. I
19 know of one for certain, what I call the Scott case in
20 Texas.

21 Q. Okay.

22 A. My understanding is he's been involved in
23 others, but I don't know which.

24 Q. Did he get involved in the City of
25 Bloomington case?

1 MR. SCHINK: You should know. You had
2 somebody at the trial.

3 MR. CARLSON: I know he didn't testify at
4 trial, but I don't know if he testified in a deposition.

5 A. His name was mentioned to me during my
6 deposition. I don't know if he was deposed himself.

7 Q. (BY MR. CARLSON) Have either of these
8 gentlemen authored any articles on the potential health
9 effects of PCBs?

10 A. I believe Dr. Gaffey prepared a paper. I
11 don't know if it was published or not. He was working on
12 it.

13 Q. Did Dr. Gaffey, to your knowledge, design any
14 epidemiological studies to determine potential health
15 effects of PCBs?

16 A. I hesitate, because I don't know what you
17 mean by the word "design." Dr. Gaffey took the work of a
18 previous Monsanto group that worked on an epidemiology
19 study of the Krummrich plant personnel, and added more
20 information to that data bank, and came up with his paper.

21 Q. Okay.

22 A. That's all I really know at the moment.

23 Q. Who originally gathered the information from
24 the Krummrich plant?

25 A. It was a Miss Zack. Judy Zack was the

1 principal one.

2 Q. Do you know generally what Miss Zack had
3 concluded, if anything, in her work?

4 A. She concluded, as best I remember, that the
5 number of lung cancers in that population was
6 statistically significantly more than the national
7 experience, but equivalent to the county in which the
8 plant is located.

9 Q. And did Dr. Gaffey's work, to your knowledge,
10 lead to the confirmation of the regional thoughts of Miss
11 Zack, or has there been some change?

12 A. I will really don't know.

13 Q. Did Miss Zack attempt to identify the reason,
14 if there is any identifiable reason, why the lung cancers
15 in that particular county were higher than the national
16 average?

17 A. No, she didn't.

18 Q. Zack's work was completed when?

19 A. '75, 1975.

20 Q. And Dr. Gaffey's work was completed when?

21 A. About 1982.

22 Q. Okay. Can you turn to Exhibit 2? The first
23 page is a memo from J. Coleman Weber to a number of
24 people, including yourself, dated November 17, 1975.

25 A. Yes.

1 Q. And then there's several other documents in
2 the exhibit. The next document is entitled "PCB
3 Discussions, Governmental Agencies, November 13 and 14,
4 1975."

5 A. Yes.

6 Q. And that has apparently also been authored by
7 J. Coleman Weber.

8 A. Yes.

9 Q. And I have a blank page for some reason, and
10 the next page of the exhibit is November 10, 1975.

11 MR. SCHINK: It looks like the blank page was
12 inserted by your Xeroxer, since the succeeding pages or
13 the following pages are sequential in number.

14 Q. (BY MR. CARLSON) It is dated November 10 of
15 1975. The subject is "PCB Discussions," and it's a
16 two-page document authored by yourself?

17 A. Yes.

18 Q. On the second page of the document, the first
19 page of the Weber memo, it is stated that the purpose of
20 the discussions first is, "To show that positive action
21 was taken by Monsanto in response to Dr. Kimbrough's
22 report that Aroclor 1260 caused malignant tumors in the
23 liver of the rat." Is that correct?

24 A. Yes.

25 Q. Do you know if Dr. Kimbrough has changed her

1 mind in that regard?

2 A. Dr. Kimbrough has not changed her mind in the
3 findings of her study.

4 Q. Okay.

5 A. Is that your question?

6 Q. Yeah. That's right. Has Monsanto paid for
7 Dr. Kimbrough to do any further work?

8 A. No.

9 Q. Has Monsanto had discussions with Dr.
10 Kimbrough relative to her findings?

11 A. Oh, yes.

12 Q. Can you name some of the people in Industrial
13 Bio Test that were working on the subject of lung tumors
14 in rats caused by PCB exposure?

15 A. Yes. There was Joseph Calandra, president of
16 Industrial Bio Test, and a Dr. Keplinger. His first name
17 starts with an "M." I've forgotten what his full first
18 name is. I believe there was a Dr. Don Gordon. There
19 were others who I don't remember and had never personally
20 met who were involved, also.

21 Q. Has Monsanto accepted that for the particular
22 strain of rat that was utilized by Dr. Kimbrough in her
23 test in looking at the potential for malignant tumors in
24 the liver -- I lost track of my thought. Has Dr.
25 Kimbrough's work been duplicated by anyone else?

1 A. No.

2 Q. Have others attempted to duplicate the work?

3 A. Not to my knowledge, unless you call
4 Monsanto's previous work using this same material out of
5 the same lot number a duplication.

6 Q. Okay.

7 A. But not with the same species of rat.

8 Q. Okay. Did Dr. Kimbrough's rats develop
9 malignant tumors of the liver?

10 A. Yes.

11 Q. Is that a species that was found to be
12 particularly susceptible to developing malignant tumors?

13 A. I have never heard that species described as
14 such, but it was different.

15 Q. Okay. Monsanto did a comparable test?

16 A. Yes.

17 Q. It resulted in what, enlarged livers?

18 A. Enlarged livers, loss of weight gain at the
19 high levels of feeding, but --

20 Q. No malignancy?

21 A. -- didn't see any malignancy.

22 Q. Have Monsanto's medical people made a
23 determination as to why this difference in results?

24 A. They attempted.

25 Q. Okay.

1 A. And this is why the president of Industrial
2 Bio Test was personally asked to be involved, and this is
3 why Monsanto also went to the Eppley Institute for a third
4 independent opinion.

5 Q. Okay.

6 A. The conclusion was that there is a difference
7 in the cells, but no one, I think, to this day can explain
8 why the difference.

9 Q. Has Dr. Kimbrough offered her opinion as to
10 why the difference?

11 A. No. She was just as baffled as we were, so
12 it's an open question.

13 Q. OSHA one time was considering requiring a use
14 permit for those that were using PCBs?

15 A. Yes, it was. It was considering suggesting
16 that. They can only recommend.

17 Q. That wasn't considered to be a practical
18 recommendation by Monsanto?

19 A. I don't know that Monsanto had any strong
20 opinions regarding use permits.

21 Q. On page 4 of Mr. Weber's memo, the second
22 line begins and then reads, "In general, this group of EPA
23 was not receptive to our concept that PCB's are not cancer
24 causing agents." Did they tell you why not?

25 A. No.

1 Q. They just --

2 A. They just expressed a disbelief in our
3 conclusion.

4 Q. Okay. But without having anything further to
5 support their contention?

6 A. That is correct.

7 Q. Did they rely on Kimbrough's studies? Is
8 that the only thing they were relying on, or did they even
9 rely on that?

10 A. I think that personally I believe that
11 Kimbrough's results confirmed a suspicion they had, and
12 their lead spokesman was Dr. Pallotta, their toxicologist
13 consultant, who had never done any testing personally.

14 Q. Had he reviewed any literature?

15 A. Yes. He kept up to date on all the
16 literature.

17 Q. Did you have some discussions with Dr.
18 Pallotta about this?

19 A. Oh, yes.

20 Q. Why did he think that the PCBs were
21 cancer-causing agents?

22 A. He had a subjective belief. That's all.

23 Q. Were there any that reported to Dr. Pallotta
24 that you are aware of who did not share his belief that
25 PCBs were cancer-causing agents?

1 A. Were there any people reporting to?

2 Q. Reporting to him that it was -- did you have
3 contact with EPA people that reported to Dr. Pallotta who
4 were of a contrary opinion?

5 A. I'm sorry. Dr. Pallotta at that time was a
6 consultant, self-employed, working under a contract to
7 EPA.

8 Q. Okay.

9 A. I don't know that Dr. Pallotta had any staff
10 at all.

11 Q. Where is he located?

12 A. The last I heard, it was the Washington, D.C.
13 area.

14 Q. Do you know if he had consulted the EPA in
15 other matters?

16 A. Yes.

17 Q. Other chemicals?

18 A. Yes.

19 Q. Do you know some of the chemicals that he's
20 consulted on?

21 A. Not anymore. I used to.

22 Q. Do you know a little bit or anything more
23 about his background other than he was a toxicologist?

24 A. That's all I know.

25 Q. One of the things that occurs in the course

1 of litigation is lawyers hear all sorts of rumors, and if
2 I hear a rumor, I've got to ask you about it. Has
3 Industrial Bio Test ever been indicted or looked at or
4 criminally charged for anything resulting from test
5 reports it has made or any of the warnings done?

6 A. Yes.

7 Q. Can you tell me what that was about?

8 A. I can share with you my understanding.

9 Q. Okay.

10 A. As I understand it, they were accused of
11 fraudulent data relating to some tests of chemicals by
12 several companies. As I understand it, some of the
13 employees and ex-employees of Industrial Bio Test
14 Laboratories were found guilty on several counts. I also
15 understand that some served some prison sentences, but
16 none of these allegations or problems are associated with
17 PCBs.

18 Q. Do you remember which chemicals were
19 involved?

20 A. The only one I'm familiar with is another
21 Monsanto product called TCC, which is a bacteriostat. I
22 don't recall the other products.

23 Q. Were any of the people that were involved in
24 this particular biotest problem people that worked on any
25 of the studies on PCBs?

1 A. Yes.

2 Q. Were the PCB studies of Industrial Bio Test
3 audited by any outside concern?

4 A. No.

5 Q. Were they audited by Monsanto?

6 A. Yes.

7 Q. When was the auditing done?

8 A. I understand they were audited in about 1978,
9 '79.

10 Q. Do you know who at Monsanto was responsible
11 for having the audit performed?

12 A. Dr. Levinskas.

13 Q. Was there a formal report issued as a result
14 of the audit?

15 A. I didn't see it. I don't know.

16 Q. To the best of your knowledge, did the audit
17 confirm that the reporting by Industrial Bio Test on the
18 PCB work was accurate?

19 A. Yes.

20 Q. Did everybody heave a sigh of relief?

21 A. Oh, I did.

22 Q. No matter how careful you are in choosing
23 people, sometimes things go awry.

24 A. That's true in most things.

25 Q. Including selecting people to haul PCBs

1 around, I guess. Okay. Let's take a look at Exhibit 3.
2 I guess I better check and make sure to see how many
3 documents there are. I don't know if this is out of order
4 or what's happened here, so I guess I'll just try to go
5 through it as best I can. The first page is entitled,
6 "Outline - CMC Presentation. PCB Environmental Problem,"
7 correct?

8 A. Yes.

9 Q. And the second page is Section IV of that
10 report, which is similar?

11 A. Yes.

12 Q. And the next page, is that a statement of the
13 actual presentation?

14 A. It appears to be a copy of the script that I
15 used in making the presentation.

16 Q. And that's four pages, the last page being
17 about a third of the page of printed material?

18 A. I didn't get the last part.

19 Q. Four pages, with the last page being about a
20 third of a page of printed material? In other words, four
21 pages to the script, the last page only being --

22 A. No. Following the fourth page, that's an
23 interruption, followed by a copy of a transparency which
24 is projected on the screen. The script continues then.

25 Q. I see.

1 A. The final transparency and another narrative.

2 Q. Okay. Thank you. The third page of the
3 document, which would be, as I understand it, the first
4 page of the script presentation, the first paragraph,
5 there's the sentence, referring back to your November 17,
6 1969 presentation, "Since then, as you well know, the
7 pollution hysteria continues to grow and specifically in
8 the area of PCB's, the number of laboratories,
9 governmental and university involved continues to increase
10 as we predicted." Can you define for me what you meant by
11 the term "hysteria" in that presentation?

12 A. Maybe it's a misuse of the word, but this
13 referred to the concerns expressed about DDT and all these
14 other chemicals in the environment, and the press coverage
15 that was being loaded, and the proposed allegations that
16 were being proposed throughout the country, the increase
17 in the number of articles, both in the technical journals
18 and popular press, referring to the chemical pollution of
19 the environment. That's what that was intended to cover.

20 Q. Based on today's knowledge, looking back at
21 the time this presentation was made, in your opinion, was
22 the attention given to the problem by the media and by the
23 public unwarranted?

24 A. That's a subjective kind of question, but in
25 my opinion, there were situations that warranted this kind

1 of attention, and in my opinion, it probably required this
2 kind of emphasis to get such agencies as EPA approved and
3 organized and functioning. So although it might have been
4 overstated, the need was there, and it helped satisfy that
5 need up to a point.

6 Q. How about with regard to the potential
7 environmental ramifications of continued use of PCBs? Do
8 you think that the concerns expressed by the media back in
9 1969 and '70, in retrospect was unwarranted?

10 A. I think I understand your question.

11 Would you read that again?

12 (Reporter read from record as directed.)

13 A. In general, I don't believe they were not
14 warranted, but some of the specifics were proven
15 erroneous.

16 Q. (BY MR. CARLSON) At the bottom of the same
17 page you reference the discussions with Dr. Risebrough and
18 Dr. Olcutt at Berkeley. Did Dr. Olcutt have any opinions
19 referable to potential adverse health effects of PCBs
20 which were different than Dr. Risebrough's?

21 A. Dr. Olcutt was more suspicious of DDT than
22 Dr. Risebrough was. There was a difference of emphasis
23 between the two. It was not open warfare, but it was a
24 professional difference of opinion.

25 Q. Did Monsanto, either directly or indirectly,

1 pay for any additional studies to be done by Dr.
2 Risebrough or Dr. Olcutt?

3 A. Not to my knowledge.

4 Q. The first transparency, which I believe is
5 entitled, "PCB Content, Plant Effluent," references both
6 in real amounts, apparently, and in parts per billion PCBs
7 found in the discharge.

8 A. I see that.

9 Q. Okay. Where did you get those numbers from?

10 A. This came from the laboratories at the two
11 plants.

12 Q. Okay. From the past work in the plants, did
13 those numbers appear to be accurate as far as you were
14 concerned?

15 A. Yes.

16 Q. The next page of the presentation, the first
17 paragraph, last sentence, says, "These substitutes must be
18 thoroughly evaluated to determine long term effect of the
19 environment to avoid problems in the future." That would
20 be in the nature of the biodegradability studies and
21 lifetime rat studies that we had earlier talked about?

22 A. Yes.

23 Q. By the mid-1960's, and looking back with
24 hindsight now, which I appreciate is usually, but not
25 always, clearer than our present sense, do you think

1 Monsanto should have looked at the biodegradability of
2 PCBs earlier than it did? Strike that. Do you think that
3 Monsanto should have looked at the biodegradability of the
4 PCBs earlier than it did?

5 A. No, I don't think so. There was nothing to
6 indicate that such a study would be appropriate, and
7 anyone suggesting it would have been perceived to be
8 irrational. Nobody ever looked at industrial chemicals
9 this way. That was a first as it was when it was done.

10 Q. All right.

11 A. So putting myself in 1960, knowing that
12 biodegradation testing protocol might be available --

13 Q. Right.

14 A. -- but not having any real reason to do it
15 with so many other important studies to do, I don't think
16 that any responsible company would have done it, not
17 having any other information than it had.

18 Q. The information that it eventually received
19 came from an outside source --

20 A. Correct.

21 Q. -- which then prompted looking at the
22 question?

23 A. Correct.

24 Q. Monsanto -- this is going to sound a little
25 bit argumentative, and I don't mean it to be, but it's

1 obviously a subject of concern to your company, or to your
2 past employer and current company that you consult to, and
3 my client as well. In earlier years, pre-1966, Monsanto
4 knew that it was marketing extremely stable material,
5 correct?

6 A. Yes.

7 Q. And you really had no reason to think that it
8 wasn't biodegrading?

9 A. Correct.

10 Q. And didn't know what, if any, environmental
11 problems maybe associated with its presence in the
12 environment?

13 A. Correct; but its stability led the research
14 minds that were studying it to conclude that its
15 characteristics were such that metabolism is almost out of
16 the question. Therefore, it couldn't hurt anything. I
17 used an expression earlier, pebbles on the beach. They
18 are there. I'll admit their presence, but presence alone
19 doesn't necessarily mean effect, and that's the context in
20 which it was perceived.

21 Q. Okay. We go back, when looking at that
22 subject then, to the question of who actually at Monsanto
23 looked at whether or not the PCBs were accumulating in
24 eventually the fatty tissue of animals, for example, or
25 fish. Back in the early '60s, no one was looking at that,

1 were they?

2 A. That is true.

3 Q. And as I understand it, no one was looking at
4 it primarily because it was thought there was no reason to
5 look at it?

6 A. That is right.

7 Q. If there had been some reason to look at it,
8 either other related scientific literature, then would you
9 expect Monsanto to have done the work that began in '69
10 earlier?

11 MR. SCHINK: That assumes that the
12 instrumentation, for example, existed to enable one to do
13 that. I don't know if you laid that foundation, so I
14 object. There's no foundation.

15 A. When you say do the work, are we talking now
16 about animal toxicity studies or biodegradation studies?

17 Q. (BY MR. CARLSON) Both. I don't mean to
18 limit it.

19 A. Okay. The answer to your question would be
20 yes, animal toxicity studies would have been started given
21 this hint that they're out there. The next question is,
22 if they are, are they harming any creature? Now, the
23 biodegradation study was initiated primarily to help
24 explain why, with the millions of pounds of, for example,
25 1242 sold, and put in such things as carbonless copy paper

1 and paint, things that are right out there in the
2 environment, no laboratory up to this point in time was
3 finding it. The suspicion centered on biodegradation.
4 Now, let's confirm it. That's why the biodegradation
5 studies were started. We knew they were stable. In our
6 minds we were convinced. We weren't surprised 1254 was
7 out there, but why not 1242? Does that help a little?

8 Q. Yeah. Have you discussed with people in the
9 medical department at Monsanto or others what scientific
10 literature existed in the late '30s through the '40s,
11 which arguably could relate to the question of potentially
12 adverse health effects of PCBs?

13 A. Yes.

14 Q. And what have you been told by these folks?

15 A. The published reports in those early years
16 included not only PCBs, but the materials trademarked halo
17 wax. This was chlorinated naphthylamines. The two
18 chemical families were used together in a coating
19 operation, apparently quite extensively, in which
20 electrical wire was coated with this material as an
21 insulation. Employees were exposed, and there was
22 evidence of health effects. That's the early literature.

23 Dr. Kelly and Elmer Wheeler both indicated that
24 that was used as a guideline respecting PCBs, although the
25 data was not real crystal clear as to which of these

1 chemicals was the culprit, and that's where the initial
2 words of precaution were derived, such as, "Don't breathe
3 it. Don't get it on your skin," and so on. And it was
4 later confirmed by the acute toxicity testing that was
5 conducted for Monsanto through the years, '50s, '60s.
6 There was some repeated testing, and the medical
7 department took considerable comfort in the fact that as
8 the years of experience went on and no employees showed
9 any serious health affects, they took that as a good
10 signal. We knew how to handle it.

11 Q. With PCBs being introduced into the food
12 chain as we now know, what were the potential dangers to
13 humans if PCBs had continued to be used as before?

14 A. The introduction in the food chain occurred
15 in two ways. One is via the wildlife through the fish.
16 The other is through accidents that occurred, such as
17 happened in Japan with the rice oil and happened in the
18 United States with that chicken feed ingredient that ended
19 up in poultry and eggs. Those were accidental
20 contaminations. It was the considered opinion of the Food
21 and Drug Administration that PCBs ought to be -- without
22 any PCB testing, ought to be considered similar to DDT.
23 That was their guideline.

24 Q. Okay.

25 A. So the standard they had set for the amount

1 of DDT that they would tolerate in food as an adulterant
2 would be used for PCBs in food, again as an adulterant.
3 It's not intended to be in there. It serves no useful
4 purpose, but it's there. We are going to control the
5 amount. I personally have never heard any discussion by
6 individuals in FDA saying that, "This amount will create
7 this harm in human beings, and, therefore, we apply a
8 safety factor and end up with this tolerated amount."
9 That has never been conducted in my presence, and I don't
10 know of any discussion of that kind. The similarity was
11 always to DDT.

12 Q. What about the effect of the product on the
13 environment, the product being PCBs generically?

14 A. PCBs in the environment?

15 Q. If they had been continued to be used as
16 prior to 1969?

17 A. Well, there's evidence that is pretty good
18 supported by the chicken study that birds could be
19 affected if it kept building up just the way DDT did.
20 Eventually it would reach the point where it would be PCBs
21 and DDTs are dropping. So, I predict that that could have
22 happened with continued releases.

23 There are some creatures that are very sensitive,
24 as shown by the shrimp studies. The baby shrimp just
25 don't survive in very low levels. Parts per billion, very

1 low levels of PCBs kills them. It's highly toxic. So,
2 that kind of says that there are some creatures out there
3 that we may not have studied yet that could be hurt badly.
4 So in answer to your question, with continued uses, it's
5 very likely that a level could have been reached to hurt
6 some creature in the environment.

7 Q. Could you include man on that list of
8 creatures?

9 A. Well, if carried to extremes, yes. I don't
10 know what that number would be, but I would suggest that
11 we would have other symptoms before that.

12 Q. PCBs obviously served a very worthwhile
13 purpose for a period of time, didn't they?

14 A. I'm convinced that, yes, they reduced the
15 danger of fires, which I admit are difficult to quantify.

16 Q. Sure.

17 A. The benefits, I'm pretty sure, are there.

18 Q. Okay. Do you think that they were there for
19 hydraulic fluid to the same extent; that is, the benefits
20 were there for hydraulic fluid to the same extent that
21 they were there as used as a dielectric?

22 A. I personally believe that, and I base that on
23 what I understand of the serious fire General Motors had
24 in Livonia, Michigan. You may not remember that, but they
25 burned down a plant.

1 Q. What were they using?

2 A. Mineral oil in thier hydraulic systems.

3 Q. When was that?

4 A. Early '50s. It was an Oldsmobile
5 transmission plant as I remember; but anyway, that was the
6 start of the interest in fire-resistant hydraulic fluids,
7 helped a lot by the need for hydraulic fluids in aircraft,
8 fire resistant.

9 Q. Are PCBs still used in any capacity or any
10 application today in this country?

11 A. Oh, they are still in use in electrical
12 systems. There's not a new system made, but they are in
13 place.

14 Q. But systems that are still in use?

15 A. I suspect this building has a PCB
16 transformer, and I suspect the ballast units up here are
17 PCB.

18 Q. Your comparison with -- strike that. The
19 question of the usefulness of PCBs in hydraulic fluid and
20 the reference to the General Motors fire I appreciate. I
21 wonder if, in looking at the phosphate esters that came on
22 to the market, if you at that point would still think that
23 PCBs were as important for the hydraulic fluid in usages
24 as PCBs were for the dielectric usages?

25 MR. SCHINK: I object to the form of the

1 question. I don't understand it.

2 MR. CARLSON: I'll rephrase it.

3 The phosphate esters came into use in hydraulic
4 fluids when?

5 A. Some phosphate esters were used as a
6 co-ingredient with PCBs early on.

7 Q. Okay. When did they come into their own?

8 MR. SCHINK: You're talking about by Monsanto
9 or by other companies selling hydraulic fluids?

10 Q. (BY MR. CARLSON) By anybody selling
11 hydraulic fluids.

12 A. I don't propose to know all the answers to
13 this, but it's my understanding that there were
14 competitive fluids available that contained phosphate
15 esters certainly in the early '60s. I am also under the
16 understanding that they were not quite as good. They had
17 some shortcomings.

18 Q. We talked about those a little bit earlier.

19 A. We talked about those earlier. In terms of
20 Monsanto's replacement, you will note that the phosphate
21 esters that were eventually used were not the old time
22 products that were in existence back in the '60's and
23 '70s. These were -- I'm going to call them custom made
24 phosphate esters to give the right kind of corrosion
25 control on bearings and what have you in machinery, the

1 right kinds of lubricating properties, as well as fire
2 resistance, although that fire resistance isn't quite as
3 good as the PCBs. As I understand it, you can still get
4 flashes of fire when a phosphate ester hits hot molten
5 metal.

6 Q. Okay. On the same page that we're looking
7 at, the second paragraph, the last sentence, "We have
8 recommended to the U.S. Department of Agriculture to
9 reject Aroclors as an approved inert material when
10 pesticide registrations occur this year." Why was that?

11 A. The U.S. Department of Agriculture had done
12 some research work back in the '50s, looking for materials
13 that would extend the effective life of insecticides for
14 crawling insects in households, on shelving and the like.
15 They found that PCBs made good tacky material and were
16 recommending that Lindane and these others, Heptachlor and
17 these other insecticides that existed at that time be
18 blended with PCBs to extend their useful life. That was
19 never a very common application, but there were some small
20 companies making such insecticides.

21 When we heard about it, we did two things. First
22 of all, we told our distributors, "Don't sell to that
23 application." And then Dr. Kelly wrote to the Department
24 of Agriculture, telling them, "Do not reregister these
25 formulations. We don't recommend it."

1 Q. Why didn't he recommend it?

2 A. Why didn't he?

3 Q. Yes.

4 A. Well, this was in answer to the question of
5 why are they found in so many strange places? At one time
6 it was thought that PCBs were sprayed from aircraft with
7 insecticides, and this is why you found it in places far
8 removed from industry. Well, our studies show that wasn't
9 true, but we did run across this one, and since it wasn't
10 very popular, not a big use, you might as well discontinue
11 it.

12 Q. Okay. On the last page of the presentation,
13 the top paragraph reads, "Toxicity studies are now in the
14 tenth month. Data to date indicate that Aroclors are
15 mildly toxic to mammals, however, it is highly unlikely
16 that this will be a significant factor in any decision
17 regarding the banning or restricting of the use of
18 Aroclors." Why did you feel that the mild toxicity would
19 not be a significant factor at that point?

20 A. We felt it was not a significant factor.

21 Q. Right. Why not?

22 A. Because there are many, many industrial
23 chemicals in commerce that fit this mildly toxic
24 characterization or description.

25 Q. If you take mildly toxic and add to it not

1 biodegrading, then you would have a different answer?

2 A. No, because that's coupled with the
3 probability of exposure, and if it's -- we were talking
4 here in steel containers. Who's going to get exposed to
5 it in closed systems? They are referring here to the
6 banning at restricting the use.

7 Q. Are you talking about restricting the use?
8 Are we talking about no more Pydraul with PCBs?

9 A. No. We're talking about uses over and above
10 Monsanto's restrictions.

11 Q. Okay.

12 A. They are referring here to Governmental
13 restrictions over and above the program we were describing
14 here.

15 Q. That paragraph is talking about governmental
16 decisions regarding the banning of restricting use?

17 A. Yes. That was the intent of that. It's not
18 well written, but --

19 Q. It's better written than most of my questions
20 have been phrased, so that's all right. Did Monsanto, at
21 the time you made that presentation, expect that there
22 would be a governmental ban or a restriction in the use of
23 PCBs?

24 A. There was -- yeah. The likelihood was pretty
25 good. It was fairly high that such a ban eventually would

1 occur.

2 Q. And that was understood by you as early as
3 when?

4 A. 1970, not only by me personally, but the
5 group of us who were working on this.

6 Q. Were there any people at Monsanto that you
7 worked particularly close with in the PCB question?

8 A. Yes.

9 Q. Who would those people have been?

10 A. If I understand your description of
11 "particularly close" --

12 Q. Yes. I'm sure that you reported to a lot of
13 people, and you had a lot of discussions, but were there
14 any people that you worked with almost on a day-to-day
15 basis?

16 A. All right. The key people were individuals
17 that represented each of the functions: Elmer Wheeler,
18 the medical department; Bill Richard, the research
19 function; and Bob Keller, the analytical chemistry
20 function. And I worked closely with the directors of
21 marketing, Don Olson initially, and he was replaced by Tom
22 Gossage and individuals like Bob Sido in the labeling
23 department. Those were the key people, and their staffs,
24 I'd be in touch with their lieutenants, so to speak.

25 Q. Okay. Did you meet with any resistance from

1 marketing people with regard to any programs that you
2 wanted to see implemented with regard to the customers'
3 handling of PCBs and what marketing was willing to tell
4 the customers?

5 A. Well, there was some of that, but I don't
6 recall any incident where it was so heated and it had
7 reached the point where we couldn't resolve the
8 differences.

9 Q. I can't believe anybody could get heated with
10 you, anyway, and that they couldn't resolve their
11 differences with you, so that doesn't surprise me. But
12 there must have been some people who said, "Hey, wait a
13 second. We can't do that."

14 A. That's right. That did happen, but
15 eventually they would come around. There were people who
16 did object. "Don't put anything else on the label. We
17 don't need it. Don't tell the Government anything. They
18 don't need to know." But all that was eventually, I
19 think -- I like to think that I kind of persuaded them to
20 think the way I did.

21 Q. Okay. Was the 312 label changed? I know
22 that the 1242 label had an addition to it, but was the 312
23 label changed?

24 A. There was a paragraph, a little stick-on
25 label that was attached that referred to re-emphasize,

1 really, but this had wording specific to the environment.

2 Q. Right.

3 A. "Studies show this is a potential pollutant.
4 Don't let it get in the waterways," that kind of thing.

5 Q. Did that go on the Pydraul 312 label?

6 A. Yes, sir.

7 Q. As well as when you were selling, I suppose,
8 the raw material, the Aroclor 1242?

9 A. Well, with Aroclor 1242, eventually it was
10 right on that label, not only as an addendum label,
11 affixed on.

12 Q. Okay. We'll get that a little bit later, I
13 guess. On the same page, the third paragraph reads,
14 "Biodegradation studies have, thus far, confirmed our
15 initial beliefs that the lower chlorinated biphenyls would
16 degrade easily. We were disappointed in the resistance to
17 degradation of the some of the isomers in Aroclor 1242."
18 What was occurring with regard to the 1242?

19 A. The PCBs in 1242 had the 5 chlorine and 6
20 chlorine, which are also in the 1254 cut, and those
21 fractions were not degrading, and you'll see that it
22 explains what we concluded from that.

23 Q. Okay. Did the research in looking at the
24 possible use of distilled Aroclor 1242 pan out?

25 A. Yes.

1 Q. Was that ever marketed commercially?

2 A. Yes, for dielectric uses.

3 Q. Okay. Why wasn't any used in the
4 hydraulic -- why wasn't it applied in the hydraulic side?

5 A. We had already substituted the phosphate
6 esters in hydraulic fluids. This came along later, later
7 in '71, and at that time we were only selling the
8 electrical people.

9 Q. Okay.

10 MR. SCHINK: Let's take a break. Off the
11 record.

12 (The deposition was adjourned until Thursday,
13 August 11, 1988, at 9:00 a.m.)

14 Q. (BY MR. PENDERGAST) Mr. Papageorge, again,
15 my name is John Pendergast, and I'm going to be continuing
16 the deposition we started yesterday. First, I just wanted
17 to ask you if you understand you are still under oath
18 today?

19 A. I do.

20 Q. Okay. I'd just like to, before we get back
21 into the monotony of going into some of these documents, I
22 have a couple of questions just to follow up on some of
23 what we did yesterday, and the questions may appear
24 disjointed, jumping from subject to subject, and that's
25 only because I've pulled them out of my notes from

1 yesterday. So I hope you'll bear with me for that.

2 I think you stated yesterday that you have given
3 about 24 or two dozen depositions in cases for Monsanto.
4 Do you recall that?

5 A. I do.

6 Q. Okay. Have any of those -- strike that.
7 Have you ever testified on behalf of anyone other than
8 Monsanto?

9 A. Yes. I mentioned the two cases yesterday you
10 may recognize.

11 Q. Right. And one was the Westinghouse case?

12 A. A Westinghouse case.

13 Q. And that was the one that was venued in
14 Indianapolis, Indiana?

15 A. No.

16 Q. Okay. Which one is that?

17 A. This was in San Francisco.

18 Q. And can you tell me what the nature of that
19 case was?

20 A. As I understand it, it involved transformers
21 in a fire, in an office building.

22 Q. Was Monsanto involved in that case?

23 A. At one time, I understood, but it is no
24 longer a defendant.

25 Q. Okay. Do you know what the allegations

1 against Monsanto were in that case?

2 A. They were related to product, product
3 labeling, product information.

4 Q. It had to do with warnings about fire
5 hazards, that sort of thing?

6 A. No. It had to do with the proper handling of
7 dielectric fluids that contained PCBs as an ingredient.

8 Q. And how was the handling of the materials
9 involved in the lawsuit?

10 A. Well, I can't speak for the attorneys that
11 asked the question. I was questioned in the area of what
12 did the labels say, and when were they changed, and why
13 were they changed, and some questions regarding my
14 knowledge of health effects of PCBs; also, any knowledge I
15 had regarding the burning of PCBs and the health effects
16 of the products of burning.

17 Q. Was there an allegation in that case that
18 someone's health had been adversely affected by the
19 inhalation of fumes containing PCBs?

20 A. No, not to my knowledge.

21 Q. And what was the other case that you
22 testified in or where you were not involved with Monsanto?

23 A. This was the Sangamo Electric case I
24 mentioned yesterday.

25 Q. And where was that?

1 A. This was in Greenville, South Carolina.

2 Q. And what was the basic fact situation in that
3 case?

4 A. This was a matter of water containing PCBs
5 entering public waterways and the presence of PCBs in
6 potable water.

7 Q. Was Monsanto ever involved in that lawsuit?

8 A. Initially, yes.

9 Q. In the Westinghouse case, do you know who
10 brought the suit?

11 A. The owners of the building.

12 Q. In the Sangamo Electric case, do you know who
13 brought that case?

14 A. I referred to it as the Wright case. I
15 understand there's a Mrs. Wright, plus others whose names
16 I was never told.

17 Q. And had Mrs. Wright and others alleged that
18 they had sustained some adverse health effects from
19 drinking the water?

20 A. Yes.

21 Q. Do you have any knowledge of what level of
22 PCBs were involved in that case?

23 A. I don't recall any numbers. I don't.

24 Q. Do you remember what Mrs. Wright's alleged
25 symptoms were?

1 A. I don't know that I was ever told. No.

2 Q. Okay. Do you know how many plaintiffs there
3 were in that case?

4 A. No, I don't.

5 Q. Who were the other defendants in that case?
6 Do you know?

7 A. Sangamo Electric is the only other one I'm
8 aware of.

9 Q. Do you know how the PCB materials were
10 discharged from Sangamo?

11 A. I personally don't know.

12 Q. Did anyone ever give you any impression as to
13 how that happened?

14 A. During my deposition I had an impression that
15 they were a part of the plant's waste water as well as
16 runoff from rain storms.

17 Q. What kind of plant was that?

18 A. A capacitor manufacturing plant.

19 Q. And do you know what product they used in
20 that plant that was manufactured by Monsanto?

21 A. Aroclor 1242 was the PCB.

22 Q. Were there any other Monsanto products used
23 there?

24 A. Not to my knowledge.

25 Q. Okay. Maybe this is a good point for me to

1 clear up some misunderstanding in my mind. We have been
2 referring to Aroclors, numbers such as 1242, 1248, 1254,
3 1260. I think we identified yesterday that the last two
4 numbers in that four-digit number represented the
5 percentage of chlorine in that Aroclor; is that correct?

6 A. That is correct.

7 Q. Okay. And just now you referred to Aroclor
8 1242 as being the PCB that was involved?

9 A. Yes.

10 Q. Is it correct for me to say that the Aroclor
11 1242 contained a number of different polychlorinated
12 biphenyls?

13 A. Yes.

14 Q. Do you know what the predominant
15 polychlorinated biphenyl was in Aroclor 1242?

16 A. It was the 3 chlorine type.

17 Q. Do you know how the Wright case was resolved
18 finally?

19 A. No, I don't.

20 Q. Did you testify at trial on that case?

21 A. No.

22 Q. Did you ever see any medical literature
23 relating to Mrs. Wright or any of the other plaintiffs in
24 that case?

25 A. No.

1 Q. Go ahead.

2 A. No.

3 Q. Have you been involved in any other cases in
4 which there is an allegation of human health problems from
5 contact with PCBs?

6 A. Yes, I have.

7 Q. Okay. Can you tell me which cases those
8 were?

9 A. Let me think a moment here. There was the
10 incident in Tennessee where a transformer enroute to the
11 customer from General Electric's plant developed a leak.
12 The driver drained the contents on the shoulder of the
13 roadway, and then the people living in that area, as well
14 as a passing motorist, claimed that they were injured by
15 this disposal of the fluid.

16 Q. Do you remember what the first plaintiff's
17 name was in that case?

18 A. I do not.

19 Q. Monsanto was a defendant in that case?

20 A. Yes, initially.

21 Q. And was General Electric as well?

22 A. Yes.

23 Q. Were there any other defendants in that case?

24 A. Not to my knowledge.

25 Q. And you believe that was venued somewhere in

1 Tennessee?

2 A. It was, Knoxville.

3 Q. Are there any other cases that you have
4 worked on where there was an allegation of human health
5 effects?

6 A. Yes. There's a silo, dairy silo case in
7 Michigan. The plaintiff's name was the Haley family,
8 farmer, dairy farmer. They claimed adverse health effects
9 from drinking milk that in turn contained PCBs that
10 originated in the silage fed to the dairy cattle. PCBs
11 were alleged to have come off of a coating that was
12 applied to the internal surface of the silo.

13 Q. Is that case still pending?

14 A. No. That's been tried.

15 Q. Do you know what year that was tried?

16 A. 1984.

17 Q. How about the General Electric case?

18 A. I think that was about 1980, '79, '80.

19 Q. Did Monsanto go to trial in the Haley family
20 case?

21 A. Yes.

22 Q. Do you know what the verdict was in that
23 case?

24 A. The jury gave an award to the plaintiffs. I
25 don't know that I ever heard the amount personally.

1 Q. Do you have any understanding what the
2 quantity of PCBs involved in that volume?

3 A. Oh, I only recall that it was above the limit
4 established by the Food and Drug Administration for
5 permissible PCBs in the butter fat in the milk.

6 Q. And what was that limit?

7 A. I believe at that time it was five parts per
8 million in the butter fat.

9 Q. How about the Knoxville, Tennessee case? How
10 was that resolved?

11 A. I'm under the impression -- I wasn't there.
12 I was dismissed, but I am under the impression that the
13 jury found for the plaintiffs.

14 Q. Monsanto was dismissed from that case?

15 A. Yes.

16 Q. Do you know what the basis for that dismissal
17 was, any understanding of it?

18 A. All I know is that while I'm still in the
19 witness chair, the judge asked everybody in the room,
20 "What's Monsanto doing in this case?" And then the
21 lawyers approached the bench, and they had a conversation.
22 I was excused, and that was the end of it. I don't know.

23 Q. Okay. What year was the Wright case?

24 A. It's been filed for several years, and I gave
25 a deposition, video, which was videotaped in early '87.

1 Q. Is that case still pending?

2 A. I don't know. That's my last exposure to it.

3 Q. And Monsanto is no longer a party to that
4 case?

5 A. That's my understanding.

6 Q. Okay. Did you have any understanding of what
7 the basis of their being on that case was?

8 A. No, I do not.

9 Q. Okay. Any other cases in which there was an
10 allegation of human health effects?

11 A. I can't think of any at the moment.

12 Q. On any cases where there has been an
13 allegation of adverse health effects on livestock?

14 A. Yes.

15 Q. Okay. And can you tell me what those cases
16 were?

17 A. Well, the Haley case we just talked about,
18 the cattle were alleged to have been affected, and their
19 health was harmed. There was a case involved or two cases
20 that I recall involving poultry and affecting
21 reproduction.

22 Q. Do you remember any of the plaintiffs' names
23 in those cases?

24 A. Holly Farms. I can't recall the one up in
25 New York.

1 Q. Do you remember what county that was in?

2 A. I'm sorry?

3 Q. Do you remember what county or city of New
4 York that was entered in?

5 A. My deposition was held in Middletown, New
6 York.

7 Q. And the Holly Farms case, what year was that
8 around?

9 A. About '74.

10 Q. Do you know how that case was resolved?

11 A. No, I don't.

12 Q. How about the Middletown, New York case?

13 A. I don't know, either. Neither of those went
14 to court.

15 Q. Okay. Do you remember what the date was on
16 the Middletown?

17 A. About 1978. Now, those are not the dates the
18 suits were filed. They were the dates I got involved.

19 Q. Okay. Any other cases where there's an
20 allegation of human health effects or effects on livestock
21 or animals?

22 A. There were cases in Ohio, dairy cases again,
23 which was alleged that the dairy herd were adversely
24 affected. There was a case in New Hampshire where mink
25 were alleged to have been affected by PCBs.

1 Q. Do you remember the plaintiff's name in that
2 case?

3 A. I'm sorry?

4 Q. Do you remember the plaintiff's name in the
5 New Hampshire case?

6 A. Yes. It was referred to as the Bethlehem
7 milk case.

8 Q. Do you know how that was resolved?

9 A. The jury found for the plaintiff and
10 apportioned the award to the three or four defendants. I
11 don't remember just how and the amounts.

12 Q. Was Monsanto a defendant?

13 A. Yes.

14 Q. Do you remember, about, the year on that,
15 that it went to trial?

16 A. '74.

17 Q. How about the Ohio cases that you referred
18 to? Do you remember any of the plaintiffs' names in
19 those?

20 A. Let me think. One of the dairy farmers was a
21 Mr. Schwartzwalder, and I can't recall the others.

22 Q. Were these separate cases that were brought?

23 A. Yes.

24 Q. Were they consolidated at some time or not?

25 A. I'm not -- I was never told they were

1 consolidated, no.

2 Q. Okay. Do you know the outcome of the
3 Schwartzwalder case or any of the other cases?

4 A. I do not.

5 Q. Any other cases that you worked on that
6 involved human health effects, allegations of human health
7 effects or effects on livestock? And maybe we can extend
8 that into fish and game.

9 A. Fish and game. There was the case in Texas
10 referred to as the Scott case where factory workers in
11 several types of industries alleged health effects.

12 Q. What was the year on that?

13 A. The trial was held last year, '87.

14 Q. And was Monsanto in that case when it went to
15 trial?

16 A. Yes.

17 Q. And what was the result of the trial?

18 A. The jury found for Monsanto.

19 Q. Do you know what the exposure levels were
20 there?

21 A. They were mentioned at the trial, but there
22 were different levels for each of the situations. There
23 was some question about the validity. I really don't
24 know.

25 Q. What kind of factory workers were involved in

1 that?

2 A. There were workers from a capacitor plant,
3 workers from the Ford Motor Company, and employees of the
4 Tennessee Valley Authority, TVA. It seems to me there was
5 one additional industry representative. I just don't who
6 that was.

7 Q. Were any of the people from Ford Motor
8 Company who alleged adverse health effects working in die
9 casting to your knowledge?

10 A. That's my understanding.

11 Q. Was Ford Motor Company also a party defendant
12 in that case?

13 A. No.

14 Q. Any other cases now?

15 A. I can't recall any more at the moment.

16 Q. Okay. The cases we have discussed, would
17 that cover about half of the cases that you have testified
18 in?

19 A. Roughly so, yes.

20 Q. Okay. Is there some general category that
21 the other half pertained to?

22 A. Yes. The other cases are predominantly the
23 presence of PCBs and the need for or the perceived need to
24 clean up and properly dispose and the related costs.

25 Q. To your knowledge, has the EPA ever brought

1 an action against Monsanto for cleanup?

2 A. I'm under an impression that EPA was a
3 plaintiff in the Waukegan Harbor cleanup situation, and
4 Monsanto was a defendant in that particular case.

5 Q. Any other cases other than the Waukegan
6 Harbor case where the EPA had brought an action in which
7 Monsanto was a party?

8 A. Not to my knowledge.

9 Q. Have any of these other cases been cases in
10 which a user of Monsanto products had alleged that
11 Monsanto was liable to them for the cost of disposal and
12 cleanup?

13 A. What was the first part of your question?

14 Q. In this category of cases we have called
15 other, were any of those cases cases in which a user of
16 Monsanto products containing PCBs alleged that Monsanto
17 was liable to them for the cost of cleanup or disposal?

18 A. Yes.

19 Q. Okay. Can you describe those cases for me?

20 A. I'll try to remember them. There was a case
21 in Texas. A transformer manufacturing company was ordered
22 to clean up their plant site and believed that Monsanto
23 ought to pay for that cost.

24 There was a case in Indiana, City of Bloomington,
25 who believed that Monsanto ought to pay for the costs of

1 oversight related to a cleanup activity of several sites
2 in that city area. The San Francisco fire case was also
3 one where the building owners felt that Monsanto ought to
4 help pay for the costs of cleanup.

5 There was a similar -- there was a situation in
6 Florida in which the transformers in an office building
7 that contained PCBs were removed and replaced with non-PCB
8 transformers, and the owners of that building believed
9 that Monsanto ought to pay for the cost of what they
10 called cleanup.

11 Chattanooga, Tennessee, there was a transformer
12 fire in a building. The owners of the building believed
13 that Monsanto ought to help pay for that cleanup.

14 In Wyoming -- or let me think. Montana. In
15 Montana, there was an incident in an animal
16 slaughter-packing house in which a leaking transformer
17 resulted in contamination of that site and the neighboring
18 grounds. They were ordered to clean up. The owners of
19 that packing company felt Monsanto ought to pay for the
20 cleanup as well as the replacement of the transformer.

21 I can't think of any more. I'm sure there's some
22 more. I just can't think of them anymore.

23 Q. Okay. If you remember any of them during the
24 course of the morning while we're talking, let me know.

25 A. All right. I'll do that.

1 Q. Do you remember the names of any of the
2 plaintiffs in the Texas case brought by a transformer
3 manufacturer?

4 A. Texas case. That is the Ensco Company,
5 E-n-s-c-o.

6 Q. And what Aroclor was involved in that?

7 A. It was Aroclor 1254.

8 Q. How about the City of Bloomington case? Do
9 you know what Aroclor was involved in that?

10 A. Aroclor 1242.

11 Q. How was the Ensco case resolved?

12 A. I don't know.

13 Q. What was the Aroclor involved in the San
14 Francisco fire case?

15 A. I'm somewhat confused, because in that case
16 they used a Westinghouse formulation referred to as
17 Inertee. It could have been either Aroclor 1242 or
18 Aroclor 1254.

19 Q. That's the case we also referred to as the
20 Westinghouse case?

21 A. Yes, sir.

22 Q. How about the case in Florida? Do you
23 remember the plaintiff's name in that?

24 A. It's an insurance company, Independent Life.

25 Q. Do you remember Aroclor involved there?

1 A. No, I don't.

2 Q. How about the Chattanooga, Tennessee case?
3 Do you remember any of the plaintiffs' names in that or
4 the plaintiff's name in that?

5 A. That's the Electric Power Board of
6 Chattanooga.

7 Q. How was the Independent Life case resolved?
8 Do you know?

9 A. I don't know.

10 Q. How about the Electric Power Board case?

11 A. That's still active.

12 Q. How about the Montana case with the
13 slaughterhouse? Do you remember the plaintiff's name in
14 that?

15 A. Pierce Packing Company, P-i-e-r-c-e.

16 Q. And do you know how that was resolved?

17 A. I do not.

18 Q. Do you know what the Aroclor involved was?

19 A. No.

20 Q. How about the Electric Power Board case? Do
21 you know what the Aroclor involved was?

22 A. Let me think. I believe it was Aroclor 1254
23 as best I can recall.

24 Q. Do Aroclor 1242, 1254 and 1260 all contain
25 the same PCBs?

1 A. Not really. There are overlaps.

2 Q. Okay.

3 A. You start with the low chloral to the high
4 chloral spectrum, and as you increase the percent
5 chlorine, you pick up some of those isomers that are
6 existing in the lower chlorinated mixture.

7 Q. So they share many, but not all, of the same
8 PCBs; is that fair?

9 A. They share some. I don't recall many. They
10 do share a few. There is a little overlap.

11 Q. Okay. Did you do anything to prepare
12 yourself for your deposition yesterday and today?

13 A. I had a discussion with Mr. Schink.

14 Q. And when did that discussion take place?

15 A. Let's see. Today is Thursday. It was
16 Tuesday afternoon, Tuesday morning. Tuesday morning.

17 Q. Was there anyone else present at that
18 meeting?

19 A. Another attorney.

20 Q. And what was that attorney's name?

21 A. Gerard Davidson.

22 Q. Is he with Monsanto?

23 A. No.

24 Q. Do you know who he's with?

25 A. Smith, Helms, Mullis & Moore, Greenboro,

1 North Carolina.

2 Q. Was he there in connection with another case
3 or in connection with this case?

4 A. Oh, I don't know.

5 Q. Okay. How long did you meet with Mr. Schink
6 and Mr. Davidson?

7 A. From about 9:30 'til 12:30, three hours.

8 Q. Did you review any documents at that time?

9 A. A few, yes.

10 Q. Do you remember what those documents were?

11 A. Not specifically. If I'd see them again, I
12 probably would.

13 Q. Do you generally remember what they were?

14 A. We looked at a few yesterday, and at least
15 one of those was one of the documents we reviewed, the
16 script for a presentation, copies of memorandum, letters
17 to customers, material that I'm led to believe was
18 submitted during your discovery process here.

19 Q. Okay. Do you remember how many documents you
20 looked at?

21 A. I didn't count them. I would suggest that
22 the stack looked to me like a two-inch stack, and I may
23 have looked at personally about eight or 10 of those.

24 Q. Okay. Is it your testimony then you don't
25 have any specific recollection of any of the documents

1 other than the script?

2 A. I remember a copy of a letter to customers
3 dated February, 1970. I remember other letters to the
4 customers written by other Monsanto people that referred
5 to changing formulations of Pydrauls when the new
6 materials would be available. I remember something like
7 that. That's all that comes to mind. Like I said, if I
8 see them, I'll refresh my memory, but right now I don't
9 recall them all.

10 Q. Did you review any papers or notes that you
11 keep personally for the deposition?

12 A. Currently?

13 Q. Yes.

14 A. Oh, no. I don't have any such documents.

15 Q. Do you personally have any documents in your
16 possession relating to your work with PCBs or your work at
17 Monsanto?

18 A. I do not.

19 Q. With respect to the files you kept at
20 Monsanto, do you have any idea where those files are
21 today?

22 A. No.

23 Q. Okay. They were turned over to who when you
24 left?

25 A. J. C. Weber, Coleman Weber.

1 Q. And that was in what year?

2 A. February, 1976.

3 Q. Do you know if Mr. Weber maintained those
4 files as they were?

5 A. I do not.

6 Q. Do you have an understanding that Monsanto
7 has placed many of its PCB correspondence into a central
8 area?

9 A. Well, I personally started the collection of
10 documents and sent them to Monsanto's records center for
11 long-term storage. Since I was no longer involved with
12 PCBs starting in '76, I don't know whether that collection
13 is intact or added to or distributed.

14 Q. So in 1976, you sent many of your records to
15 Monsanto's records center?

16 A. No. No, I misled you.

17 Q. Okay.

18 A. Records that were in Monsanto's possession,
19 not my collection, but others, of individuals who were
20 transferring to other assignments, or the Anniston plant,
21 for example, closing down its PCB operation, they wanted
22 someplace to send all the records, and I was the one
23 attempting to coordinate all this and had all these boxes
24 of material sent to Monsanto's central records collection
25 center. These were inactive files.

1 Q. Other than Anniston's files, what other files
2 did you receive?

3 A. Individuals, as indicated earlier, would
4 change assignments, would come by my office with two or
5 three folders of papers, and say, "I'm no longer with
6 PCBs. What do I do with these?" I'd say, "Well, leave
7 them here." I would collect those, leave them in a file
8 box, and ship it to the center. I did not keep a score of
9 just who these people were, because there is a turnover.
10 Some people come, and they return, and others leave the
11 assignment and never get involved again.

12 Q. Did you receive files from any of the other
13 Monsanto plants?

14 A. We're talking PCBs now?

15 Q. Right.

16 A. I don't remember any.

17 Q. Okay. Who at central records did you send
18 the records to?

19 A. As I remember, there was a Mr. Porter was the
20 custodian, P-o-r-t-e-r, I guess.

21 Q. Do you remember if Mr. Porter was an
22 attorney?

23 A. No. I say no, he's not an attorney.

24 Q. Okay. At that time were you making any
25 arrangement with Mr. Porter as to what was going to be

1 done with these documents ultimately? Did you have a
2 plan?

3 A. The plan was keep them forever until further
4 notice.

5 Q. Have you ever been to the central records?

6 A. I was there once, yes.

7 Q. When was that?

8 A. I believe '72 or '73.

9 Q. Do you know how the records are kept there?

10 MR. SCHINK: Now or then?

11 MR. PENDERGAST: Well, he was only there
12 once, so I will say then.

13 A. I will tell you what I went in and observed.

14 Q. (BY MR. PENDERGAST) Okay.

15 A. There were steel rings like an erector set
16 type facility, and shelving was made, compartments. And
17 then on these shelves were stacked corrugated paper boxes,
18 letter size, and they were numbered with numbers with the
19 system he used. This would refer back to a form that was
20 filled out each time that a box was sent to his center,
21 and on this form one could find the general description of
22 the contents, not specific letter by letter, but in
23 general; and that's the system that I observed in the
24 early '70s, '72, thereabouts.

25 Q. At that time were the forms then kept in some

1 sort of catalog?

2 A. He had a three-ring loose-leaf binder.

3 Q. And had he devised different category
4 sections that you could look to?

5 A. He had it, as I recall, indexed to match the
6 numbers on the shelving. Pick that number and go to the
7 book. Find that number and flip the page, and then you
8 can find the box with an additional designation, and the
9 box then would have a sheet that would say in this box are
10 manufacturing records or analytic chemistry records or
11 whatever the appropriate title would be.

12 Q. After you had given your records or the
13 records from Anniston and the other individual files that
14 you had received, after you had given them to Mr. Porter,
15 and let's say you wanted to retrieve part of that, let's
16 say you wanted to find out what memos had been sent to
17 Anniston on maintenance. How could you find that with Mr.
18 Porter's system?

19 A. You want me specifically -- I had a little
20 more information than the average person.

21 Q. Okay.

22 A. I would go to my copy of that form that Mr.
23 Porter received and do my own initial search, and then I
24 would fill out another form to send to Mr. Porter,
25 requesting that box number so and so be sent to my office.

1 And I'd sign for it to say that I intended to keep this
2 box for "X" days or "X" months, and return it by a given
3 date, and that's the way he kept track of the whereabouts
4 of that particular box.

5 Q. Okay. So, you kept copies of the forms you
6 sent in to Porter?

7 A. Yes.

8 Q. So you wouldn't actually know which box or
9 which box number it was in to begin with; would that be
10 fair?

11 A. Yes. Yes. He would send me back, say,
12 "These boxes you sent me were numbered as follows. Here
13 are the forms or copies of the forms with the numbers
14 added to them."

15 Q. All right.

16 A. So my files had reference to his numbers.

17 Q. What about information that you had not
18 previously had? How could you retrieve that from records?

19 A. I never had to do that. I suppose I would
20 have called Mr. Porter and asked him, "How do I go about
21 it?"

22 Q. Okay. Do you have any understanding of how
23 that system has been changed and how it exists today?

24 A. I do not.

25 Q. Did Mr. Porter have any kind of computer

1 system in which he kept records on or cataloged records?

2 A. Not when I was involved with him.

3 Q. Okay. During the course of your employment
4 with Monsanto, did Monsanto have a department or a
5 division or a department or division of any of its
6 companies that was referred to as applications research?

7 A. That expression was used. The function
8 existed. I'm not aware of any group having that specific
9 title, but the function was a responsibility of the
10 research department.

11 Q. Particularly with respect to the die cast
12 industry, was there anybody in the research department
13 specifically who was charged with the responsibility of
14 knowing how Monsanto's products were being applied in the
15 die cast industry?

16 A. Perhaps we have a different understanding of
17 the term "application and research."

18 Q. Why don't you tell me what you understand
19 that term to mean.

20 A. This is the research that's conducted to find
21 new uses of Monsanto old products or proposed new
22 products. That's what I call applications research. It's
23 not a market research of where are these products used,
24 and what kind of industries and what kinds of machines,
25 and what is the experience regarding that. That's a

1 marketing function.

2 Q. Okay. Was there someone then in marketing
3 who was charged with the responsibility to go see what the
4 customers were doing with the product and find out if
5 there's ways Monsanto could improve its product or
6 marketing to better serve them?

7 A. There were individuals assigned in the
8 marketing department that fulfilled that role, yes.

9 Q. Okay. Prior to 1969, would you know who any
10 of those individuals would have been?

11 A. Prior to 1969, no, I do not.

12 Q. At any time would you know who would have
13 been involved in that?

14 A. For which product?

15 Q. For the hydraulic fluids.

16 A. Hydraulic fluids. Well, I remember a Roger
17 Hatton, a Larry Bradford. Those are two individuals I
18 recall involved with that kind of activity.

19 Q. Do you know where Mr. Hatton is today?

20 A. The last I heard, he's still working for
21 Monsanto.

22 Q. Is Mr. Bradford also working for Monsanto?

23 A. No. Mr. Bradford left Monsanto in the '70s,
24 late 70's, as I recall. I don't know where he is.

25 Q. Okay. In the late '60s, you were approached

1 by -- I'm going to say Bergen, Howard Bergen, in
2 connection with a request that you assume some
3 responsibilities with respect to the PCB question that was
4 being raised at that time. Is that fair to say?

5 A. Yes.

6 Q. I tried not to use any charge terms in that
7 description. Essentially, Mr. Bergen asked you if you
8 were interested in a new job relating to the broader PCB
9 question; is that correct?

10 A. Yes, sir.

11 Q. And at that time you were at Anniston?

12 A. Yes.

13 Q. And you accepted that job; is that correct?

14 A. Yes.

15 Q. And you commenced work as of January 1, 1970?

16 A. Yes.

17 Q. What did you understand your new duties to be
18 at that time, generally?

19 A. Well, in simple words, I was to kind of keep
20 as informed as I could be of the situation with a fast
21 moving kind of scenario with information coming from many
22 many sources, and act as a focal point where this
23 information would be gathered and disseminated, both
24 within Monsanto and externally, and to make sure that
25 there was some consistency as to the way this information

1 was conveyed. That's my perception of the assignment.

2 Q. Okay. Obviously part of your qualifications
3 for that job was your experience at the Queeny plant as
4 well as the Anniston plant. Were there any other
5 qualifications which Mr. Bergen felt suited you for that
6 task?

7 A. Of course, I can't presume to speak for what
8 Mr. Bergen was thinking, but as I recall, the interview
9 with Mr. Bergen, he felt that my experience, not only with
10 the chemicals themselves, but also dealing with many kinds
11 of functions, research, manufacturing, and personnel and
12 the whole spectrum, would be invaluable, and I'd have a
13 better feel for where others might be coming from
14 regarding this issue; and I guess he felt that I had
15 enough experience behind me that my audience would listen
16 better. This is all speculative. I don't know really
17 what went on in Mr. Bergen's mind.

18 Q. Did you understand part of your new function
19 to be a public relations kind of function?

20 A. Well, that was certainly a part of it, but I
21 had a public relations person, Monsanto public relations
22 person, helping me. So, that was a resource that I could
23 use as well as the researchers and so on.

24 Q. Who was the public relations man that was
25 working with you again?

1 A. There were several through the years. The
2 initial one was Mr. Ed John.

3 Q. Had you had any prior experience dealing with
4 the press or with any governmental agencies prior to
5 January, 1970?

6 A. Well, as plant manager, yes, I had experience
7 with the press, the local press, local town newspaper, and
8 the reporters and the editor and the like. You also asked
9 about governmental agencies. Again, as plant manager, I
10 had experience with the State of Alabama and the
11 regulatory agencies in the state, and I also had some
12 exposure and experience with the legislature in Alabama.
13 That was all perceived to be a good background for the
14 kinds of things that they thought I would get involved in.

15 Q. As far as your involvement with the Alabama
16 Legislature, were you involved in any discussions on any
17 particular legislation that was going to affect Monsanto's
18 practices there?

19 A. Yes. Certainly I don't recall specifics, but
20 I know there were tax matters. There were water pollution
21 control matters. None of these were specific to Monsanto.
22 They were statewide. I don't recall all the others.
23 There were many activities that go on in the State
24 Legislature that would affect business, and I was involved
25 in that.

1 Q. As one component of your new job, you
2 undertook to find out everything Monsanto knew about its
3 PCB-containing products to the best you could?

4 A. Yes.

5 Q. Did part of that also involve finding out
6 what Monsanto knew about how its products were being used
7 by consumers?

8 A. Yes.

9 Q. Now, as part of your review of that
10 information, did you determine whether Monsanto had any
11 understanding of how its products were being used by the
12 die cast industry?

13 A. I believe I had an understanding. How
14 correct that was, I have no way to measure.

15 Q. Okay. And what was your understanding of the
16 die caster's use of Monsanto products?

17 A. I don't quite know where to start.

18 Q. Primarily they used the hydraulic fluids.
19 Would that be fair to say?

20 A. They used the hydraulic fluids in the
21 operation. I had an understanding that many times there
22 were document complaints about the high cost. It costs
23 more than the competitive material. I had an
24 understanding that the reason the fire resistance is
25 important is because there are breaks in the system

1 creating a spray of liquid on hot, molten metal that would
2 ignite.

3 I also had an understanding that cooling water is
4 used in these systems. There is an opportunity for water
5 and the fluid to mix, and I also had an understanding that
6 that didn't necessarily damage that fluid. It could be
7 recovered. Some of the customers were recovering it.
8 Some felt they needed some help, and Monsanto was able to,
9 as I recall, mention a few small chemical companies that
10 were in this business of reprocessing fluid.

11 As to the degree of care in handling the material,
12 it was fairly typical. The majority of them did a real
13 good job. There was always a few bright stars that
14 supercleaned, and then there were always a few at the
15 other end that they either don't understand or just don't
16 have the resources to do what's right, and they are the
17 worrisome type in terms of proper handling of the material
18 and exposing their workers and exposing the communities.
19 I did hear of a few of those that Monsanto people were
20 working with to see if they could improve their situation.
21 I don't know if that helps any, but that's my general
22 understanding. And these, of course, range from the super
23 big companies, world class, General Motors and so on, down
24 to the mom and pop shop in the back alley somewhere.

25 Q. Do you have any idea to what degree die

1 casters were reclaiming Monsanto fluids in their die cast
2 operation? Was that a widespread practice or not?

3 A. It was widespread, but as to the degree, I
4 don't know how to measure that. I don't recall any
5 numbers given to me. I just don't know.

6 Q. With respect to the die casters, the
7 troublesome ones you referred to, you stated that Monsanto
8 was trying to help them with their practices. In what way
9 did Monsanto help some of these customers?

10 A. Well, I don't have a specific case in mind,
11 but in general, the way it would be done is our field
12 sales representative would be the principal contact, would
13 go to them and discuss with them why he might be ordering
14 a little bit more of the replacement material. "Do you
15 need some help with recovery? As an example, here's a
16 brochure. Here's a sketch. Here's the kind of thing you
17 do, and it won't cost you much. All you need is a steel
18 drum here." And this is the scenario that I'm describing
19 here.

20 Depending on the customer's reaction to this offer
21 to help, we can go further, or if he discourages us, there
22 is an awful lot you can do, because Monsanto in the first
23 place was not trying to be an all purpose consulting
24 engineering company. They were just talking about its
25 product and what we knew about its product, rather than

1 try to tell them how to design his shop, his facility.

2 If the salesmen couldn't handle a technical
3 problem, he could go back to this technical person in the
4 marketing department, like the Roger Hattons and the Larry
5 Bradfords, and if they couldn't cope with it, they in turn
6 could go either to Monsanto's research department or
7 Monsanto's engineering department and get some ideas and
8 feed it back to the field salesman. It was at times they
9 would have a Larry Bradford or a Roger Hatton or Mr.
10 Engineer to go to that site along with the salesman
11 together, sit down and talk. This was not beyond the --
12 this was not beyond reality at all.

13 Q. Okay. With respect again now to the case you
14 referred to as troublesome, do you have any knowledge --

15 A. Did I use the word "troublesome"? I meant
16 worrisome.

17 Q. Okay. Worrisome. Anyway, in this category
18 of die casters, do you have any knowledge of anyone from
19 Monsanto ever going into one of these plants and saying,
20 "Not just that we can help you save money by reclaiming
21 some of these fluids that are laying around here, but that
22 you've got a messy plant here, and you better do something
23 about it, because it's getting out the door or it's
24 harmful to your workers"?

25 A. Yeah. With my many conversations with many

1 representatives of Monsanto, yes, this kind of discussion
2 did take place.

3 Q. Have you ever seen any documents relating to
4 that?

5 A. I have a vague recollection of seeing --
6 you're talking about documents, seeing a document which
7 was a letter Dr. Kelly wrote to a hydraulic fluids user
8 prompted by a sales representative's request. "Dr. Kelly,
9 would you write to this customer?" I don't recall the
10 specifics, but I do recall that type of letter. I've seen
11 it in the past five years or so.

12 Q. Do you remember who that user was?

13 A. No, I don't. I don't remember the specifics,
14 but --

15 Q. And what was the general tenor of the letter?

16 A. The general tenor was -- these are not the
17 exact words -- something to the effect that, "As a medical
18 director of the company, I was approached by Mr. So and
19 So, who suggested that I write you something about the
20 health effects of these materials and how they should be
21 handled. I'm sure you know this, but" -- you know how a
22 letter can flow, that kind of thing, and then go on to say
23 you shouldn't breathe it. You shouldn't eat it. You've
24 got to wash it off your clothes, the very things that
25 appear on the label. Don't breathe it. Don't get it on

1 your skin, and so on. You would just reemphasize. And
2 this was done not only for this product, but any product,
3 as a sort of an emphasis, like underlining a word to
4 highlight. These are the things you should do.

5 Q. Do you remember what the time frame was as
6 far as that letter goes?

7 A. Let me think a bit. I'm going to say the
8 '60s. I don't recall any closer than that.

9 Q. We discussed yesterday that one of the
10 products of the PCBs is that in water the PCBs will
11 separate from the water; is that correct?

12 A. Yes.

13 Q. And they would be heavier than water and sink
14 to the bottom of a container containing both. Is that
15 fair to say?

16 A. Yes.

17 Q. Okay. Do you have any knowledge as to
18 whether the phosphate ester fluids which would be marketed
19 during the '60s also had this property?

20 A. The mixtures were heavier than water, yes.

21 Q. Okay. Was Monsanto's 312-C also heavier than
22 water?

23 A. As best I recall, yeah. As I recall, yes,
24 they were.

25 Q. Okay. For a good period of time before the

1 advent of PCBs, mineral oils were also used in hydraulic
2 applications; is that correct?

3 A. That's my understanding.

4 Q. Do you have any knowledge as to whether those
5 were heavier or lighter than water?

6 A. Oh, they're lighter.

7 Q. Okay. How about the water glycols being used
8 in the '60s, to your knowledge?

9 A. Yes.

10 Q. Do you have any information as to whether
11 they were heavier or lighter than water?

12 A. They are soluble with water, so they would
13 mix. It's the same material in your automobile cooling
14 system, antifreeze.

15 Q. Are you aware of any information -- and again
16 now, I'm going to jump through a few categories of things
17 here. Are you aware of any information that would suggest
18 or anyone who has suggested that Monsanto and Industrial
19 Bio Test ever agreed in any way to fabricate results of
20 tests, testing done by that laboratory?

21 A. No, I'm not.

22 Q. Okay. To your knowledge, did Monsanto have
23 any ownership interest in Industrial Bio Test?

24 A. No.

25 Q. Is the Queeny plant still in operation?

1 A. Yes.

2 Q. What do they produce there?

3 A. They produce an ingredient that goes in weed
4 killer.

5 Q. What is that ingredient?

6 A. Oh, I forget the chemical. It's the one that
7 appears in Monsanto's Lasso, an agricultural product.

8 Q. Okay.

9 A. They produce some phosphate esters. I'm
10 hesitating because they have shut down so many units here
11 in the past couple years. Aspirin, there's a big aspirin
12 unit at that plant. They produce a baceteriostat, TCC, we
13 mentioned yesterday. I believe they still produce methyl
14 salicylate. That's all I can recall at the moment.

15 Q. Do you know what the area that formerly had
16 been used for PCB production is presently being used for?

17 MR. SCHINK: At Queeny?

18 Q. You mean the blending.

19 Q. (BY MR. PENDERGAST) Blending. I'm sorry.

20 A. On the blending operation -- I'm sorry. What
21 it's being used for?

22 Q. Right.

23 A. Oh, it's used now to drum the phosphate
24 esters. And they still make Pydrauls. They still use the
25 facility for that.

1 MR. SCHINK: Are you saying today they do
2 that, or that was what they were doing at the time you
3 left the company, or do you know?

4 THE WITNESS: Both.

5 MR. SCHINK: Okay.

6 Q. (BY MR. PENDERGAST) You also worked at the
7 Krummrich plant?

8 A. Yes.

9 Q. At Krummrich they actually manufactured PCBs;
10 is that correct?

11 A. They did manufacture, yes.

12 Q. Do you know what the manufacturing area is
13 presently being used for?

14 A. It's leveled off and covered with crushed
15 rock.

16 Q. Is there anything going on at that plant now?

17 A. At the plant?

18 Q. Right.

19 A. Yes.

20 Q. What's being done there now?

21 A. They still make nitrol chlorobenzenes. They
22 make phosphorus trichloride, phosphorus oxychloride,
23 hydrochloric acid. I believe they are still making
24 chlorine and caustic soda. They make many rubber
25 chemicals. These are chemicals added to rubber items.

1 They make phosphorus pentasulphide. There must be more.
2 I just can't remember them.

3 Q. Was Krumrich an outdoor production facility
4 for PCBs?

5 A. Yes.

6 Q. Have the PCBs ever been removed from that
7 site?

8 A. You mean a total cleanup?

9 Q. Right.

10 A. No. It's my understanding they did clean up
11 down to a predetermined level three or four feet, and then
12 backfilled, and that's the extent of the cleanup.

13 Q. Okay. Was Monsanto ordered to do that?

14 A. No.

15 Q. How about Anniston? That was a production
16 facility?

17 A. Yes.

18 Q. And what is presently being done in that
19 manufacturing area?

20 A. That's nothing. It's leveled off, graded,
21 backfilled. Grass is growing on it.

22 Q. Okay. Do you have any idea what the PCB
23 content in the soil at the Krumrich plant was before the
24 excavation?

25 A. No. No one ever told me.

1 Q. Okay. How about Anniston? Did you say that
2 was -- I think you said yesterday it was approaching one
3 percent in the area around the production facility?

4 A. In some oily spots, yes.

5 Q. Okay.

6 A. Visibly you could see it.

7 Q. Is anything being done at Anniston now? Is
8 there any production of any kind?

9 A. Yes.

10 Q. Okay. When was the cleanup of the Krummrich
11 plant done?

12 A. It started in late '77, and was completed in
13 1978.

14 Q. How about Anniston?

15 A. Anniston, I believe they completed it, as I
16 remember, about 1972.

17 Q. At the Queeny plant was there any actual
18 excavation around the property?

19 A. No.

20 Q. Okay. The machines were just cleaned?

21 A. Yes. I don't want to mislead you. The
22 Queeny plant was an indoor facility, except for the big
23 tanks that were outside, but the material was brought in
24 and blended and packaged indoors. There was no
25 opportunity for material to spill on the ground, so to

1 speak.

2 Q. Okay. Nonetheless, all the production
3 machinery had to be cleaned for the application to the
4 phosphate ester products?

5 A. Yes.

6 Q. And we discussed that yesterday?

7 A. Yes.

8 Q. Okay. Do you remember what year that was
9 done?

10 A. Well, it was done when the transition was
11 made. I would say early 1971, it was completed, or middle
12 of 1971.

13 Q. Did Monsanto have any other production
14 facilities other than Krummrich and Anniston?

15 A. Yes; in the United Kingdom.

16 Q. Okay. Any others in the United States?

17 A. No.

18 Q. To your knowledge, where was the plant in the
19 United Kingdom located?

20 A. It was at Newport, Wales.

21 Q. Is that plant still in operation?

22 A. No.

23 Q. Is there any production being done there at
24 all of anything?

25 A. At Newport?

1 Q. Yes.

2 A. Yes.

3 Q. When was the Newport plant shut down for
4 PCBs?

5 A. I wasn't directly involved when it happened.
6 At about the time the Krummrich plant was shutting down,
7 they were shutting down.

8 Q. Do you have any understanding of whether PCBs
9 have been regulated or banned in the United Kingdom?

10 A. I have not heard that they were officially
11 banned and regulated. I just don't know where that stands
12 today.

13 Q. Have you been involved in any litigation
14 involving PCBs outside the United States?

15 A. No.

16 Q. Are you aware of any?

17 A. No.

18 Q. As part of our discussion yesterday, we were
19 discussing different governmental agencies which you had
20 been in contact with as well as other organizations.

21 Off the record.

22 (Discussion held off the record.)

23 Q. (BY MR. PENDERGAST) All right. I guess I'm
24 looking at my notes now again. We were discussing Exhibit
25 No. 1, which was the management plan you recall, and part

1 of the plan was for you to contact various governmental
2 bodies and act as a liaison of sorts with them; is that
3 correct?

4 A. That was part of my assignment, but not
5 limited just to me. Other Monsanto people were expected
6 to help as appropriate.

7 Q. All right. Two of the governmental bodies
8 that you spoke of were the State of Michigan and the
9 Wisconsin Department of Natural Resources. Do you recall
10 that?

11 A. Yes.

12 Q. Were there any other state bodies that you
13 initially came in contact with?

14 A. The Ohio Department of Agriculture. I had
15 just one encounter with a representative of Georgia, and I
16 think it was the State Department of Agriculture, the
17 dairy branch of the Georgia state system. That's all that
18 comes to mind at the moment.

19 Q. Was there -- how was your contact with the
20 Wisconsin DNR initiated? Let me strike that. Of the 50
21 states, was there any reason that Wisconsin and Michigan
22 were one of your contacts? Was that initiated by you, or
23 was that precipitated by some event?

24 A. As I understood it, the interest really was
25 centered around the Great Lakes and the presence of PCBs

1 in some fish that were taken in that area, and the concern
2 of the fate of the recently stocked coho salmon, and how
3 that might affect the coho salmon. All of that stimulated
4 the states around the Great Lakes, and it seemed to center
5 in the university area, Lansing and Madison, where
6 apparently the technical people were located and, also,
7 the governmental agencies were located.

8 Q. Did you initiate the contact with the
9 Wisconsin DNR?

10 A. No. I wasn't even aware of who it would be.
11 I don't recall how that was. Somebody from their office
12 called Monsanto looking for a contact, and my name was
13 given.

14 Q. I guess now we are going to get back into the
15 less entertaining aspects of the deposition. I'm going to
16 show you what's been marked as Exhibit No. 4, and that is
17 a -- I guess it's entitled "Pollution Letter," and it's
18 from N. T. Johnson to a number of people. Have you ever
19 seen that before?

20 A. Yes. This is one of the letters that Mr.
21 Schink showed me the other day.

22 Q. Okay. Were you at all involved in the
23 formulation of that letter?

24 A. I couldn't recall ever seeing this letter
25 before the other day.

1 Q. Okay.

2 MR. SCHINK: By that letter, you're referring
3 to the first two pages of this document --

4 THE WITNESS: Yes.

5 MR. SCHINK: -- or are you referring to the
6 entire document?

7 MR. PENDERGAST: No, just the first two
8 pages.

9 MR. SCHINK: All right.

10 Q. (BY MR. PENDERGAST) The second paragraph,
11 first sentence, reads, "We want to avoid any situation
12 where a customer wants to return fluid." Did I read that
13 correctly?

14 A. Yes, you have.

15 Q. Okay. Do you recall any discussions at
16 Monsanto as to why or why not Monsanto would want any of
17 its customers to return PCB-containing fluids?

18 MR. SCHINK: You're referring specifically to
19 the fluids that that document references, or are you
20 referring to other fluids?

21 MR. PENDERGAST: Any fluids.

22 A. Well, the intent was to accept fluid that was
23 perceived to be a potential problem, and back in early
24 1970, that seemed to center around 1254 and 1260. So your
25 question did Monsanto refuse to accept any fluid, that's

1 not quite -- that's not correct. It was a selective
2 return of material.

3 Q. (BY MR. PENDERGAST) Okay. Now, you're
4 saying at that time or the time this letter was sent out,
5 Monsanto was willing to accept 1254 and 1260, because
6 those were perceived to be the problem fluids?

7 A. Yes. We did take some back, as I remember,
8 not limited to hydraulic fluids.

9 Q. Okay. You do not recall then any discussions
10 as to why Monsanto would not want to accept the return of
11 any 1254 or 1260?

12 A. No, I don't recall any such discussion.

13 Q. And, in fact, it was your belief that the
14 idea was those were the fluids, at least initially, that
15 you would want to help the customers out with and take
16 back; is that correct?

17 A. If he had a problem with them, yes.

18 Q. Okay.

19 A. But if he had good control, kept them in his
20 system when he had to dispose of them and did it properly,
21 there was no need to take it back.

22 Q. Okay. Then under what circumstances did you
23 perceive that the users would be returning these higher
24 numbered Aroclors?

25 A. This is a personal opinion. It would have to

1 be someone who emotionally couldn't cope with that drum of
2 material in the corner of his building. I don't know what
3 other reason he might have.

4 Q. Do you have any idea why Monsanto, as of
5 February 16, 1970, would be instructing its distributors
6 not to take back any of these fluids?

7 A. I do not.

8 Q. In late 1969 and early 1970, was there anyone
9 at Monsanto who felt that telling the ultimate users of
10 the PCB-containing products everything Monsanto knew about
11 them might cause hysteria or panic in the users such that
12 they would discontinue purchasing products from Monsanto?

13 A. Well, that was a recognized business risk,
14 but it had to be taken. Yes, that was discussed.

15 Q. And I think we talked briefly yesterday that
16 there were those at Monsanto who felt the customers and
17 the public and the Government should be told less than you
18 wanted to tell them, but that those disputes were resolved
19 in a friendly manner between those involved?

20 A. True. I don't want to give the impression
21 there were many. That's the minority, as in any group.

22 Q. Okay. People were throwing out ideas. "I
23 think it should be done this way. I think it should be
24 done this way," and the divergent views eventually came
25 around to what you felt was the reasoned view?

1 A. That's true. Keep in mind the individuals
2 who felt this way in virtually every case were people who
3 had spent 20, 30 years with the material, and suddenly
4 they were faced with information that they hadn't heard
5 before, hadn't realized. They found it hard to believe,
6 hard to accept.

7 Q. Was there anybody involved in the discussions
8 particularly pertaining to what information should be
9 conveyed to the customers and users who felt the changes
10 in the labels or the letters sent were not sufficient to
11 let the customers and users know what was going on?

12 A. I don't recall any such belief, although in
13 every case if a customer wanted more information, it was
14 well known that Monsanto resources would be available. As
15 an example, if a customer's physician wanted to talk to
16 another physician, Monsanto's Dr. Kelly was available. We
17 didn't want the physician to be forced to talk to a
18 salesman who didn't understand medical problems. This was
19 true of chemist to chemist, analytical chemist to
20 analytical chemist, engineer to engineer. That was always
21 available. So, the wording in brochures and labels was
22 designed in such a way that the layman would understand it
23 and respect the chemical and treat it properly, but if
24 more information was needed, certainly we would get it. I
25 would never put on a doctor's hat. For example, if I were

1 talking to a physician, I would say, "I'll have Dr. Kelly
2 call you right back," and that's the way we tried to
3 handle it.

4 Q. All right. How was it conveyed to the
5 customers that Monsanto was willing to address these
6 concerns or questions and that the Monsanto professionals
7 were available to discuss any problems to the customer?

8 A. To the salesmen.

9 Q. And the salesmen were charged with the duty
10 of conveying that information out to users and customers?

11 A. Yes.

12 Q. To your knowledge, is there any training
13 program for salesmen, any basic --

14 A. Sure, there is.

15 Q. Okay. Do you know who was in charge of that?

16 A. I don't remember their names. There were
17 several individuals through the years. About every four
18 or five years a new person would take over, but there was
19 sales training of the classroom type, and then there's the
20 field type where he pairs off and is coached by an
21 experienced person, and then he's given his own district
22 or area.

23 Q. Do you know who the present custodian of any
24 training materials might be for the salesmen in the
25 hydraulic fluid area?

1 A. No, I don't.

2 Q. Okay. Do you know of anyone who would know
3 who keeps those records now?

4 A. I don't.

5 Q. Who would have been in charge of training of
6 salesmen of the hydraulic fluid area in 1970?

7 A. I just don't remember his name. This
8 training individual was not specific to my department. He
9 would set up the courses and invite the proper people to
10 act as instructors.

11 Q. If you don't remember the individual's name,
12 do you know who his immediate supervisor would have been
13 then?

14 A. No, I don't.

15 Q. Taking a look at page 2 of Exhibit No. 4,
16 second to last paragraph, the first sentence reads, "We
17 can't afford to lose one dollar of business." Did I read
18 that correctly?

19 A. Yes, you did.

20 Q. Was there a concern in early 1970, late 1969,
21 that the information that was coming out about the PCBs
22 was going to cause Monsanto a substantial loss in
23 revenues?

24 A. There was a concern that it might cause, yes.

25 Q. Was there any effort made in late 1969 or

1 early 1970, to boost production of PCBs?

2 A. Not to my knowledge, no.

3 Q. Was there any suggestion made by anyone that
4 the production of PCBs at that early date should be
5 curtailed?

6 A. In '69 and '70, there was a growing consensus
7 that curtailment was a viable option and could come about
8 fairly quickly. So, that thought was being considered
9 very seriously.

10 Q. Were there any proponents in early 1970 of
11 boosting production?

12 A. No, not to my knowledge.

13 Q. Turning to page 3 of Exhibit 4, memo dated
14 February 6, 1970, from J. R. Fallon to a number of
15 individuals. Have you ever seen that document before?

16 A. I saw it the other day for the first time.

17 Q. Okay. The first paragraph refers to
18 inquiries from heat transfer customers?

19 A. Yes.

20 Q. Does that include purchasers of hydraulic
21 fluid?

22 A. It could. A customer may buy the two
23 different products for their different machinery, but they
24 are not necessarily the same.

25 Q. You then had no input as to what should be

1 contained in this letter?

2 A. That is correct.

3 MR. SCHINK: Which letter are you referring
4 to?

5 Q. (BY MR. PENDERGAST) I'm sorry, in this memo,
6 February 6, 1970. Paragraph number 4, or the fourth
7 paragraph, I should say, in the indented portion begins
8 with the words, "We recognize it will be impossible to
9 obtain names of individuals at each customer location."
10 It continues, "The use of the a/R customer list was the
11 best list available. We realize most of your contacts
12 will not receive the letter. This is both good and bad."
13 Can you tell me what the a/R customer list is?

14 A. Accounts receivable.

15 Q. Okay. Do you remember any concern in early
16 1970 -- strike that. Prior to your meeting with Mr.
17 Schink, you had no knowledge of this February 6, 1970
18 memo; is that correct?

19 A. That is correct.

20 Q. Did you have any knowledge, without knowing
21 of the existence of the memo itself, of the contact by Mr.
22 Johnson with the field representatives on this topic?

23 MR. SCHINK: On the topic of heat transfer
24 customer notification?

25 Q. (BY MR. PENDERGAST) Right. That is, have

1 you read the February 6, 1978 memo?

2 A. Yes. Yes.

3 Q. Okay. Were you aware of the general contents
4 of that memo without having actually seen the memo prior
5 to your meeting with Mr. Schink?

6 A. Yes.

7 Q. Did you have any knowledge of the use of the
8 accounts receivable customer list as the basis for the
9 notification of prior customers?

10 MR. SCHINK: Wait a minute. I object to the
11 form of the question, unless you clarify notification of
12 whom.

13 Q. (BY MR. PENDERGAST) Okay. This memo
14 references the process by which heat transfer customers
15 would be advised of developments in the --

16 MR. SCHINK: Not Pydraul customers now. We
17 are talking about a different subject, a different product
18 unrelated to this lawsuit. Okay.

19 Q. (BY MR. PENDERGAST) Well, let me ask this
20 question. As far as the heat transfer customers are
21 concerned, did that not include Pydrauls?

22 A. No. That's a different marketing group.

23 Q. Okay. Now, going down to paragraph 4 of the
24 indented portion, were you aware of any discussions
25 concerning the use of the accounts receivable customer

1 list to notify these heat transfer customers?

2 A. Yes.

3 Q. Okay. Were you also aware that it was at
4 least believed by Mr. Fallon that this was not the best
5 list available for contacting all of the heat transfer
6 customers?

7 MR. SCHINK: Well, I object to the form of
8 the question. It says the use of this list was the best
9 list available.

10 MR. PENDERGAST: Oh, I'm sorry.

11 MR. SCHINK: You misread it.

12 MR. PENDERGAST: I misread it.

13 Were you aware of Mr. Fallon's sentiment that most
14 of the sales people's contacts would not receive copies of
15 the letter if the accounts receivable list was used?

16 MR. SCHINK: This is now again with respect
17 to heat transfer customers, not Pydraul customers?

18 MR. PENDERGAST: Correct.

19 MR. SCHINK: Okay.

20 A. Let me try to help.

21 Q. (BY MR. PENDERGAST) Please do.

22 A. Heat transfer customers in general are
23 represented by two types. One is the user of this heat
24 transfer fluid in his equipment, who purchased that
25 material from Monsanto under his name. Company "X" at

1 this address wants so many barrels of this material
2 shipped to this address. It could be the same. It could
3 be another.

4 There's another type of customer, was really an
5 engineering construction kind of company, that is going to
6 install the unit at Company "X." That material was
7 purchased by Engineer A, and our list shows him as the
8 customer, whereas the material really ends up at Company
9 "X." That's what Mr. Fallon was trying to point out as a
10 weakness in our system, but it was hoped that Engineer A,
11 when he gets that letter, would go to Company "C" and say,
12 "Hey, read this."

13 Q. Did anyone perceive there to be a similar
14 problem with the Pydraul customers?

15 A. That was discussed, but it was concluded that
16 most fluids in machines that use hydraulic fluids were
17 shipped to the site, and the functional fluids group used
18 the three lists, the accounts receivable, bill to, and
19 ship to. They had three different lists that they looked
20 at.

21 Q. It was felt with respect to the hydraulic
22 fluid customers then you had a higher probability of
23 getting the letter to the intended parties?

24 A. That's what the managers of that business
25 felt, yes, and they had a longer list of customers.

1 Q. Okay.

2 A. More of them.

3 Q. Who was involved in that, those discussions
4 in that analysis?

5 A. It would be the market managers. I was
6 involved. Mr. Bergen, who was the business director, was
7 tuned in. He couldn't attend all of these discussions.
8 And, of course, they called in individuals who managed the
9 accounts receivable department and so on to see what their
10 records were like to help the discussion.

11 Q. Turn to the page that is identified as STR
12 002115, entitled "Polychlorinated Biphenyls, Control of
13 Escape to the Environment." Do you know who drafted this
14 document?

15 A. This was drafted by at that time Mr. Ed John,
16 taking input from several people. I was one of those that
17 he talked to.

18 Q. On the last page of Exhibit 4, paragraph
19 number 2, which refers to action taken by Monsanto in the
20 area of industrial usage, "Phased out the PCB's as
21 components of industrial and hydraulic fluids where
22 control of spillage and collection of spent material is
23 not possible." Did I read that correctly?

24 A. Yes, you did.

25 Q. Was it the consensus at Monsanto at the time

1 this document was written?

2 MR. SCHINK: Well, now wait. I don't think
3 you've established when that document was written.

4 Q. (BY MR. PENDERGAST) Well, do you have any
5 idea when this document was produced?

6 A. Yes. That would happen about before
7 mid-1970.

8 MR. SCHINK: But it was not at the time of
9 these other documents?

10 THE WITNESS: It was after the previous, yes.

11 Q. (BY MR. PENDERGAST) And this is indicating
12 that PCB use in hydraulic fluid had been phased out of
13 Monsanto's production?

14 MR. SCHINK: Well, that's not what it says.
15 It says that Monsanto is there for taking the following
16 actions. It doesn't say necessarily --

17 A. It was under way. The phase-out of the
18 hydraulic fluids was under way when this document was
19 prepared, and the statement you just read was really a
20 goal, an intended goal. And the total phase-out of PCBs
21 in hydraulic fluids went even a step further than the
22 statement would imply. We removed all PCBs from hydraulic
23 fluids irrespective of whether control of spillage or
24 collection of material is not possible.

25 Q. Okay. Does the paragraph number 2 represent

1 a thinking and opinion of Monsanto at the time that
2 document was written?

3 A. Yes.

4 Q. Okay. Let me hand you what's been marked as
5 Exhibit No. 5. Do you know who drafted this document?

6 A. No, I don't.

7 Q. Have you ever seen it before?

8 A. No. I don't remember.

9 Q. On page 2, under "General Strategy," the
10 first sentence, a statement is made, "We will maintain our
11 present customers by exploiting to the fullest our
12 recognized technical leadership in the field of synthetic
13 fire resistant fluids and by contract proposals at large
14 accounts tying in the new fluid purchases with disposal
15 of PCB and PCT containing fluids." Did I read that
16 statement correctly?

17 A. You did.

18 Q. Who at Monsanto was responsible for that
19 strategy?

20 A. Ultimately, it would have been Mr. Howard
21 Bergen.

22 Q. And was it the thought that Monsanto could
23 retain a large share of its market by tying in an
24 agreement to dispose of PCB and PCT-containing fluids with
25 those customers' purchase of the new phosphate ester

1 fluid?

2 A. That's what the sentence indicates, yes.

3 Q. Was that, in fact, the strategy of Monsanto
4 for 1972?

5 A. I understood that, yes.

6 Q. Okay. When did Monsanto discontinue
7 manufacturing Pydrauls that contained PCBs?

8 A. I believe they finally discontinued in about
9 after the first quarter of 1971.

10 Q. Was Monsanto convinced at that point that
11 further production of PCB-containing Pydrauls presented an
12 unreasonable risk of adverse ecological effect?

13 A. Yes. And the unreasonable risk consensus was
14 reached after it was determined that the phosphate esters
15 proposed for these fluids at the alternate material were
16 acceptable to the customer. Once that was known and they
17 were acceptable in spite of some shortcomings, once that
18 was known, then there was no good basis for continuing to
19 use PCBs.

20 Q. Okay. Was it also the consensus as of the
21 date that the PCB-containing fluids, Pydraul fluids, were
22 discontinued, that further use of those fluids would
23 present an unreasonable risk of human health effects?

24 A. The continued use of the old fluids? I --
25 No. No, I don't recall that thought at all, because it

1 was perceived that proper care would be taken. It's
2 coupled with the way it's handled, and as long as it's
3 handled properly, there is no unacceptable risk involved.

4 Q. Okay. There was the ecological factor that
5 was the concern?

6 A. The potential for the ecological impact was
7 always in the discussions, yes.

8 MR. SCHINK: That's if handled improperly by
9 the customer?

10 THE WITNESS: That is correct.

11 MR. PENDERGAST: I move to strike that. That
12 is not what he testified to.

13 MR. SCHINK: Well, I would like to have the
14 question then read back, because he didn't testify to
15 that, and it wasn't taken down properly.

16 Could you repeat the last two questions and
17 answers.

18 (Reporter read from record as directed.)

19 MR. SCHINK: Do you understand your answer to
20 that question, Mr. Papageorge?

21 THE WITNESS: Yes, I do.

22 Hearing that, I have an addition to make. I
23 mentioned the availability of phosphate esters and their
24 acceptance in the interim before all of the formulations
25 included phosphate esters. We went through a chlorinated

1 terphenyl formulation, so that formulation was also
2 acceptable. Therefore, the need to continue with PCBs had
3 to be reviewed in light of that.

4 MR. PENDERGAST: Off the record.

5 (Discussion held off the record.)

6 Q. (BY MR. PENDERGAST) Exhibit No. 5, page 2,
7 states the 1972 goals with respect to the marketing of
8 Pydraul. Goal number 1, "Sell all inventory of chlorine
9 containing Pydraul fluids by June 30, 1972." Did I read
10 that correctly?

11 A. Yes, you did.

12 Q. And the chlorine containing Pydraul fluids
13 were the PCB-containing fluids and the 312 series; is that
14 correct?

15 A. I don't know what you mean by 312.

16 Q. I'm sorry. 312, the terphenyls or the -- is
17 that correct?

18 A. Chlorinated terphenyls? Is that what
19 you're -- yes. The reference to chlorine containing
20 includes the original PCB types and the interim
21 chlorinated terphenyl types, but at this point in time the
22 PCB types were gone already, so it it's limited then to
23 the chlorinated terphenyls.

24 Q. Do you know when this marketing plan was
25 drafted?

1 A. No. Since I hadn't seen this before, I can't
2 help you there.

3 Q. I'm sorry. Were you involved in discussions
4 concerning the sale of the Pydraul inventory in the plant
5 to have that sale concluded by June 30, 1972?

6 A. I was knowledgeable at the time. I don't
7 know that I -- I don't recall a formal session in which I
8 participated. I did know that the chlorine-containing
9 types were being discontinued. That's the extent of my
10 involvement.

11 Q. As of January 1, 1972, did Monsanto have in
12 its inventory any PCB-containing Pydrauls?

13 A. Not to my knowledge.

14 Q. Okay. Did Monsanto incinerate any of its
15 inventory of PCB-containing Pydrauls?

16 A. No, not to my knowledge. This is unused
17 Pydraul?

18 Q. Right.

19 A. No.

20 Q. Were you aware of the deadline of selling the
21 inventory of chlorine-containing Pydrauls by June 30,
22 1972?

23 A. Eventually I was, yes.

24 Q. Subsequent to June 30?

25 A. No, at about the time just before that.

1 Q. Did anyone at Monsanto express the opinion
2 that as opposed to selling the inventory of the
3 chlorine-containing Pydrauls, that they should be
4 incinerated?

5 A. No, that was not discussed. It was not
6 perceived to be appropriate.

7 Q. And why was that?

8 A. Because there's no known problems with the
9 chlorinated terphenyls.

10 Q. At that time you didn't know that the
11 terphenyl products also contained PCBs?

12 A. Yes; as a contaminant, that's true.

13 Q. How about the remaining inventory of the
14 PCB-containing fluids? Was there anyone who suggested, as
15 opposed to selling that stock, that that be incinerated?

16 A. Not to my knowledge.

17 Q. Take a look at the last page of Exhibit 5,
18 under the "1972 Pydraul Action Plan," the first paragraph,
19 "Review old Pydraul fluid inventories with Distribution on
20 a weekly basis until all chlorine fluid inventories are
21 sold out." And the responsibility apparently for that was
22 given to three individuals. Do you know whose initials
23 those are?

24 A. I believe the middle set of initials, EMP,
25 refers to Earl M. Potter, P-o-t-t-e-r. The first set of

1 initials refers to Herb Day. The initials are JHD, Herb
2 Day. These two individuals were production planners with
3 Monsanto. I do not recognize the initial RS.

4 Q. Okay. Let me show you what's been marked as
5 Papageorge Exhibit No. 6. Have you ever seen that before?

6 A. I cannot be certain, but these appear to be
7 copies of organization charts that I was once shown during
8 the previous deposition, but I've forgotten just which
9 case was involved.

10 Q. Okay.

11 A. They look like the same charts.

12 Q. Do you happen to know if there's a larger
13 version of that? Is this a reduced copy?

14 A. I don't know where it came from.

15 Q. Okay. The only other time you saw it, it was
16 in this form?

17 A. Yes, sir. It appears to be the same form.
18 There's an awful lot of detail on those charts. I don't
19 know if they are the identical set.

20 MR. PENDERGAST: Well, I'll show it to
21 counsel. If we could, I'd like to request a more legible
22 copy of that.

23 MR. SCHINK: It's the best copy we have.

24 Q. (BY MR. PENDERGAST) I show you what's been
25 marked as Exhibit No. 7. Have you ever seen that document

1 before?

2 A. I don't recall ever seeing this before.

3 Q. Do you have any idea when Monsanto prepared
4 it from looking at it?

5 A. In the code in the bottom left corner of the
6 cover page, I would suggest that this was printed in
7 October, 1970. You see the numbers 1070?

8 Q. Yes.

9 A. That tips me off that that might well be the
10 publication date, and it seems to fit from the products
11 listed and their formulations, and timewise it seems to
12 fit that date.

13 Q. Is Industrial Fluids a division of Monsanto
14 Company?

15 A. It's a sub-group.

16 Q. Okay. What I'm getting at is the term
17 "Industrial Fluids" there is not being used as a generic
18 term, but as an indication of the source of the document,
19 or don't you know?

20 A. I would suggest it's generic.

21 Q. Okay. I want you to turn to the second to
22 last page, which indicates the policy on returned fluids.
23 The first paragraph reads, "All customers should be
24 discouraged from draining present fluid from their
25 machines. It is very costly to refill machines and

1 returned fluid will add to our already overwhelming
2 inventory of fluid for incineration." Did I read that
3 correctly?

4 A. That is correct.

5 Q. Do you recall a concern by anyone at Monsanto
6 that if customers were encouraged to return PCB-containing
7 fluids, that that would create an inventory problem for
8 Monsanto?

9 MR. SCHINK: You're asking as of October,
10 1970?

11 MR. PENDERGAST: No. I'm asking if this
12 refreshes any memory in his mind as to whether that was
13 ever the sentiment of someone at Monsanto.

14 A. There was on occasion discussions about the
15 inventory. The facilities did have limits. Storage tanks
16 did fill up, and it was a matter of proper management of
17 this whole activity. So yes, there were concerns
18 expressed about the size of the inventory, the type of
19 inventory, and the proper control.

20 Q. (BY MR. PENDERGAST) Was there ever any
21 analysis done to determine what the inventory capacity was
22 for Monsanto's incineration program?

23 A. The use of the word "analysis" implies a very
24 formal task force approach to me. We, of course, knew how
25 much warehouse space we had for drum material. We knew

1 how much outdoor space could be set aside for drum
2 material. We knew how many tanks we had for the bulk
3 material. So, that assessment was part of the initial
4 incinerator project. No subsequent assessment was made,
5 because nothing had changed.

6 Q. Who was in charge of assessing the ability to
7 manage the waste to be incinerated or the fluids to be
8 incinerated?

9 A. Well, that was the initial responsibility of
10 the engineering department, Robert Kountz, K-o-u-n-t-z.
11 He was the engineer in charge.

12 Q. Was there ever an attempt made to estimate
13 the amount of fluids which would be received by Monsanto
14 for incineration?

15 A. Yes.

16 Q. And who conducted that assessment?

17 A. Each of the marketing groups, through their
18 salesmen, were to take a reading from all their customers
19 to determine just how much material might be expected
20 initially and how much on a steady basis.

21 Q. And was that information organized into any
22 kind of report or memo that was generated?

23 A. I don't recall a single report. I do recall
24 reports referring to each of the different business groups
25 and at different times.

1 Q. Was it ever concluded by anyone -- strike
2 that. Was there an assessment made as to Monsanto's
3 capacity for incineration, the volume that would be
4 incinerated over a given period of time?

5 A. That was limited by the incinerator, and it
6 was calculated to be able to burn so many pounds per unit
7 time, and it was calculated that it would be onstream in a
8 given percentage to allow for repairs and the normal down
9 times expected. So, the incinerator was the controlling
10 device in that whole system.

11 Q. Was the assessment of the capacity of the
12 incinerator ever committed to writing?

13 A. Yes. I used to know it at one time.

14 Q. Based on this information, was it ever
15 concluded that Monsanto did not have the capacity to
16 incinerate the volume of fluids that were going to be or
17 that it was anticipated would be returned to them?

18 A. I never heard that we couldn't eventually
19 burn. It's a matter of time, because the information we
20 had led us to believe that the material being returned for
21 incineration, although it was not arriving at a uniform
22 rate, would peak and valley to a point where we could
23 catch up.

24 Q. During periods of peak periods, did Monsanto
25 ever undertake a program or take any initiative to

1 dissuade its customers from returning materials?

2 A. Not to my knowledge.

3 Q. Okay. Would you have been in disagreement
4 with such a policy?

5 A. Certainly.

6 Q. Let's take a look at Exhibit No. 8, which
7 appears to be a lengthy letter authored by W. R. Corey,
8 Monsanto; is that correct?

9 A. That is correct.

10 Q. In 1978, do you know what Mr. Corey was doing
11 for Monsanto?

12 A. Well, he was, as shown under his name on this
13 document, a director of the Toxic Substances Control Act
14 Administration within Monsanto.

15 Q. Okay. Did you ever have any contact with Mr.
16 Corey while at Monsanto?

17 A. Yes, sir.

18 Q. What did his job entail?

19 A. At what point in time?

20 Q. Well, when did you come in contact with him
21 first?

22 A. There was a point in time when he was my
23 immediate supervisor. As I remember, that was about 1974,
24 '75.

25 Q. Was Mr. Corey still working for Monsanto

1 after 1970?

2 MR. SCHINK: After 1970?

3 MR. PENDERGAST: I'm sorry. I'm having a
4 lapse here.

5 In 1974, Mr. Corey was your direct supervisor?

6 A. Yes, sir.

7 Q. Okay. Have you seen this letter before?

8 A. This is the first I've seen it.

9 Q. Did you participate in it all?

10 A. No. I knew nothing of this.

11 Q. What were Mr. Corey's job responsibilities in
12 1974?

13 A. In 1974, Mr. Corey was, I believe -- this may
14 not be word for word -- director of administration for the
15 Monsanto Industrial Chemicals Company, which is an
16 operating unit of Monsanto's company, Monsanto Company.

17 Q. Were you aware of any calculations done to
18 determine the cost of cleaning die cast machinery for the
19 removal of PCBs?

20 A. No.

21 Q. Did you at any time become aware of anyone
22 who was of the belief that it would not be possible to
23 remove residual PCBs from die casting machinery?

24 MR. SCHINK: Object to the form of the
25 question. What do you mean by "residual PCBs"?

1 A. No, I'm not aware of any.

2 Q. (BY MR. PENDERGAST) Okay. Let me show you
3 Exhibit No. 9, which is, I believe, another copy of a
4 document we looked at yesterday.

5 MR. SCHINK: We did.

6 A. I don't remember this yesterday.

7 Q. (BY MR. PENDERGAST) Well, regardless, have
8 you seen this document before?

9 A. No.

10 Q. On the page identified STR 002158, there are
11 handwritten notes. Do you recognize that handwriting?

12 A. I believe I do.

13 Q. And whose is it?

14 A. It's Mr. Bergen's penmanship.

15 Q. Okay. And on the next page, is that also his
16 notes?

17 A. That looks like it to me, yes.

18 Q. Would you turn to the document STR 002166,
19 which is handwritten notes on lined paper. Have you ever
20 been seen this before?

21 A. I have not.

22 Q. Do you have any idea of whose writing that
23 is?

24 A. No.

25 Q. Were you aware of anyone at Monsanto who

1 attempted to calculate the cost of replacing
2 PCB-containing hydraulic fluids with either a phosphate
3 ester fluid or a water glycol fluid?

4 A. No. I'm not familiar with that.

5 Q. When you came on in January of 1970 with the
6 PCB unit, if I can call it that, were there any
7 discussions as to estimated costs of replacing
8 PCB-containing fluids in customers' die cast machines?

9 A. Not in my presence.

10 Q. Was that raised as one of the concerns as to
11 the potential costs of replacing these fluids in these
12 systems?

13 A. Not in the discussions that I was involved
14 with.

15 Q. Okay. On page 002168, which is the third
16 page following, are those handwritten notes there? Do you
17 recognize those as Mr. Bergen's as well?

18 A. The bottom half are Mr. Bergen's notes, and
19 as I look at that, I see Mr. Johnson's initials.

20 Q. Okay. That's Norman Johnson?

21 A. Yes, sir.

22 Q. The following page starts, "History of
23 Monsanto Production and Sales of Chlorinated Biphenyls."
24 Have you seen that document before?

25 A. Briefly glancing at the contents, it appears

1 to resemble, although it's in a little bit different
2 format, it appears to resemble a document I had seen
3 before. This appears to be a draft version of a document
4 that I have seen.

5 Q. Okay. Do you remember what that other
6 document is entitled?

7 A. I have forgotten the exact title, but it was
8 referred to at least in my -- I referred to it as the PCB
9 White Paper.

10 Q. All right. Turning to page 002179, which
11 would be the third to last page, if you want to maybe back
12 up one page so we can get the introduction discussing Dr.
13 Jensen's work in Sweden, the next page begins, "Before the
14 findings could be confirmed or duplicated in the U.S.,
15 analytical methods had to be refined in order to
16 definitely separate PCBs from other chlorinated
17 hydrocarbons that were known to be present in the
18 environment." Did I read that correctly?

19 A. That is correct.

20 Q. Had Dr. Jensen developed the analytical
21 methods necessary to distinguish PCBs from other
22 chlorinated hydrocarbons?

23 A. Yes. He had developed methods that went a
24 long way toward this, but it was still at that time
25 questionable whether he had actually achieved that

1 capability, and that's the reason that all the emphasis
2 went into further study of analytical methods.

3 Q. How long did it take Monsanto to develop what
4 they felt were the necessary analytical methods?

5 A. It took them from 1967 to the early part of
6 1970, about three years.

7 Q. Who was working on that project?

8 A. It was a group under Dr. Keller, led by Dr.
9 Scott Tucker.

10 Q. And it's your understanding they began that
11 work in 1967?

12 A. I'm sorry?

13 Q. It's your understanding that they began that
14 work in 1967?

15 A. That's my understanding, yes.

16 Q. All right. Let's take a look at Exhibit No.
17 10. This is an October 6, 1970 memo authored by yourself;
18 is that correct?

19 A. That is correct.

20 Q. All right. In the first paragraph under the
21 heading "General," the third sentence states, "However, it
22 was emphasized that we will continue to emphasize to all
23 remaining users of PCB's the importance of preventing
24 escape to the environment and we must ensure that these
25 warnings are fully documented so that they will support

1 the action we have taken in this area should we become
2 involved in legal actions." Did I read that correctly?

3 A. Except that up above where it says, "we must
4 continue," I think you said, "we will continue."

5 Q. Okay.

6 A. Other than that, you did.

7 Q. As far as the warnings concerning the
8 importance of preventing escape to the environment, was
9 this precipitated by information Monsanto had that, in
10 fact, users of PCBs were allowing escape of PCBs into the
11 environment?

12 MR. SCHINK: Was what precipitated by that?

13 MR. PENDERGAST: Well, I think the question
14 is clear.

15 Do you understand the question?

16 MR. SCHINK: Object to the form.

17 A. I think I do. There was no specific incident
18 that triggered this. It was the reported presence in,
19 say, Lake Michigan or up in Sweden that led us to believe
20 that somehow this material was being released into the
21 environment. Therefore, we better get back to our
22 customers and tell them don't let it get into the
23 environment, and make certain that we documented that we
24 did this in case questions are raised later. That was the
25 intent of all that.

1 Q. Down the page, paragraph number 2 concerns
2 the reformulation of Aroclor 1242, does it not?

3 A. No. It talks about reformulation of products
4 containing Aroclor 1242.

5 Q. Okay. And it indicates an extension was
6 granted for the reformulation, I believe, of the products
7 containing Aroclor 1242, but that particular extension
8 would be the last extension; is that correct?

9 A. That is correct.

10 Q. Why were you drawing the line at that point
11 as to getting the reformulation done as opposed to letting
12 them continue until they came up with a new product?

13 A. Well, we had self-imposed a target date to
14 get it all done by the end of the year, and we committed
15 this to the top corporate committee at a meeting. We
16 found that we were too optimistic in establishing that
17 date, and we felt some obligation then to the top
18 executives in Monsanto to either meet that date or go back
19 and ask for an extension. I hope that answers your
20 question.

21 Q. Okay. Was there a concern that a number of
22 your marketing people would essentially be idle as they
23 had no product to market for a period of time as the
24 period of time between discontinuing the PCBs and the
25 PCB-containing products and the start-up of the new

1 product? Was that at all a factor in that?

2 A. No, because in many cases our marketing
3 people were selling other products. So, it's not a case
4 of having nothing to do. In fact, with all the questions
5 arising about industrial hydraulic fluids, they were
6 overwhelmed with things to do, not only selling, but
7 communicating and visiting and talking and so on.

8 Q. I guess my concern is that this may not be an
9 important point at all, but the interest part of that
10 paragraph is the statement that if the reformulation is
11 not concluded by a given date, it will be necessary to
12 discontinue that business, and where did the necessity
13 come from?

14 A. Like I said, self-imposed, very conservative
15 approach, and since there were competitors on the market
16 claiming fire resistance and good performance, we either
17 had to meet that or get out.

18 Q. Okay. How often were status reports, such as
19 the October 6, 1978 report, prepared by yourself?

20 A. Each month.

21 Q. And between what years?

22 A. I believe it started in 1970, and I believe
23 it went through 1971, and it was discontinued then because
24 activity dropped to a very low level, and the need to
25 communicate as extensively was not there.

1 Q. I'm sorry. When was that practice
2 discontinued?

3 A. I believe about the end of 1971.

4 Q. Okay. Was there then a periodic reporting
5 system different than the monthly reporting system in use?

6 A. There was no periodic, no, not for my office.

7 Q. Okay. Was there any periodic reporting from
8 any central office?

9 A. Not that I saw.

10 Q. Was there ever a suggestion by anyone at
11 Monsanto that discussions on this topic not be committed
12 to writing for any reason?

13 A. No.

14 Q. Okay. Take a look at page 001735, under the
15 heading "Industrial Hydraulics." Was it your
16 understanding in October of 1970, that the Pydraul 312
17 reformulation resulted in a product with a greater fire
18 resistance than the original PCB-containing material?

19 A. Yes, sir.

20 Q. From this paragraph were you referring to the
21 312-A?

22 A. Yes.

23 Q. Was that also true of the phosphate ester
24 product that was eventually developed?

25 A. Not to my understanding, no.

PERRY REPORTING SERVICE

1 Q. The second paragraph, is that intended to
2 address Monsanto's production of hydraulic fluids?

3 A. This is in general, not specific to Monsanto.

4 Q. Okay. So this was information that applied
5 to hydraulic fluid customers as well as to Monsanto's own
6 use of those products?

7 A. Yes.

8 Q. Okay. Was it ever conveyed by Monsanto to
9 any of its customers the idea of using the absorption
10 system as referred to under number 2 in that paragraph?

11 A. Yes, sir.

12 Q. And was that given to all Monsanto's
13 customers, hydraulic fluid customers?

14 A. To my knowledge, yes.

15 Q. Okay. That paragraph states, "It will be
16 desirable to make the hydraulic fluid application into a
17 closed loop system. We cannot expect to stop leaks but we
18 can expect to minimize contamination of water by (1)
19 minimizing run-off to sewers; (2), treating contaminated
20 water by absorption of water (Anniston had no detectable
21 PCB after passing through a limestone bed); (3), recycling
22 absorbents to remove Aroclor by squeezing, by extraction
23 or by devolatilization-destruction." Did I read that
24 correctly?

25 A. That is correct.

PERRY REPORTING SERVICE

HARTOLDMON0012769

1 Q. Was that information that you felt should be
2 conveyed to Monsanto customers in October of 1970?

3 A. Yes.

4 Q. Turn to page 7 of the report. Paragraph 3
5 indicates arrangements have been made to sample, take
6 samples of fish in the Anniston area; Is that correct?

7 A. That is correct.

8 Q. Was that ever done?

9 A. Yes.

10 Q. And what were the results of that testing?

11 A. I don't remember the numbers, but there were
12 PCBs found in some of those fish samples.

13 Q. Who conducted the test?

14 A. That was Dr. Scott Tucker's group.

15 Q. Do you remember what the levels were?

16 A. No, I don't.

17 Q. Was there some concern by the Monsanto people
18 that PCBs were found in the fish there in aquatic life?

19 A. Yes. We attempted to determine where the
20 exposure might have come from, and as I remember, the
21 study was frustrating because we couldn't determine where
22 these fish had spent their lifetime, what waters did they
23 come from, and so on. So the study was just never
24 completed because of that lack of information.

25 Q. Who undertook the study to find out where the

1 PCBs came from?

2 A. Plant people did some of this, and as I
3 remember, they hired a fish biologist from the University
4 of Mississippi to help them.

5 Q. And that was being done in late 1970, early
6 1971?

7 A. It started the summer of 1970.

8 Q. Do you remember the biologist's name?

9 A. No, I don't.

10 Q. Did you ever see a draft copy of the report
11 or an internal report that was done on that?

12 A. No, I did not. I saw a summary report from
13 the plant. I did not see the original.

14 Q. Who prepared the summary of the report? Do
15 you know?

16 A. It would be one of two individuals. It would
17 be either the supervisor, Vince Haupt, H-a-u-p-t, or Jerry
18 Miller, the chief chemist at the Anniston plant.

19 Q. When is the last time you saw a copy of that,
20 years ago?

21 A. When I was preparing these. That would be
22 the input for these reports.

23 Q. Okay. Well, at the time the report was done,
24 you were just preparing to do the survey; is that correct?

25 A. At the time of this particular report, yes.

PERRY REPORTING SERVICE

1 Subsequent reports was trying to report the progress of
2 that study.

3 Q. All right. Page 9 indicates -- now, with
4 respect to the Anniston plant, where is Snow Creek?

5 A. Oh, it's about 100 yards or so from the plant
6 fence line.

7 Q. And in 1970, testing was done of that creek,
8 and PCBs were found?

9 A. Yes, sir.

10 Q. Why was the creek tested?

11 A. Well, because of its proximity, and during
12 flash rain storms and all there would be a lot of surface
13 water going in to that creek, and there was a suspicion
14 that lots of the soil, the dirt particles that went with
15 that water, could have contained PCBs in it through 40
16 years. The question was how much is still there in Snow
17 Creek, and that's the purpose for some of these studies.

18 Q. What was the source of the information that
19 the contamination of Snow Creek was due to one very bad
20 day?

21 MR. SCHINK: Well, I object to the form of
22 the question. It doesn't say that it was Snow Creek that
23 was contaminated.

24 Q. (BY MR. PENDERGAST) Okay. Were PCBs found
25 in the creek?

1 A. This doesn't tell me that. I don't know.
2 It's entitled "Snow Creek," but the wording is such that
3 that loss could have been from the production unit, not
4 necessarily into Snow Creek. It's not clear.

5 Q. Do you have any recollection or understanding
6 that samples were taken from Snow Creek, and it was
7 determined that PCBs were present?

8 A. There was a program involving Snow Creek as
9 well as other creeks and lakes in the area. So this
10 isn't -- this is nothing new as far as I was concerned.

11 Q. Did Monsanto at its Anniston plant undertake
12 any efforts to prevent the flow of PCB-containing
13 materials into the creek?

14 A. Yes. I remember yes, they did try. They did
15 a lot of bulldozing, either moving to build a dam to
16 deflect the flow. There was an attempt to reduce that.

17 Q. When was that undertaken?

18 A. 1971 or so.

19 Q. Prior to that, had there been any efforts
20 made to prevent the flow of PCB-containing materials into
21 the creek?

22 MR. SCHINK: Are you talking about in
23 addition to what was done within the plants to control its
24 loss, or are you talking about outside the plant?

25 MR. PENDERGAST: I think the question is

1 clear.

2 MR. SCHINK: I object to the form of the
3 question. It's ambiguous. We are referring now to storm
4 water now?

5 Q. (BY MR. PENDERGAST) Right. That's the
6 source into that creek.

7 A. I'm not aware of any special program directed
8 at the creek. Programs are always to keep it controlled
9 in the plant, and then you'll avoid the secondary problem
10 such as the creek. The emphasis was back in the plant.

11 Q. Okay. I may be getting the sites confused.
12 Anniston was an outdoor production area?

13 A. Both plants were what we call outdoor
14 structures. There are no walls, just steel structures,
15 concrete base floor.

16 Q. Okay. And at the Anniston plant was there
17 anything in the floor, on the floor, or around the floor
18 to prohibit the flow of water off the floor?

19 A. At what time?

20 Q. Prior to 1969.

21 A. Prior to '69, there were a few places that
22 had curbing, but there were also places that did not have.

23 Q. How high was the curbing?

24 A. About six, eight inches.

25 Q. Was there any question in your mind when you

1 were working at Anniston that rain water was washing off
2 the protectionary floor and into the surrounding soil?

3 A. Well, it wouldn't be the floor so much,
4 because there was a roof over this structure. So unless
5 it was a driven rain, the floors would not get that wet.
6 Back in the late '60s, when I was involved with our
7 understanding and our then understanding of the way PCBs
8 are inert, and we just did not see this as a serious
9 problem. Certainly we didn't want it to be abused,
10 overdone, and it was never a situation where we could
11 visually see PCBs in the creek, like an oily stain or
12 anything like that.

13 Q. Okay. Would the PCBs create an oily stain on
14 the creek if they're in there, or would they sink to the
15 bottom?

16 A. Only if it's an awful lot. This is a dry bed
17 creek. It only has water in it when it rains, so there
18 are no fish. There aren't even any grasshoppers there.
19 It's just a gully.

20 Q. Okay.

21 A. It's called Snow Creek.

22 Q. Okay. One of the contributing causes listed
23 in the section entitled "PCB Levels in Snow Creek" is
24 detergent cleaning of the department. Was that intended
25 to mean that the cleaning of the department somehow led to

1 PCBs winding up in Snow Creek?

2 A. The implication is there, but this paragraph
3 is to me, as I read it now, rather confusing. Detergent
4 cleaning on occasion was used to wash down handrails and
5 sticky spots and the floor and so on, but the only
6 reference to Snow Creek that I read in this now is the
7 last paragraph of that section. You will note, leaching
8 of PCBs from the creek bed results in a plant effluent
9 level, or in other words, 1.1 to 2.8 pounds per day they
10 are attributing to the PCBs in the creek. That varies
11 from the 32 pounds that they refer to in the first
12 paragraph.

13 Q. Okay. Do you know where these measurements
14 were being taken?

15 A. I'm confused by your question.

16 Q. It's probably because I'm confused by the
17 paragraph. The limestone bed was used to purify waste
18 water?

19 A. To pretreat, yes.

20 Q. Pretreat?

21 A. Yes.

22 Q. Okay. And depending on the ability of the
23 limestone bed to handle the amount of material put through
24 it, you would have varying levels of PCBs in the water
25 effluent; is that fair?

1 A. All right.

2 Q. Is that correct?

3 A. Yes.

4 Q. And is that what the zero to three pbb or
5 parts per billion PCBs refer to, the pit effluent?

6 A. Yes.

7 Q. Where did the pit effluent go?

8 A. It went to the municipal sewage treatment
9 plant.

10 Q. Okay. Now, separate and apart from the
11 limestone bed, we have the reference to leaching of PCBs
12 from the creek bed.

13 A. Yes, sir, and I don't remember where they
14 could have taken a sample of water then to be able to come
15 up with that 1.1 and 2.8 pound per day number.

16 Q. My question is, as I read this paragraph, to
17 say that there are PCBs in the creek bed and that somehow
18 affected the waste water effluent?

19 A. Yeah. It's combined.

20 Q. Okay. How did the PCBs in the creek bed
21 affect the waste water effluent?

22 A. I don't remember where the tie-in is made.
23 It's been so long. This implies that whatever was in the
24 creek eventually joins what's leaving the plant, and the
25 sample is then taken. The sample measures that zero to

1 three parts per billion as a concentration, but it
2 calculates the 32 pounds per day.

3 Q. Okay. Was that creek bed ever cleared up or
4 cleaned up to your knowledge?

5 A. There was a cleanup effort made. I'm under
6 an impression in early 1980, there was a cleanup of some
7 kind made. I don't know the details.

8 Q. Okay. Let's take a look at page 10. It
9 refers to the W. G. Krummrich plant, also indicates that
10 as of October 6, 1970, Monsanto had identified a loss to
11 "the river" ranging from 12 to 742 parts per billion with
12 an average loss of 311 parts per billion for 11 samples;
13 is that correct?

14 A. That is correct.

15 Q. What is the river that's being referred to?

16 A. Mississippi.

17 Q. Okay. So it was identified at the Krummrich
18 plant that PCBs were leaving the plant and entering the
19 Mississippi River? Is that generally what that tells us?

20 A. Yes.

21 Q. That last sentence in that first paragraph
22 says, "This is an equivalent average loss of 71.5
23 lbs/day." Is that pounds per day of PCBs?

24 A. Yes.

25 Q. How were the PCBs getting from the Krummrich

1 plant to the Mississippi?

2 MR. SCHINK: No, it's the treatment plant.

3 Q. (BY MR. PENDERGAST) I'm sorry, from the
4 treatment plant to the Mississippi.

5 A. That's the water that results from their
6 treatment, separated from the sludge, and then eventually
7 it's pumped out to the river.

8 Q. Okay. You testified yesterday that Krummrich
9 had its own waste disposal facility on site; is that
10 correct?

11 A. No.

12 Q. No? Then I'm confused.

13 A. It goes to a municipal treatment plant, and I
14 talked about the sludge being taken to the landfill and so
15 on.

16 Q. All right. What prompted Monsanto to go
17 check the effluent from the municipal treatment plant?

18 A. Well, that's where its wastes go, and that's
19 the appropriate place to look for water, or that water
20 which is entering the environment. There is no point
21 between the manufacturing unit and the river other than
22 getting it at that treatment plant.

23 Q. Okay. Was Monsanto ever involved in the
24 cleanup of that treatment plant or the Mississippi in that
25 area?

1 A. No.

2 Q. Exhibit No. 11, this is a duplicate of a
3 document we looked at earlier today. It's not an exact
4 duplicate. It doesn't have Mr. Bergen's notes on it. Do
5 you know who gave this presentation to the corporate
6 developament committee?

7 A. It's my understanding that this was presented
8 by Mr. Bergen, and he introduced Mr. Wheeler and Mr.
9 French as the principal speakers of the contents of this
10 document.

11 Q. Turning to page 001567 --

12 A. I have it.

13 Q. When you came on board then in St. Louis in
14 January of 1970, did you move your office to St. Louis?

15 A. I was between the two locations, but I was --
16 the job was mine no matter where I was.

17 Q. Okay. On 1567 it refers to four
18 alternatives. Did you understand in January of 1970, that
19 Monsanto was considering these four alternatives as to how
20 to react to the PCB question?

21 A. Yes.

22 Q. Did Monsanto eventually adopt one of these
23 alternatives?

24 A. The alternative that was adopted was
25 alternative 4.

1 Q. And was a specific action plan actually
2 drafted by someone for each of the action groups and
3 customer market situations?

4 A. Yes.

5 Q. And then we saw the 1972 marketing plan for
6 Pydraul. Was that a result of that program?

7 A. Well, that was the aftermath of the original
8 plan.

9 Q. Okay. Was there any actual plan drafted as a
10 result of this discussion in Exhibit No. 11?

11 A. Yes.

12 Q. Okay. And what form did that document take?

13 A. This was the plan presented to the corporate
14 development committee in May of 1970.

15 Q. Have we seen that document today?

16 A. I don't know.

17 MR. SCHINK: No, we saw it yesterday at some
18 length.

19 Q. (BY MR. PENDERGAST) Okay. Is that attached
20 to Exhibit No. 1?

21 A. Now, this was the draft document from which a
22 presentation that I made was developed and further
23 finetuned by Mr. John Mason. So, there are at least four
24 documents that kind of show the evolution of the plan.

25 Q. Okay. Which document that we have seen

1 represents the final plan?

2 MR. SCHINK: I think it may be one he's
3 marked and hasn't shown you yet.

4 A. Yeah, I think it's coming up.

5 Q. (BY MR. PENDERGAST) Okay. On page 1579,
6 item number 4 indicates that part of the recommended
7 action plan was to educate customers on the need for
8 cleanup at their plants within four months; is that
9 correct?

10 A. That is correct.

11 Q. Was that done?

12 A. Yes.

13 Q. Was the corporate development committee in
14 existence prior to January, 1970?

15 A. There was always a committee of similar
16 structure that at times had different names, corporate
17 management committee, corporate development committee,
18 corporate administrative committee, but a group of that
19 type has been in existence in Monsanto for decades.

20 Q. Let me show you what's been marked as Exhibit
21 No. 12. Have you seen that document?

22 A. I have seen it before, yes.

23 Q. Do you have any idea -- the first page,
24 there's a large blank space. Do you have any idea whether
25 there was ever any typing in there, any print?

1 A. I have never seen it, but this is -- this
2 tells me that another item was under the agenda that was
3 covered, and it doesn't relate to this at all.

4 Q. Okay. You can also see on the side there
5 appears that this has been taken from a binder. Would you
6 have any idea or impression as to whose binder or what
7 binder that was kept in at any point in time?

8 A. No, I do not know.

9 Q. On page 2 under the "Legal Aspects," one of
10 the items recommended by Legal was to, "Take steps to
11 insure that PCB's are contained and not discharged in
12 planted effluent." Did I read that correctly?

13 A. Yes, you did.

14 Q. Was that referring to Monsanto plant effluent
15 or plant effluent of customers?

16 MR. SCHINK: If you know.

17 A. I don't know.

18 Q. (BY MR. PENDERGAST) Were you privy to any
19 discussions or meetings when that was discussed as the
20 position of the legal department?

21 A. No.

22 Q. Okay. How about number 2, "Provide adequate
23 warnings to customers and users, including advice as to
24 disposal methods"? That had been a concern when you came
25 on board as well, was it not?

1 A. Yes.

2 Q. The next page under "Plan of Action," number
3 4, subsequent to your coming on in St. Louis, did it
4 continue to be a concern that the customers be educated on
5 the need to reduce and effectively control PCB effluents
6 at their plant; is that correct?

7 A. That's correct.

8 Q. Again, the information Monsanto had
9 concerning plant effluents of Monsanto's customers came
10 through their sales people; is that correct?

11 A. Yes.

12 Q. Okay. Had Monsanto accumulated or organized
13 any of this kind of information obtained by salespeople
14 containing kind of a binder or booklet as to the title,
15 something like information from customers or information
16 on customers' usage, something like that?

17 A. I never saw such a document.

18 Q. Okay. What made Monsanto think that any
19 further education of their customers was necessary?

20 A. Well, you're asking me to get as to what Mr.
21 Bergen and Mr. Springgate were thinking.

22 Q. That continued to be the concern of what's
23 enumerated there in paragraph 4, continued to be a concern
24 of Monsanto after you came on as well, was it not?

25 A. That's right.

1 Q. And my question is: Why was it after you
2 came on that it was Monsanto -- why was Monsanto concerned
3 about that?

4 A. After I came on, we felt it was a pretty
5 critical part of the overall program, and we fully
6 recognized that in spite of past efforts, there are always
7 new customers. There are always changes in people at the
8 old customers' plants, so the education is continuing.
9 You never finish. And new information that Monsanto had
10 could well lead to new types of programs that had to be
11 passed on.

12 Q. I'm going to show you what's been marked as
13 Exhibit No. 13. Have you ever seen that document before?

14 A. Yes, I have, or it looks like a good copy of
15 what I've seen before.

16 Q. We haven't looked at that document yet, have
17 we?

18 A. I don't believe we have.

19 MR. SCHINK: Maybe is that one we looked at
20 yesterday? I'm pretty sure we looked at this one
21 yesterday, several of these pages.

22 A. May I see yesterday's exhibits?

23 Q. (BY MR. PENDERGAST) Sure.

24 MR. SCHINK: They seem pretty similar.

25 A. Okay. This is an earlier draft of this final

1 script.

2 MR. SCHINK: So Exhibit 3 is an earlier
3 draft --

4 A. An earlier draft, and this Exhibit 13 is the
5 script that I used in making a presentation for the CMC in
6 April of 1970.

7 Q. (BY MR. PENDERGAST) Okay. So Exhibit No.
8 13, that's the final draft we were looking for?

9 A. It looks like -- well, I don't know that we
10 were looking for this as the final plan. This is the
11 third of the four documents I referred to earlier.

12 Q. Okay. Did you get a chance to look this over
13 the other day?

14 A. Yes.

15 Q. Was this one of the documents you looked at?

16 A. Yes.

17 Q. I'd like to refer you to page 7. The
18 references down at the bottom of the page would be the
19 second to last sentence concerning the reduction in PCB
20 contents in plant streams. Do you see that?

21 A. I do.

22 Q. What did that refer to?

23 A. This is the plant waste water discharge from
24 the total plant site.

25 Q. And that went to the municipal treatment?

1 A. Correct.

2 Q. The next page refers to toxicity studies
3 which indicate the Aroclors are mildly toxic to mammals,
4 and goes on to say, ". . .it is highly unlikely that this
5 will be a significant factor in any decision regarding the
6 banning or restricting of the use of Aroclors." Do you
7 see that?

8 A. We do. I do.

9 Q. Who was the -- strike that. Who at Monsanto
10 felt that this level of toxicity wasn't going to be a
11 significant factor in the banning or restricting of
12 Aroclors?

13 A. The medical department, primarily the medical
14 director.

15 Q. That was Mr. Kelly?

16 A. Dr. Kelly, yes.

17 Q. Did Dr. Kelly explain to you why he felt that
18 it wouldn't be a significant factor?

19 A. Yes.

20 Q. And why was that?

21 A. From his knowledge of other chemicals and how
22 they tested using similar tests that the Aroclors were
23 undergoing, and his knowledge that these other chemicals
24 were still in commerce, he was drawing direct analogies
25 that the toxicity of these materials would not be a key

1 factor in any governmental regulatory agency's decision
2 making process regarding banning or restricting.

3 MR. PENDERGAST: Could you read that back to
4 me.

5 (Reporter read from record as directed.)

6 MR. PENDERGAST: Okay. Maybe we can mark
7 these separately so that there's no confusion.

8 [Plaintiff's Deposition Exhibit Papageorge
9 Nos. 14-A and 14-B marked for identification.]

10 Q. (BY MR. PENDERGAST) I show you copies of
11 Exhibits 14, 14-A and 14-B. Yesterday we were talking
12 about Monsanto literature which indicated methods for
13 reclamation. Do you recall that?

14 A. I do.

15 Q. Okay. Have you seen any literature like this
16 before you?

17 A. Yes, I have.

18 Q. Okay. Are you aware of any other literature
19 that Monsanto produced concerning its PCB-containing
20 Pydrauls?

21 A. I have seen earlier versions, so these would
22 be the replacement copies. This covers the literature
23 that's available.

24 Q. Have you had a chance to review that
25 literature recently?

1 A. Very briefly the other day I glanced at a
2 couple pages here.

3 Q. Okay. This was on Tuesday?

4 A. Yes.

5 Q. Okay. Yesterday you were talking about the
6 fact that this literature indicated means for reclamation,
7 and you thought that it also might contain information
8 about making sure PCB-containing materials were not
9 discharged or allowed to escape from the unit. Can you
10 tell me where in that literature that that is indicated?

11 A. I have read these three documents. I do not
12 find any specific reference referring to avoiding
13 discharge into sewer systems. I believe that was your
14 question.

15 MR. SCHINK: Could you read the question
16 back?

17 MR. SCHINK: I don't understand by the
18 "that." Are you talking about means of reclamation or
19 keeping it away from water? You referred to both in the
20 question.

21 Q. (BY MR. PENDERGAST) Mr. Papageorge, did you
22 understand my question?

23 A. I think I do.

24 Q. Okay.

25 A. I may not, but I think I do. You used the

1 reference to escape from the unit. I earlier had referred
2 to escape down the sewer.

3 Q. Okay.

4 A. Escape from the unit relates very closely to
5 exposure to employees, and that is covered here under
6 proper handling. Escape to the sewer would imply mixing
7 with water, and I would relate that to the reclaiming
8 chapter. If I combine the two sections here and follow
9 those, I think I've achieved or the user will have
10 achieved what was proper and appropriate for handling this
11 material.

12 Q. Okay. You would agree, however, there's no
13 specific or direct reference to allowing these materials
14 to escape into waste water effluent or escape into the
15 surrounding environment; is that true?

16 A. There is no direct reference. It's implied.

17 Q. Okay. I show you what's been marked as
18 Exhibit No. -- what are we up to, 15?

19 A. Sixteen.

20 Q. Sixteen. Do you know who prepared this
21 document?

22 A. I prepared the initial draft and then
23 consulted with several people within Monsanto, and with
24 minor minimal change, I came up with this final version.

25 Q. Who was this document intended for?

1 A. This was for the advisory committee to the
2 EPA on water standards, water quality standards.

3 Q. Okay. On the second page of text, page 2,
4 under, "First: We Limited Sales," the first paragraph
5 says, "We limited sales of PCB for use in many, many
6 applications where there was any danger of it getting into
7 the environment." Did that include the use of
8 PCB-containing hydraulic fluids in die casting plants?

9 A. Yes.

10 Q. Under the second category, control of
11 programs at the manufacturing locations, reference is made
12 that the departments were converted into concrete
13 bathtubs. Do you see that reference?

14 A. I do see it, yes.

15 Q. Was that done in response to some concerns by
16 Monsanto people that PCBs from the production areas were
17 getting out of the production area and into the
18 surrounding environment?

19 A. Certainly in the 40 years of use, some were,
20 but this was intended to even prevent that from happening.
21 This is the curbing and sump activity.

22 MR. PENDERGAST: Let's mark that.

23 [Plaintiff's Deposition Exhibit Papageorge
24 No. 17 marked for identification.]

25 Q. (BY MR. PENDERGAST) Exhibit 17, is this the

1 White Paper we were looking for?

2 A. This is what I had in mind when I referred to
3 the White Paper, yes.

4 Q. Okay. For whose use was this intended?

5 A. Anybody that had any interest.

6 Q. Was this disseminated to the public?

7 A. I was told so, yes. I wasn't personally
8 involved.

9 Q. Okay. Was it the intent that if inquiries
10 were made to Monsanto as to what was going on with the
11 PCBs, that they could be provided with this type of
12 literature that would get them up to speed quickly as to
13 what was being done?

14 A. Yes.

15 Q. Take a look at page 001269, "PCB
16 Manufacturing and Sales, Monsanto Industrial Chemicals
17 Company." Particularly take a look under the category,
18 "Hydraulics/Lubricants."

19 A. I see it.

20 Q. And I guess you have to refer to the next
21 page to find the figures for 1969 and 1970. Would it be
22 fair to say that 1969 and 1970 were two of the highest
23 years in Monsanto's history for the production of
24 PCB-containing hydraulics and lubricants?

25 A. Yes.

1 Q. Is that also true of most of its
2 PCB-containing products?

3 A. I haven't studied the chart recently, but
4 that's generally true. It was a growing market.

5 Q. Okay. By 1969, it was known to Monsanto, was
6 it not, that there was at least some concern with the
7 presence of PCBs in the environment?

8 A. That concern was rather minimal in '69.
9 There were still many questions not answered.

10 Q. Page 1273 indicates that in 1970, Monsanto
11 decided to restrict sales of chlorinated biphenyls.

12 A. Yes.

13 Q. That's -- I'm sorry. Down under, "Monsanto's
14 Withdrawal from the Chlorinated Biphenyl Business" --

15 A. I found it, yes. The answer is yes.

16 Q. At the same time that Monsanto decided to
17 restrict sales, did it make any efforts to restrict
18 production of PCBs in 1970?

19 A. Certainly.

20 Q. Okay. And if we took a look at a graph to
21 see what the production levels were for PCBs in 1970,
22 would we see them declining towards the end of the year?

23 A. Yes. In fact, the numbers would show up at
24 the top of the page marked 1269 and 1270. Page 1270 will
25 show the production number, which is the first number --

1 Q. Right.

2 A. -- dropping from 85,000,000 in 1970, to
3 45,000,000 in '71.

4 Q. Okay. When was the production -- when was
5 the decision made to curtail production?

6 MR. SCHINK: Of which Areclors?

7 MR. PENDERGAST: Of any of them.

8 A. The decision was made at that meeting I
9 referred to to the CMC in May of 1970. That's when the
10 program was finalized and approved.

11 Q. (BY MR. PENDERGAST) Did anybody -- who was
12 in charge of telling production that production should be
13 winding down?

14 A. That would be Mr. Bergen as the business
15 director, along with Mr. Springgate, the other business
16 director, informing the manufacturing manager, who in turn
17 informed the plants.

18 Q. You felt it would have been a good policy as
19 of May of 1970, to begin winding down production of
20 PCB-containing -- or production of PCBs?

21 A. Yes.

22 Q. Okay. Page 1283 references a study by
23 Monsanto of its employees exposed to PCBs at the Krummrich
24 plant in Sauget, Illinois.

25 A. I see that, yes.

1 Q. Was that study completed?

2 A. This is the study we referred to yesterday
3 that was broadened, as I understood it, by Dr. William
4 Gaffey. I do not know if it's considered complete.

5 Q. All right. Do you recognize Exhibit No. 15?

6 A. No, I do not. I have never seen this before.

7 MR. PENDERGAST: Let's mark that and that.

8 [Plaintiff's Deposition Exhibit Papageorge
9 Nos. 18 through 33 marked for identification.]

10 Q. (BY MR. PENDERGAST) I've got here a number
11 of documents starting with Exhibit No. 8, which I believe
12 are form letters sent out by Monsanto on various dates,
13 and I guess I just wanted to go through them quickly one
14 by one. The first is a February 9, 1970 letter, is it
15 not? The first exhibit, No. 18 --

16 A. Eighteen.

17 Q. -- is a February 9, 1970 letter?

18 A. Yes.

19 Q. Were you involved at all in the decision to
20 send that letter and the formulation of its language?

21 A. Yes.

22 Q. Okay. And what was the basic intent in
23 putting together this letter?

24 A. This was an attempt to inform our customers
25 on record of Monsanto's current knowledge of what Monsanto

1 perceived to be an evolving environmental situation
2 regarding the PCBs.

3 Q. Was this to be sent to all of Monsanto's
4 customers who had PCB-containing products?

5 A. Correct.

6 Q. Would it also include customers who had in
7 the past purchased PCB-containing products, but no longer
8 did?

9 A. As far back as we could go, for three years
10 for sure.

11 Q. What was the source of the mailing list?

12 A. As we discussed earlier, it was primarily the
13 ship to list, bill to list, which could be different, and
14 the accounts receivable, which reflects the bill to. And
15 there is also a summary report that Monsanto had that went
16 back three years, two prior years' sales to this customer
17 at this address, and a projection for the current year,
18 and how much he was buying each month. So, that gave us
19 at least three years of history.

20 Q. Was it intended that this letter reach
21 purchasers of Pydraul 312?

22 A. Yes.

23 Q. Was this letter sent regular mail?

24 A. Yes.

25 Q. Okay. This letter doesn't indicate that

1 there is any problem with Pydraul 312 products; is that
2 fair to say?

3 MR. SCHINK: What do you mean by "problem"?

4 MR. PENDERGAST: Well, I'll stand with my
5 question.

6 MR. SCHINK: Object to the form.

7 A. Well, the word "problem" does appear in this
8 write-up as a problem of environmental contamination as it
9 relates to Aroclor 1254 and 1260. Nothing at this point
10 in time was known about 1242 in the environment.
11 Therefore, there was nothing to relate to the customer.

12 Q. (BY MR. PENDERGAST) Okay. Looking at
13 Exhibit No. 19, which is a letter, who did Monsanto intend
14 would receive this letter?

15 A. This letter was intended to be mailed to
16 purchasers of Monsanto's PCBs who were in what Monsanto
17 called the plasticizer applications, which really
18 interprets into miscellaneous, other than industrial
19 fluids.

20 Q. Both Exhibit Nos. 18 and 19 have the
21 paragraph, "As your supplier of Aroclor 1254 and 1260," et
22 cetera; is that correct?

23 A. Yes, they both have that sentence.

24 Q. Okay. Pydraul 312 did not contain Aroclor
25 1254 or 1260, did it?

1 A. That is correct.

2 Q. Okay. Is it your still your testimony that
3 Exhibit No. 8 was intended to be sent to all customers
4 with products containing PCBs?

5 A. No. I should have been more specific. This
6 specific letter and the wording is designed to be sent to
7 the purchasers of industrial fluids, which include the
8 hydraulic fluids.

9 Q. The Pydraul 312 does not contain Aroclor 1254
10 or 1260, does it?

11 A. That is correct.

12 Q. Just so I'm clear on this, was this letter,
13 February 9, 1970, intended to be sent to users of Pydraul
14 312?

15 A. Yes. The letter we are looking at marked
16 Exhibit 18 was intended for that type of customer.

17 Q. Okay.

18 A. You will note --

19 Q. Go ahead.

20 A. You will note the last paragraph and the
21 emphasis on industrial chemicals --

22 Q. Right.

23 A. -- how each state regulates. A key purpose
24 of this letter is to reemphasize that, and this gave us an
25 opportunity to do it.

1 Q. Okay. My confusion is with the terms of, "As
2 your supplier of 1254 and 1260." Neither of those
3 Aroclors were contained in Pydraul 312.

4 A. That is correct.

5 Q. So a manufacturer who had received Pydraul
6 312 would not be receiving Aroclor 1254 or 1260?

7 A. That is true. He would read that sentence,
8 and it would not relate to him, and he had to read further
9 down and find the product that he can relate to.

10 Q. Okay. So this sentence, "As your supplier of
11 Aroclor 1254 and 1260," didn't apply to everybody?

12 A. That is true.

13 Q. All right. Let's take a look at Exhibit No.
14 20, which is a duplicate of Exhibit No. 19 but for the
15 cover sheet; is that correct.

16 MR. SCHINK: No, it's a duplicate of Exhibit
17 18.

18 MR. PENDERGAST: I'm sorry, 18.

19 MR. SCHINK: Right. It doesn't have the
20 Stroh mailing label on it.

21 A. Right.

22 Q. (BY MR. PENDERGAST) Let's take a look at
23 Exhibit No. 21. Do you recognize that at all?

24 A. I do recognize this. It appears to me to
25 consist of two parts. The first two pages are a draft

1 version of what finally became the next two pages, which
2 is identical to Exhibit 19.

3 Q. Okay. Let's take a look now at Exhibit No.
4 22, which is a June 11, 1970 letter. Did you have any
5 input into the development of this letter?

6 A. Yes.

7 Q. Who was the intended recipient of this
8 letter?

9 A. This would be purchasers of PCB-containing --
10 this would have to be the PCB type Aroclors, purchasers of
11 Aroclors that contained PCBs.

12 Q. Okay. Why don't you take a look back at
13 Exhibit No. 15, because that's what I've been referring
14 to. Does that indicate that that letter was to be sent
15 to -- it says "Industrial."

16 A. Yes.

17 Q. The letter, Exhibit 22, references a letter
18 of February 27, 1970, which was sent to the -- I think we
19 already talked about the plasticizer customers.

20 A. Yes.

21 Q. Do you know if Exhibit No. 22 was mailed to
22 the plasticizer customers only, or whether it was mailed
23 to everyone?

24 A. No. This would be mailed to purchasers of
25 the Aroclor PCB materials that related to the functional

1 fluid sales group, not to the plasticizer group, because
2 Mr. Olson would have nothing to do with plasticizer
3 customers.

4 Q. Okay. The February 27, 1970 letter
5 referenced, however, was apparently sent to the
6 plasticizer group?

7 A. Yes.

8 Q. Okay. So there's some -- if this letter was
9 sent to the functional fluids group, the reference to the
10 February 27, 1978 letter probably wouldn't be understood
11 by those people?

12 A. Oh, this does not mean that Mr. Olson didn't
13 also send a letter out on the 27th, which is very, very
14 likely, analagous to what Mr. Schalk did.

15 Q. Okay. Let's take a look at the August 27,
16 1970 letter from Norman T. Johnson, marked as exhibit
17 what, 23?

18 A. Yes.

19 Q. Who was the intended recipient of that
20 letter?

21 A. This is purchasers of Pydraul F-9.

22 Q. Okay. So this letter should have been mailed
23 to all purchasers of Pydraul F-9?

24 A. Correct.

25 Q. How far back did you go to see who had

1 purchased P-9?

2 A. As I indicated, three years as a minimum, and
3 occasionally they were able by other records to find
4 fourth and fifth year back.

5 Q. Was the sending of this letter an important
6 part of your campaign to educate customers on the need to
7 properly contain and handle PCB-containing fluids?

8 A. It's part of the overall program, yes.

9 Q. Okay. Were each of these letters that we
10 have referred to so far part of that, also part of that
11 campaign?

12 A. Yes.

13 Q. And they were sent out because Monsanto felt
14 that it was important that their customers have the
15 up-to-date information on the handling of Monsanto
16 PCB-containing products; is that correct?

17 A. That is correct.

18 Q. Take a look at Exhibit 24, the February 1,
19 1971 letter. By the way, Exhibit 23, did you have input
20 into all these letters?

21 A. Yes.

22 Q. Along the line was there anybody in
23 particular who felt that these letters should contain more
24 information than they did?

25 A. No. I don't know of anybody in particular,

1 no.

2 Q. Okay. Can you think of anybody who on
3 occasion did say, "We should really put a little more
4 information in this letter"?

5 A. Yeah. I for one would want to add a sentence
6 or a word, or at the same time on a subsequent letter I
7 may ask for deletion.

8 Q. Okay. Was it ever the case in which you were
9 overruled that, "No, Bill, we're not going to put that in
10 there. We don't need that," or something to that effect?

11 A. No. I don't recall any suggestion made that
12 was overruled, no.

13 Q. Was there anybody during the time these
14 letters were being formulated, was there anybody at
15 Monsanto who felt that Monsanto was not doing enough to
16 educate their customers in the public about the PCB
17 question?

18 A. I'm not aware of anyone.

19 Q. Okay. The letter of February 1, 1971, who
20 was to receive a copy of that?

21 A. Purchasers of the Pydrauls listed in the
22 second paragraph.

23 Q. Okay. Is the second page of that exhibit --

24 MR. SCHINK: It's the same as the first page.

25 Q. (BY MR. PENDERGAST) -- same, just different

1 type?

2 A. Different typewriter to speed up the process.

3 Q. Okay. Taking a look at Exhibit 25, the April
4 15, 1971 letter, again, that exhibit consists of two
5 copies apparently typed on different typewriters, same
6 letter. Who is the intended recipient of that letter?

7 A. These are all Pydraul customers.

8 Q. In this letter, Mr. Bradford indicates that,
9 "Over the past year or so we have written you several
10 letters concerning polychlorinated biphenyls and have
11 urged that care be taken to escape of hydraulic fluids
12 containing PCBs into the environment." Is that correct?

13 A. That is correct.

14 Q. Looking at the letters we have looked at, can
15 you tell me which ones indicate that care should be taken
16 to prevent the escape of hydraulic fluids into the
17 environment?

18 A. The first one with the "Chemical Week"
19 article attached, Exhibits 18, 19, 20 and 21 refer to all
20 possible care be taken to prevent environmental
21 contamination, and that's it.

22 Q. Okay. Which exhibit was that?

23 MR. SCHINK: There were four of them he
24 referred to.

25 A. 18, 19, 20 and 21.

1 Q. (BY MR. PENDERGAST) And what is the language
2 in each of those exhibits that refers to that?

3 A. They all contain paragraphs that refer, that
4 read as follows: "We feel that all possible care should
5 be taken in the application, processing and effluent
6 disposal of these products to prevent them becoming
7 environmental contaminants."

8 Q. Okay. And Exhibit 28, this letter was
9 intended to advise Pydraul customers that the 312-A was
10 being -- that production was being ceased on 312-A?

11 A. We're talking now Exhibit 28?

12 Q. Right.

13 A. I don't see a reference specific to 312-A.

14 Q. Okay.

15 A. This refers to all Pydrauls which were sold
16 at that time.

17 Q. It states in the second sentence, "We have
18 decided to stop using polychlorinated terphenyls as a
19 component in our fluids." Is that correct?

20 A. That is correct.

21 Q. At that time did Monsanto know that the
22 products using the polychlorinated terphenyls also
23 contained PCBs?

24 A. I don't think so. This was early '72. No, I
25 don't believe so.

1 Q. When do you think that discovery was made?

2 A. As best I remember, about 1973, '74.

3 Q. Okay. Next exhibit, 27, I believe; is that
4 correct?

5 A. I have it.

6 Q. Is the February 28, 1972 letter indicating
7 that the new PCB or the new Pydraul fluid was compatible
8 with the old formulation, and that the systems would not
9 have to be drained of PCB containing fluids; is that
10 correct?

11 A. That is correct.

12 Q. In February, 1972, was there anybody at
13 Monsanto who felt that the user should be told to remove
14 the PCB-containing fluids from their machines or plants?

15 A. No. It's not perceived to be a problem when
16 it's contained and handled right.

17 Q. Okay. After you came on in St. Louis in
18 January, 1970, was there never any discussion after that
19 as to the cost to users of cleaning up PCBs out of their
20 systems?

21 A. There was never any discussion in which I
22 participated.

23 Q. Okay.

24 A. I was not present. I don't know.

25 Q. Do you know if anyone had those discussions?

1 A. I don't know.

2 Q. In formulating this letter, there was no
3 concern given to the cost of removing PCBs from systems in
4 use?

5 A. Oh, I can't speak for others. I don't know.

6 Q. Okay. Were you involved in the drafting of
7 this letter?

8 A. I saw a draft before it was finalized. That
9 was my involvement.

10 Q. Okay. Who besides Mr. Bergen was involved in
11 drafting the letter, to your knowledge?

12 A. In '72, I believe Mr. Johnson was still
13 involved, and Mr. Bradford and, I believe, at that time
14 Mr. Gossage was a director of marketing. He was involved,
15 also.

16 Q. Was there any thought given at that time to
17 advising customers to monitor the discharge into the
18 municipal waste water system for PCBs?

19 A. That was a continuing thought as part of this
20 "Don't Let It Escape" program.

21 Q. Okay. Monsanto had found, did it not, that
22 despite its best efforts to contain PCBs in its own
23 plants, that PCBs had gotten into the waste water effluent
24 that was taken to the municipal sewer, correct?

25 A. On occasion, yes.

1 Q. Okay. Was it a concern of anyone that the
2 users of Monsanto's products be told, "Check your waste
3 water and see if there's PCBs in it"?

4 A. Yes.

5 Q. Okay. And when was that done? Were they
6 ever advised to do that?

7 A. All the marketing people were advised of this
8 early on as a continual thing. As I indicated earlier,
9 the education part is evergreen. There are new people at
10 all the plants that they call on, and that was their
11 responsibility.

12 Q. Okay. Was that ever sent out in a letter?

13 A. I don't recall seeing one. That doesn't mean
14 it was never done.

15 Q. Did you think it was important to advise
16 users of Pydraul products that they should check their
17 sewage discharge for the presence of PCBs?

18 A. Certainly not only is it important, I think
19 that should be a way of life for them.

20 Q. Beginning when?

21 A. At any time; any plant ought to be
22 knowledgeable what it's sending down the sewer.

23 Q. Okay. Prior to 1969, did Monsanto believe
24 that die casters were checking their plant effluent for
25 the presence of PCBs?

1 A. No, because there was no good way to test for
2 PCBs. The methodology wasn't available.

3 Q. Did Monsanto ever disseminate any information
4 to its customers concerning methodology for testing for
5 PCBs after 1969?

6 A. Yes.

7 Q. When was that done?

8 A. We had methodology available in early 1970,
9 before the middle of the year.

10 Q. And was that information disseminated to all
11 Monsanto's PCB customers?

12 A. I don't know about all, but the salesmen had
13 copies. They were aware of the availability, and I do
14 know that we got many requests for this methodology.

15 Q. Were the salespeople directed to inform
16 customers of the availability of that technology?

17 A. Yes.

18 Q. Take a look at the March 15, 1972 letter,
19 again, a letter to Pydraul customers referencing the
20 availability of a new Pydraul product not containing
21 chlorinated hydrocarbons; is that correct?

22 A. That is correct.

23 Q. The August 3rd, 1973 letter, Exhibit --

24 MR. SCHINK: Is there some reason you removed
25 the Stroh mailing label from that one? I think that was

1 the first page of that exhibit. Is there some reason that
2 isn't a complete document or --

3 MR. PENDERGAST: No.

4 MR. SCHINK: I'm talking about Exhibit 29.

5 MR. PENDERGAST: I was just looking to see
6 whether we had document number 1299 here.

7 MR. SCHINK: I think, yeah, that's the first
8 page of that. I don't see it here.

9 Q. (BY MR. PENDERGAST) In any event, the letter
10 of August 3, 1973 --

11 MR. SCHINK: Here. I have a copy of it. Why
12 don't you make your exhibit complete.

13 MR. PENDERGAST: All right. Well, I'm not
14 going to ask any questions about document 009299.

15 MR. SCHINK: The point is if you're going to
16 mark an exhibit that's been a produced document in this
17 case, you should mark the complete document rather than a
18 fragment of an incomplete document.

19 Q. (BY MR. PENDERGAST) Well, let me ask. As
20 the document is here --

21 And if you want to mark this as an exhibit, that's
22 fine.

23 As the document is marked Exhibit 29 in the form
24 that is before you, it's a form letter from Cumming Paton
25 to Monsanto Pydraul customers; is that correct?

1 A. That is correct.

2 Q. And have you seen this document before?

3 A. Yes, I have.

4 Q. Okay. And the rest of the documents,
5 including the sections of the "Federal Register" and memo
6 on the incineration services, were all intended to be
7 attachments to that letter?

8 A. That is right.

9 Q. Okay. And this advises customers as of
10 August 3rd, 1973, that they should in paragraph 3,
11 ". . .review your procedures and inspect your facilities
12 at this time to insure that your operations are in
13 compliance with the new regulations." Correct?

14 A. That is correct.

15 Q. And did Monsanto feel that this was important
16 that this information be disseminated to its product
17 users?

18 A. Yes.

19 Q. And this again was part of your program to
20 keep the customers informed as to the developments on the
21 PCB question?

22 A. Yes.

23 Q. Also, letting the customers know the
24 availability of incineration, correct?

25 A. Yes.

PERRY REPORTING SERVICE

1 Q. Did Monsanto feel at that time that
2 incineration was the best method for disposal of PCBs?

3 A. Yes.

4 Q. This information you felt was important
5 enough to your customers to put in a letter and send to
6 them apparently, correct?

7 A. Yes.

8 MR. PENDERGAST: Okay. I guess we can mark
9 that.

10 [Plaintiff's Deposition Exhibit Papageorge
11 No. 30 marked for identification.]

12 Q. (BY MR. PENDERGAST) For the sake of the
13 record, I'm showing you Exhibit No. 30, which is a
14 document numbered 1299, which was produced by Monsanto to
15 Stroh in this case, together with Exhibit No. 29, and that
16 appears to be a mailing label of some sort, correct?

17 A. That is correct.

18 Q. I guess maybe one more question if I can, and
19 I think a quick way to do this is this way. Yesterday you
20 testified concerning the labeling on the Pydraul products,
21 and particularly, I believe, after 1970, you said it was
22 decided that a sticker should be added to the Pydraul
23 label with an additional warning; is that correct?

24 MR. SCHINK: No, he didn't say that. He said
25 to reemphasize.

1 Q. (BY MR. PENDERGAST) I'm sorry. I didn't
2 mean to misconstrue your testimony. Generally speaking,
3 though, to reemphasize the warnings that had previously
4 been on the label; is that correct?

5 A. That is correct.

6 Q. Okay. I have no interest in going through
7 all of these labels. I have these identified as labels
8 and information regarding labeling that we have received
9 from Monsanto. If you could, and maybe -- I would like to
10 find the sticker that I'm looking for. If you could find
11 that for me, we won't have to mark them all and go through
12 them all.

13 A. The sticker that I had referred to earlier is
14 copied on this sheet that is marked is STR 002837.

15 MR. PENDERGAST: Let's mark this.

16 [Plaintiff's Deposition Exhibit Papageorge
17 No. 31 marked for identification.]

18 MR. PENDERGAST: That's now been marked as
19 Exhibit No. 31?

20 A. Yes.

21 Q. And that was added to the Pydraul labels at
22 what time?

23 A. Beginning about April or May of 1970.

24 Q. And which labels was that added to?

25 A. It was added to a label similar to the sheet

1 that is the document marked STR 002854.

2 Q. Why do you say similar to? Was that not --

3 A. Because there are others that would show
4 different Pydrauls --

5 Q. Okay.

6 A. -- to designate the contents of the package.

7 Q. But with respect to the Pydraul 312, the
8 label that was in effect or in use, I should say, in 1970
9 was STR 002854?

10 A. Yes.

11 MR. PENDERGAST: Let's mark that.

12 [Plaintiff's Deposition Exhibit Papageorge
13 No. 32 marked for identification.]

14 Q. (BY MR. PENDERGAST) That's now been marked
15 as Papageorge Exhibit No. 32 as the Pydraul label that was
16 in use in 1970, Pydraul 312 label?

17 A. Yes.

18 Q. How long had that been in use?

19 A. As best as I can determine, that was in the
20 '50s or '60s, decades.

21 Q. Okay. How about for Pydraul F-9? What was
22 the period that that product was --

23 A. About the same time; most of these were
24 developed in the '50s.

25 Q. When did Monsanto cease marketing Pydraul

1 F-9?

2 A. Oh, I don't know the exact date, but it had
3 to occur the latter part of 1970, early part of 1971.

4 Q. Okay. Was the sticker, Exhibit No. 31, also
5 added to those labels?

6 A. Yes.

7 Q. Can you pick out there the Pydraul F-9 label
8 that was in use at that time?

9 A. It appears that STR 002862 is a copy of that
10 letter.

11 Q. And how long had that been in use?

12 A. That particular one, I would suspect about 15
13 years or so.

14 Q. Dating back to 1955?

15 A. '53.

16 MR. PENDERGAST: Okay. Let's mark that.

17 [Plaintiff's Deposition Exhibit Papageorge
18 No. 33 marked for identification.]

19 Q. (BY MR. PENDERGAST) Showing you Exhibit No.
20 33 then, that was the Pydraul F-9 label in use between
21 1953, until it discontinued production?

22 A. Yes.

23 Q. On each of the labels that we have down in
24 the bottom right-hand corner of the last number, does that
25 indicate on the ones where it's shown the year that that

1 label, the first year that label was used?

2 A. Yes.

3 Q. Okay. Good enough.

4 Q. Again, the reason for adding the sticker to
5 the label, as opposed to changing labels, was because at
6 the time it was added, Monsanto had already decided that
7 the Pydraul 312 would be discontinued; is that fair?

8 A. That is correct.

9 Q. Okay. Did Monsanto disseminate information
10 to each of its plants in 1970 and thereafter concerning
11 handling of PCB-containing materials and their proper
12 disposal?

13 A. Yes.

14 Q. Okay.

15 A. It didn't just happen then. It's an ongoing
16 communication.

17 Q. Okay. And those instructions or that
18 information was committed to writing?

19 MR. SCHINK: Are you asking about something
20 in addition to the warnings and other literature that we
21 have already looked at that went to all other customers?

22 MR. PENDERGAST: I'm talking about within the
23 company right now.

24 MR. SCHINK: But I mean, for example, if you
25 have a 55-gallon drum of material, whether it goes to a

1 die cast manufacturer or a Monsanto plant, it's going to
2 have the same information about handling and proper
3 disposal.

4 Q. (BY MR. PENDERGAST) I'm talking about an
5 additional internal system of communication.

6 A. No. The field salesman would treat the
7 Monsanto plant in their district as a customer of that
8 product, and he would communicate with the Monsanto
9 people, say, at Pensacola that we talked about.

10 Q. How about at the production facilities?

11 A. I'm sorry?

12 Q. At the production facilities.

13 A. Production facilities? That would be through
14 the manufacturing manager located in St. Louis to
15 communicate to the two producing plants, and he was very
16 well tuned in, and all of it really happened over the
17 telephone, and plus his personal visits.

18 Q. Okay. Have you ever seen any documents
19 relating to the communications between the St. Louis
20 office and the production plants concerning the handling
21 of the PCB-containing -- or PCBs?

22 A. Well, I certainly have seen documents, yes.
23 There are operating procedures, standard manufacturing
24 process manuals. They have paragraphs in them that are
25 reviewed and modified, and yes, there are documents

1 reinforced by the personal contact.

2 MR. PENDERGAST: Okay. Well, that's all I
3 have.

4 MR. SCHINK: I have a couple questions for
5 you, Mr. Papageorge.

6

7

CROSS-EXAMINATION

8 QUESTIONS BY MR. SCHINK:

9 Q. What were the risks of ecological effects for
10 the use of PCB Pydrauls by die cast customers at the time
11 the sale of PCB Pydrauls was terminated by Monsanto?

12 A. What were the ecological risks?

13 Q. Right.

14 A. Well, at that time it was perceived that if
15 enough of the PCBs ended up in the environment in a spot
16 that was vulnerable and sensitive, which would include
17 spots such as I had mentioned, or where juvenile shrimp
18 might be located, or the peregrine falcon might be nesting
19 and all, the ecological risks would be one of if enough of
20 this material was available, and the wild creatures in the
21 environment would be exposed, some harm could be noted,
22 and this was undesirable.

23 Q. Under what circumstances did you believe that
24 this risk might be unreasonable at that time?

25 MR. PENDERGAST: Object to the form of the

1 question.

2 A. I would suggest that the circumstance that
3 comes to mind is just careless handling or mishandling,
4 really.

5 Q. (BY MR. SCHINK) By whom?

6 A. By the person --

7 MR. PENDERGAST: Object to the form.

8 A. By the person in possession of the material.

9 MR. PENDERGAST: Object to the form of the
10 question.

11 Q. (BY MR. SCHINK) Where a die caster using a
12 PCB Pydraul hydraulic fluid had in place at its plant a
13 system to collect any leaked fluid, did you believe that
14 there was an unreasonable risk of an ecological effect?

15 MR. PENDERGAST: Object to the form of the
16 question.

17 A. If it's properly collected, it's not going to
18 get into the environment. It's contained and under
19 control. That's the key word, control.

20 Q. (BY MR. SCHINK) And under those
21 circumstances where it was properly contained and
22 controlled by the die cast customer, did you believe there
23 was an unreasonable risk of ecological effects?

24 MR. PENDERGAST: Object to the form of the
25 question.

1 A. No. I do not see any risk.

2 MR. SCHINK: I have nothing further.

3 MR. PENDERGAST: Fine.

4 MR. SCHINK: I think we will have signature
5 before any notary if that's acceptable.

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PERRY REPORTING SERVICE

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WILLIAM B. PAPAGEORGE

Subscribed and sworn to before me this _____
day of _____, 1988.

My commission expires: _____.

[Notary Public]

PERRY REPORTING SERVICE

HARTOLDMON0012821

NOTARIAL CERTIFICATE

STATE OF MISSOURI)
)
CITY OF ST. LOUIS)

I, KATHRYN T. O'NEILL, a Registered Professional Reporter and a duly commissioned Notary Public within and for the State of Missouri, do hereby certify that pursuant to notice there came before me at the Paul Brown Building, 818 Olive Street, St. Louis, Missouri 63101,

WILLIAM B. PAPAGEORGE,

who was by me first duly sworn to testify to the truth and nothing but the truth of all knowledge touching and concerning the matters in controversy in this cause; that the witness was thereupon carefully examined upon oath and said examination was reduced to writing by me; that the signature of the witness was not waived by agreement of all parties; and that this deposition is a true and correct record of the testimony given by the witness.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 19th day of August, 1988.

My commission expires June 3rd, 1990.

[Notary Public]

Perry Reporting Service
818 Olive Street, Suite 462
St. Louis, Missouri 63101
August 19, 1988

Mr. James H. Schink
Messrs. Kirkland & Ellis
Attorneys at Law
200 East Randolph Drive
Chicago, Illinois 60601

Re: Stroh Die Casting Co. -vs- Monsanto Company

Dear Mr. Schink:

Enclosed please find a carbon copy of the transcript of Mr. Papageorge's deposition, which was taken August 10 and 11, 1988, together with the original signature page and errata sheet.

Please have Mr. Papageorge read his deposition at his earliest opportunity, making any changes he feels necessary on the errata sheet and stating his reason for making such change. He should then sign the original signature page and errata sheet in the presence of a notary public and return both to Mr. Carlson, who has the original transcript.

Thank you for your assistance in this matter.

Very truly yours,

Kathryn T. O'Neill, R.P.R.

Enclosures