

IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

THE CITY OF BLOOMINGTON, INDIANA;)
THE UTILITIES SERVICE BOARD OF)
BLOOMINGTON, INDIANA; and MONROE)
COUNTY, INDIANA,)

Plaintiffs,)

vs.)

Civ No.
IP 83-9-C

WESTINGHOUSE ELECTRIC CORPORATION,))
a Pennsylvania corporation; and)
MONSANTO COMPANY, a Delaware)
corporation,)

-----Defendants-----)

The continued deposition of W. B. PAPAGEORGE,
called for examination by the Plaintiffs, pursuant
to notice and pursuant to the provisions of the
Federal Rules of Civil Procedure of the United
States District Courts, pertaining to the taking
of depositions for the purpose of discovery, taken
before Arnold N. Goldstine, a Notary Public and
Certified Shorthand Reporter within and for the
County of Cook and State of Illinois, at Three
First National Plaza, Chicago, Illinois, on
October 15, 1986, at the hour of ten o'clock a.m.

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APPEARANCES:

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Mr. James G. McConnell
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Chicago, Illinois 60602

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-and-

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Mr. Geoffrey M. Grodner
Law Offices of Geoffrey M. Grodner
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appeared on behalf of the
Plaintiffs;

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Mr. Michael R. Fruehwald
Barnes & Thornburg
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appeared on behalf of Defendant
Monsanto Company.

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I N D E X

WITNESS:

W. B. PAPAGEORGE

Direct Examination
By Mr. Mc Connell

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1 MR. MC CONNELL: Let the record show this is
2 the continuation of the deposition of Mr.
3 Papageorge, pursuant to notice and the applicable
4 provisions of the Federal Rules of Civil Procedure
5 and the local rules of the United States District
6 Court for the Southern District of Indiana.

7
8 WILLIAM B. PAPAGEORGE,
9 having been previously duly sworn,
10 was examined and testified as follows:

11 DIRECT EXAMINATION (CONTINUED):

12 BY MR. MC CONNELL:

13 Q. Mr. Papageorge, in the course of the
14 Monsanto Company's pcb business, there came a time
15 when the company retained a laboratory called
16 Industrial Bio-Test to do some animal testing on
17 pcb's, do you recall that?

18 A. Yes.

19 Q. Before Industrial Bio-Test was retained
20 to do pcb animal testing by Monsanto, I take it
21 they had done other animal testing on other
22 Monsanto products?

23 A. That is my understanding.

24 Q. Okay.

1 Were you involved in any of those other
2 product test efforts?

3 A. No.

4 Q. Okay.

5 Do you know what the approximate annual
6 dollar volume of business was in 1967, '68, '69,
7 '70 between Monsanto and Industrial Bio-Test?

8 A. I do not.

9 Q. Were you involved in the decision-making
10 process at Monsanto that led to the decision to
11 use Industrial Bio-Test to do these animal studies
12 on pcb's?

13 A. No.

14 Q. Okay.

15 That was before you came into the role of
16 pcb coordinator?

17 A. Correct.

18 Q. Okay.

19 Before you took over, or took I guess is
20 better than took over, before you became the pcb
21 coordinator at Monsanto, had you been involved in
22 any kind of program on the animal testing on
23 Monsanto products?

24 A. No.

1 Q. Is there anything in your educational or
2 other background before Monsanto involving animal
3 testing of chemicals?

4 A. No.

5 Q. So this pcb testing at Industrial
6 Bio-Test was your first exposure to the area of
7 animal testing for health effects of chemicals, is
8 that a fair statement?

9 A. I don't know about fairness. But I need
10 a definition. I was aware of results of animal
11 testing.

12 Q. Okay.

13 A. On other products, in addition to the
14 pcb's.

15 Q. Other Monsanto products?

16 A. Yes.

17 Q. Okay.

18 Before you became involved with the
19 pcb's, as the pcb coordinator at Monsanto, were
20 you aware of the general scientific principles
21 that go into animal testing of chemicals?

22 A. In a very general way, yes.

23 Q. Okay.

24 In your earlier experience with Monsanto

1 before you were the pcb coordinator, had you been
2 called upon to convey animal testing information
3 or results from the company to customers?

4 A. No.

5 Q. Had you been involved at Monsanto before
6 you became pcb coordinator in any way with the
7 consideration of what meaning animal test results
8 on Monsanto products might have for the health of
9 Monsanto's own employees who worked with those
10 products?

11 A. To a very limited degree.

12 Q. Okay.

13 What was your involvement in that regard?

14 A. I was in a position to discuss with
15 members of the medical department the effects of
16 chemicals that my plant had to deal with. And in
17 those discussions I felt were involved with animal
18 studies.

19 Q. And this was in relationship to the
20 health of Monsanto employees, is that correct,
21 rather than customer employees or outsiders?

22 A. Yes.

23 Q. Okay.

24 Was there a particular product of that

1 plant that you can recall as involving discussions
2 with the medical department?

3 A. Oh, there were many. The one I recall
4 very vividly is an insecticide called Parathion.

5 Q. P-a-r-a-t-h-i-o-n?

6 A. Correct.

7 Q. Okay.

8 Any others that you can recall?

9 A. Chlorine. Mercury. Hydrochloric acid.
10 Those are the key chemicals.

11 Q. Okay.

12 What was the health concern with respect
13 to Parathion?

14 A. Parathion, I guess I better describe that
15 as a nerve damaging chemical, if humans are
16 exposed to some given amount which I have
17 forgotten.

18 Q. Okay.

19 In fact, that is the mechanism of action
20 on the insects as well, isn't it?

21 A. That is my understanding, yes.

22 Q. Does Monsanto still make Parathion?

23 A. I don't believe so, no.

24 Q. Do you recall what -- let's back up a

1 little bit.

2 In the context of Parathion, did you have
3 occasion to discuss animal studies on Parathion
4 with the Monsanto medical department?

5 A. Yes. They came up, the referenced animal
6 studies came up in the discussion, examples of
7 what effects could be noted in humans, possibly in
8 humans.

9 Q. When you say referenced animal studies,
10 you are referring to studies published in the
11 literature?

12 A. I don't -- let me think. Some of them
13 were published in the literature and some were
14 Monsanto results, as best I can remember.

15 Q. So at least some of the studies on
16 Parathion were commissioned by Monsanto?

17 A. Yes.

18 Q. Were any of those performed by Industrial
19 Bio-Test, to your knowledge?

20 A. I do not recall. I don't know.

21 Q. Did your involvement in these discussions
22 result from some expression of concern by
23 employees at the plant?

24 A. No.

1 Q. Okay.

2 How was that initiated, how were those
3 discussions initiated?

4 A. I was assigned the management of the
5 Anniston plant, that was one of the principal
6 products of the plant, and at my request the
7 discussions were held, so I could become more
8 knowledgeable of the chemical and what it can do.

9 Q. More on the order then of bringing
10 yourself up to date as you took over
11 responsibility for the plant that produced the
12 product?

13 A. Yes.

14 Q. Okay.

15 When you took over the Anniston plant,
16 were there any particular protective measures in
17 effect for the employees who worked in the
18 Parathion manufacturing process?

19 A. Certainly.

20 Q. Do you recall what they were?

21 A. They had access to complete changes of
22 clean clothing. And were required to wear the
23 proper type of gloves to protect their hands.
24 Safety spectacles, hard hats. And under some

1 conditions of operating or repairing the
2 equipment, they had to wear proper breathing
3 equipment. And there was easy access to showers
4 in the event that material got on their clothing
5 or bodies, they could wash quickly.

6 Q. Were any or all of these same safety
7 precautions recommended by Monsanto to customers
8 who were in the business of applying the
9 insecticide?

10 A. Yes, that is a requirement by the
11 regulatory agencies on pesticides.

12 Q. Okay.

13 Whatever they required you had on your
14 labeling, is that a fair statement?

15 A. Yes.

16 Q. Were any of those same protective
17 measures in effect for the people who worked in
18 the Anniston plant manufacturing pcb's?

19 A. Well, in different degrees. There were
20 showers, but not as many. Clean clothing was
21 provided. Gloves were provided, but they were of
22 different material of construction because the
23 chemicals are different.

24 And they, too, had to wear the safety

1 glasses for eye protection and the hard hats. And
2 there again on certain assignments, duties that
3 were to be performed, they had the proper
4 respiratory protection equipment.

5 Q. In the discussions you had with the
6 Monsanto medical department about animal tests on
7 Parathion, did you understand the medical people
8 to be drawing conclusions about the effects of the
9 chemical on human health, based on the
10 demonstrated effects on the animals?

11 A. Some of that, as well as some accidental
12 exposures to humans that were as I remember
13 documented at the time.

14 Q. So Monsanto's own medical people looked
15 at both whatever human data was available and had
16 the animal studies, advising you about the
17 potential health effects of Parathion?

18 A. Yes.

19 Q. Okay.

20 And was it your general understanding
21 that they did that same process with respect to
22 other Monsanto products; that is, they looked at
23 both the human data and the animal data?

24 A. Yes. Whatever was available.

1 Q. To your knowledge, had there been any
2 animal toxicology studies on pcb's before the
3 studies commissioned by Monsanto at Industrial
4 Bio-Test?

5 A. Yes.

6 Q. Okay.

7 Do you know by whom those had been done?

8 A. I recall a reference to a Younger
9 Laboratories. There is a reference to another
10 laboratory, at the moment the name escapes me, it
11 started with an "S," named after I believe the
12 owner or the investigator who made the studies.
13 Starts with an "S". It doesn't come to me at the
14 moment.

15 Q. Okay.

16 Take a look at what the court reporter
17 has marked as Deposition Exhibit 208 which is a
18 two-page letter to Dr. Hunt of Monsanto from
19 William Randolph at the Department of Health,
20 Education and Welfare.

21 Do you want to look at this?

22 (The document above-referred to
23 was marked Bloomington Deposition
24 Exhibit No. 208 for identification.)

1 A. I have looked at it.

2 Q. Does that letter indicate to you that Dr.
3 Hunt or someone at Monsanto had made a request of
4 the government for whatever information the
5 government had on animal studies on Aroclor
6 products?

7 A. That is what I would infer from the
8 wording of the first paragraph.

9 Q. Okay.

10 The particular product that is referred
11 to in that letter which is 5460, as I understand
12 it that is not a pcb product; is that correct?

13 A. That is correct.

14 Q. Would it be the usual practice at
15 Monsanto before commissioning animal studies on a
16 product to make an effort to find out what
17 information was already available from other
18 sources?

19 A. Yes.

20 Q. Do you know whether there were any
21 requests to any other outside sources other than
22 the Department of Health, Education and Welfare
23 for information on pcb animal testing before the
24 Industrial Bio-Test studies were launched?

1 A. No, I do not.

2 Q. Okay.

3 And, again, this was at a time before you
4 were the pcb coordinator; is that correct?

5 A. That is correct.

6 Q. Okay.

7 Did I read the date of that into the
8 record. January 5, 1967. I don't think I did.

9 MR. FRUEHWALD: I believe it is 9.

10 MR. MC CONNELL: Okay.

11 Q. Before you became the pcb coordinator,
12 did you have any general knowledge about the cost
13 involved in conducting this kind of animal study?

14 A. No.

15 Q. Okay.

16 Would you take you a look at Exhibit 209,
17 please.

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 209 for identification.)

21 A. I have looked at it.

22 Q. That letter commissions, or, rather, that
23 letter encloses the plans that Industrial Bio-Test
24 generated for three studies on Aroclor 5460, is

1 that correct?

2 MR. FRUEHWALD: Are you representing this is
3 an Industrial Bio-Test document? It doesn't say
4 so on the document itself.

5 MR. MC CONNELL: That is where we got it from.
6 So I assume it is their file copy. I know Dr.
7 Fancher to be affiliated with Industrial Bio-Test
8 at that time.

9 Would you read the question back. I
10 forgot what I asked.

11 (The record was read.)

12 A. Your use of the word plans is similar to
13 the word protocol, which is the methodology,
14 procedure followed in conducting the tests.

15 Q. Okay.

16 The protocol describes what animal is to
17 be used, how many and in each group, what the
18 dosage level is going to be and what the
19 investigator is looking for with respect to
20 examining the treated animals?

21 A. Correct.

22 Q. Okay.

23 Now, can you tell me as you sit here
24 today what the reason was that prompted the

1 company to look at the health effects on animals
2 of the 5460 product?

3 A. I cannot.

4 Q. Okay.

5 Would one thing that Monsanto would want
6 to do in beginning a program of animal testing of
7 pcb's be to determine whether its selected
8 laboratory could duplicate results of experiments
9 that had been reported elsewhere?

10 A. That could be a reason, yes.

11 Q. Okay.

12 Do you know why the particular animals
13 that are shown in Exhibit 209 were chosen for
14 those studies?

15 A. No, I don't.

16 Q. Okay.

17 As I understand the process of animal
18 testing, one of the first things that needs to be
19 determined before extensive testing can be
20 undertaken is what is the lethal dose; that is,
21 how much can you give before you kill the test
22 animals; is that a fair statement?

23 A. Yes.

24 Q. So that you don't plan a long test and

1 end up killing off all the animals early in the
2 test, because the dose is too high?

3 A. That is correct.

4 Q. Okay.

5 Take a look at Exhibit 210, which is a
6 memo dated June 23, 1967 from Richard Palazzolo
7 to G. Jackson.

8 (The document above-referred to
9 was marked Bloomington Deposition
10 Exhibit No. 210 for identification.)

11 A. I have looked at it.

12 Q. Does that describe the type of study that
13 we just discussed that would be done to determine
14 what dosage levels might reasonably be employed in
15 a longer term animal study?

16 A. I don't know that it suggests anything to
17 me, because I don't know what acute toxicity study
18 was actually conducted, and whether these numbers
19 were arrived at mathematically or by actual
20 observations.

21 Q. Okay.

22 A. But that is the intent of this letter.

23 Q. Acute toxicity refers to the level of
24 material which when administered, whether by

1 feeding or otherwise, produces immediate
2 observable effects or effects observable in a
3 relatively short period of time; is that a fair
4 statement?

5 A. Yes.

6 Q. As opposed to a chronic study, which
7 looks for effects that occur when the product is
8 administered over a comparatively longer period of
9 time?

10 A. Yes.

11 Q. Okay.

12 So the acute studies ordinarily come
13 first in the sequence of events, in order to
14 determine the appropriate dose range for the
15 chronic studies?

16 A. Yes.

17 Q. Okay.

18 Take a look at Exhibit 211, if you would,
19 please.

20 (The document above-referred to
21 was marked Bloomington Deposition
22 Exhibit No. 211 for identification.)

23 A. All right.

24 Q. 211 is a memo also from Richard Palazzolo

1 to G. Jackson dated July 28, 1967 subject chick
2 edema study Monsanto Aroclor.

3 Do you know why it was that those studies
4 were being rerun as reflected in that memo?

5 A. No, I don't.

6 MR. FRUEHWALD: Off the record.

7 (Discussion had off the record.)

8 BY MR. MC CONNELL:

9 Q. Do you know whether it had been the
10 practice between Monsanto and Industrial Bio-Test
11 before the pcb studies were commissioned by
12 Monsanto for Industrial Bio-Test to forward to
13 Monsanto draft reports of the results of animal
14 studies on Monsanto products for comment and
15 criticism?

16 A. No. I do not.

17 Q. Do you know whether it had been the
18 practice between Monsanto and Industrial Bio-Test
19 before the pcb studies were commissioned by
20 Monsanto for Industrial Bio-Test to occasionally
21 make revisions to its study reports and forward
22 pages to Monsanto to be inserted in the original
23 copies of the report or to replace pages from the
24 original copies of the report?

1 A. I do not know.

2 Q. Okay.

3 As your understanding was then of the
4 proper procedures, your general understanding you
5 you have described or testified to of the proper
6 procedures for animal studies, would such a
7 substitution of pages in a report be proper?

8 A. Yes. My understanding, yes.

9 Q. Okay.

10 And under what circumstances?

11 A. When the professional toxicologist is
12 managing the study for Monsanto's -- of Monsanto's
13 chemicals, he does get involved in a dialogue with
14 the toxicologists and technicians and others in
15 the laboratories. To this day that dialogue still
16 takes place as to what is observed and what
17 conclusions are drawn.

18 Q. Between the Monsanto toxicologist and the
19 outside laboratory?

20 A. Yes.

21 Q. Okay.

22 Does that dialogue commonly include the
23 exchange of draft reports and revisions to the
24 draft reports, if you know?

1 A. In every instance that I have been close
2 to since I was assigned pcb coordinator, that has
3 been my observation, yes.

4 Q. Okay.

5 Have you ever observed outside the pcb
6 studies a circumstance where after new pages were
7 substituted in a draft report, the old pages would
8 be destroyed?

9 A. I was never that close to the paper
10 handling, no.

11 Q. Okay.

12 According to your knowledge then, and I
13 will ask you about your knowledge now.

14 According to your knowledge then; that
15 is, back in the early seventies, would it have
16 been the preferred practice to keep the earlier
17 version as well as the later version of those
18 reports on file?

19 A. To my knowledge, the various drafts, can
20 be anywhere from one to a dozen, are discarded
21 when the final draft is published.

22 Q. And that is still the practice at
23 Monsanto?

24 A. To my understanding, yes.

1 Q. Do you know if that is also the practice
2 at the outside laboratories?

3 A. That is my understanding.

4 Q. Okay.

5 And is that the case even with respect to
6 those products where the tests are done in
7 compliance with government regulations?

8 A. Yes.

9 Q. Is it a common practice at Monsanto to
10 pay in advance for animal studies on its products
11 by outside laboratories?

12 A. Yes.

13 Q. Why is that?

14 A. I don't know.

15 Q. Take a look at what the court reporter
16 has marked as Exhibit 212 which is a letter dated
17 October 20, 1967 from J. C. Calandra to Dr. Hunt
18 at Monsanto,

19 (The document above-referred to
20 was marked Bloomington Deposition
21 Exhibit No. 212 for identification.)

22 A. I have seen it.

23 Q. Does that reflect one of the
24 substitutions of pages in a draft report that we

1 have discussed?

2 A. That is what I would assume from the
3 wording of this letter.

4 Q. And that refers to a 90-day sub-acute
5 oral toxicity study of Aroclor 5460 in albino
6 rats?

7 A. Yes.

8 Q. Take a look at Deposition Exhibit 213,
9 which is a document consisting of 26 pages,
10 including a cover memo, which is a report to
11 Monsanto Company, Industrial Bio-Test Number 5313,
12 90-day subacute oral toxicity of Aroclor 5460 -
13 albino rats, and I will ask you if you can
14 determine from reviewing 213 whether that version
15 of the report represents the report before or
16 after the substitution of the pages that is
17 referred to in 212?

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 213 for identification.)

21 A. I am looking through this multi-page
22 report. I find that page 29 is missing, which is
23 referred to in the previous exhibit we discussed.

24 Q. In fact, it ends on page 25, does it not?

1 A. That's correct.

2 Page 24 appears to be a transmittal --
3 not a transmittal so much as a reference to
4 tables, which -- one of which appears on page 25
5 and the second table referenced is missing.

6 As to whether the correction referred to
7 in the previous letter is included in this
8 document, the dates of the two would imply to me
9 that the document which is dated October 18 does
10 not have the correction referred to in the letter
11 dated October 20.

12 Q. Okay.

13 Would it ordinarily be the practice at
14 Monsanto in the case of such a correction or
15 substitution of pages in a report, to change the
16 date on the report to reflect the date of the
17 correction?

18 A. Yes.

19 Q. Take a look at what the court reporter
20 has marked as -- before we do this. It is 11:15.

21 (Discussion had off the record.)

22 Take a look at what has been marked as
23 Exhibit 214, which is a memo which looks like it
24 is dated September 9, 1967, although the month is

1 very unclear, to Dr. Kodras, K-o-d-r-a-s, from Al
2 Wolvin, W-o-l-v-i-n, subject: J5315.

3 (The document above-referred to
4 was marked Bloomington Deposition
5 Exhibit No. 214 for identification.)

6 One of the things that is referred to in
7 that document is transmission of blank peracardial
8 edema sheets.

9 Why would blank sheets of that nature be
10 transmitted to Monsanto, if you know?

11 MR. FRUEHWALD: To Monsanto?

12 MR. MC CONNELL: If they were.

13 That is not a fair question because it
14 just says they are transmitted, it doesn't really
15 say to whom.

16 MR. FRUEHWALD: Again, I don't think any of us
17 is familiar with these documents, but it appears
18 to me they are being transmitted within IBT.

19 MR. MC CONNELL: You are right, I will
20 withdraw the question.

21 Okay, I have a different question about
22 this, though.

23 Q. This refers again to a repeat study. Do
24 you know why the study, the chicken study on

1 Aroclor 5460 was repeated?

2 A. I do not.

3 Q. Let's just let the record show that we
4 have already marked as Exhibit 215 a document
5 which appears to me to be an identical copy of
6 what has already been marked as 212. Although the
7 copy that was marked as 212 is of somewhat better
8 quality. So we will not use it.

9 I am not going to try and renumber all of
10 these.

11 (The document above-referred to
12 was marked Bloomington Deposition
13 Exhibit No. 215 for identification.)

14 Q. I am going to show you a document that
15 has been marked as Exhibit 216, which is a memo to
16 Greenie Jackson from R. Kodras, dated October 23,
17 1967 and I direct your attention particularly to
18 the numbered paragraph 2.

19 It appears to me that the rest of this
20 document refers to studies IBT was doing for other
21 customers or on other substances, but paragraph 2
22 refers to J5314, Monsanto's Aroclor study.

23 Can you read that?

24

1 (The document above-referred to
2 was marked Bloomington Deposition
3 Exhibit No. 216 for identification.)

4 A. I have looked at it.

5 Q. Okay.

6 Can you tell whether the directions that
7 are included in paragraph 2 represent a change
8 from the original protocol of the study or whether
9 that is just carrying out what was originally
10 planned to be done?

11 A. I have no way of knowing.

12 Q. Okay.

13 During your experience at Monsanto
14 dealing with Industrial Bio-Test on the animal
15 studies, do you know whether it was a practice
16 from time to time to change the protocol of the
17 study in the middle of the course of the study
18 somewhere?

19 A. On certain occasions that would take
20 place, depending on the results that were being
21 observed as the study progressed.

22 Q. Why might such a change be made?

23 A. Oh, there are several reasons. One is
24 the animals might be dying off unexpectedly

1 because of the high dosage. Or an observation
2 might be made of an effect that could better be
3 studied under a different test. So you terminate
4 the old test and design a new one to pursue that
5 observation.

6 Sometimes the animals in the test
7 developed diseases that were not anticipated.
8 This includes not only those being exposed to
9 chemicals, but the controls. So the directors of
10 the study have to make decisions on how much of
11 the test can be salvaged and results be acceptable
12 or how much must be altered, how much must be
13 terminated.

14 Those are some examples of the kinds of
15 things that happen.

16 Q. Okay.

17 In the second example you gave, that is,
18 an effect is observed which could better be
19 studied under a different test. Would the
20 appropriate procedure be to terminate the
21 experiment that was underway and start the new
22 test with the new group of animals, or would it
23 ever be appropriate to use the animals who have
24 been on the old test for a period of time?

1 A. That is a judgment call of the study
2 director. But it has been my observation they
3 prefer starting with a new group of animals that
4 are exposed under controlled conditions, rather
5 than have animals that have been previously
6 exposed and an additional study be made, an
7 additional exposure be imposed which would
8 complicate the study.

9 Q. So it is less complicated to start over
10 with fresh animals?

11 A. Yes.

12 Q. I am going to show you a document that
13 has been marked as Exhibit 217, dated October 27,
14 1967 from R. Kodras to Greenie Jackson confirming
15 a telephone conversation of October 25, 1967. I
16 will ask you to review that.

17 (The document above-referred to
18 was marked Bloomington Deposition
19 Exhibit No. 217 for identification.)

20 A. I have reviewed Exhibit 217.

21 Q. In the last paragraph on that document
22 which is the paragraph numbered 3, I take that to
23 be a suggestion that the possibility exists that
24 inappropriate technique was used in creating the

1 blood smear slides in that dog study, too much
2 pressure was applied, it couldn't be read. Does
3 that agree with your understanding?

4 A. That is what I would infer from the
5 words.

6 Q. What steps, if any, could be taken to
7 correct that situation with respect to the -- let
8 me back up a little bit.

9 As I understand the studies that were
10 done with the dogs, blood samples were drawn at
11 different times of the study?

12 MR. FRUEHWALD: Excuse me, this is a 1967
13 study of some other product. I don't think this
14 has to do with any of our products, or it doesn't
15 indicate that it does.

16 Are you representing that it does?

17 MR. MC CONNELL: No.

18 I am interested in the techniques
19 employed by the people who did all of the dog
20 studies.

21 MR. FRUEHWALD: It not sure Mr. Papageorge is
22 the man to tell you about that, you but you can
23 ask the question.

24 MR. MC CONNELL: Let me ask the same question

1 a different way.

2 Q. During the time that you were dealing
3 with Industrial Bio-Test on the pcb studies, one
4 of the species of animals that was used was Beagle
5 dogs; is that correct?

6 A. That is correct.

7 Q. And they were housed at a farm in
8 Wisconsin?

9 A. Not the dogs that I saw, no.

10 Q. Okay.

11 Where were the dogs that you saw?

12 A. In the IBT laboratories in Northbrook.

13 Q. In Northbrook?

14 A. Yes.

15 Q. Okay.

16 One of the things that was done in the
17 course of the dog study was that blood was drawn
18 at different times and examined for various
19 characteristics; is that correct?

20 A. Yes.

21 Q. Okay.

22 Do you know who the Industrial Bio-Test
23 technicians were that were involved in the blood
24 tests on the dogs?

1 A. No.

2 Q. Okay.

3 Did anybody ever bring to your attention
4 problems with laboratory technique in the blood
5 cell counts in the Industrial Bio-Test dog
6 studies?

7 A. No.

8 Q. In the case of the paragraphs following
9 the numbered heading 2, J5314 Monsanto's Aroclor
10 study, that study was done on chickens; is that
11 correct?

12 A. It is not specific. But the chicken was
13 the typical bird used.

14 Q. Okay.

15 Take a look at Exhibit 218, which is a
16 letter to Dr. Hunt from Rudolph Kodras, dated
17 October 27, 1967.

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 218 for identification.)

21 Do you know whether the study that is
22 referred to in that letter was one of the studies
23 involving pcb products?

24 A. No, I don't.

1 Q. Why would Monsanto be interested in the
2 conditions under which the birds were housed and
3 the eggs incubated?

4 A. We are always interested in following
5 proper laboratory procedures, so that the results
6 obtained from the study are not affected by other
7 conditions in the laboratory which are brought
8 about by improper care, improper procedures.

9 Q. Okay.

10 The control animals, whether they be
11 chickens or rats or mice or fish, whatever, and
12 the animals being tested by exposure to the
13 chemical should all be housed under the identical
14 conditions, should they not, in order for the
15 experiment to be valid?

16 A. That is my understanding, yes.

17 Q. Okay.

18 Was it the fact that during these studies
19 on pcb's that Industrial Bio-Test did for Monsanto
20 that some of the tissues from the study animals
21 and the control animals were sent to Monsanto's
22 own laboratories for pcb residue analysis?

23 A. Yes.

24 Q. Why was that done?

1 A. This was done to determine if pcb's
2 accumulate in animals. If so, which of the pcb's
3 remain as residues.

4 It was part of the biodegradation study
5 that Monsanto had ongoing.

6 Q. Perhaps my question was inartfully
7 phrased.

8 What I am trying to get at is why that
9 was done at Monsanto rather than Industrial
10 Bio-Test?

11 A. At that point in time, Monsanto was one
12 of the -- had one of the few laboratories that had
13 the capability of analyzing pcb's at these low
14 levels. But Industrial Bio-Test laboratories did
15 not have that expertise.

16 Q. I am going to show you a memo that has
17 been marked as 219 dated November 16, 1967 to Dr.
18 Kodras from Al Wolvin. I will ask you to take a
19 look at that.

20 (The document above-referred to
21 was marked Bloomington Deposition
22 Exhibit No. 219 for identification.)

23 A. I have reviewed it.

24 Q. Why would the path sheets on the animals

1 and the actual tissue samples be sent separately,
2 if you know?

3 A. I don't know.

4 Q. Would it be a better practice to have the
5 documentation and the samples all packaged
6 together?

7 A. I don't know.

8 Q. Did there come a time in the course of
9 the Industrial Bio-Test studies when a great deal
10 of confusion arose about tissue samples that had
11 been transmitted to Monsanto but not received or
12 couldn't be located in Monsanto's laboratory?

13 A. There was an incident when that occurred,
14 yes.

15 Q. Okay.

16 Do you know if that was a result of the
17 fact that the documents were transmitted
18 separately from the samples?

19 A. No, I do not.

20 Q. Do you know if that situation was ever
21 resolved to Monsanto's satisfaction?

22 A. Yes.

23 Q. Was it?

24 A. We got other samples.

1 Q. Okay.

2 Deposition Exhibit 220 is a memo from R.
3 Kodras to C. W. Berndt, dated December 6, 1967.

4 (The document above-referred to
5 was marked Bloomington Deposition
6 Exhibit No. 220 for identification.)

7 Do you know why the report on this study
8 J5314 was to be held?

9 A. No.

10 Q. To your knowledge, did Monsanto ever
11 terminate a study at Industrial Bio-Test and ask
12 for Industrial Bio-Test not to submit a report on
13 the study?

14 A. I am not aware of any.

15 Q. Was it ordinarily the practice then if a
16 study were terminated that there would be a report
17 on what had been done up to the point of
18 termination?

19 A. That has been my experience.

20 Q. So as far as you know, there should be no
21 Industrial Bio-Test animal study on pcb's which
22 went undocumented?

23 A. I am not aware of any.

24 Q. Okay.

1 Was it the practice during the time that
2 you were the pcb coordinator between Monsanto and
3 Industrial Bio-Test that all of the raw data from
4 the studies, in addition to the reports
5 themselves, was transmitted to Monsanto either on
6 paper or in the form of microfilm or microfiche?

7 A. I don't know if all of it was
8 transmitted, no. I don't know.

9 Q. Was there ordinarily some considerable
10 back up documentation that came along with or in
11 addition to the report, that came to Monsanto?

12 A. I know some data was sent forward. I
13 don't know if I can define it as considerable or
14 all.

15 Q. In the context of this dialogue which you
16 described between Monsanto's own toxicologist and
17 the outside laboratory, wouldn't it be important
18 for the Monsanto toxicologist who was evaluating
19 the draft of a report to also have the underlying
20 data that supported it?

21 A. It would be important and in many
22 instances this is done at the laboratory. The
23 Monsanto toxicologist goes to the laboratory.

24 Q. Okay.

1 And looks through their files?

2 A. Correct.

3 Q. At their laboratory notebooks and so
4 forth?

5 A. Right.

6 Q. Okay.

7 So one way or the other, he has access to
8 the raw data supporting the report?

9 A. Yes.

10 Q. Okay.

11 Is it the routine practice, then, for the
12 Monsanto toxicologist who is supervising or
13 coordinating the outside study to at least spot
14 check the raw data with the corresponding report?

15 A. That is my observation, yes.

16 Q. I will show you what has been marked as
17 Deposition Exhibit 221, which appears to me, to
18 the extent that it is possible to determine it, an
19 internal Monsanto memorandum from Elmer Wheeler to
20 W. R. Richard, with a long list of other people.
21 Subject minutes of our discussions with Dr.
22 Calandra dated December 9, 1968.

23 Take a look it that. But I want to
24 particularly direct your attention to the last

1 paragraph on the second page of the two-page
2 document which is numbered 11.

3 (The document above-referred to
4 was marked Bloomington Deposition
5 Exhibit No. 221 for identification.)

6 A. I have reviewed Exhibit 221.

7 Q. Okay.

8 My question is paragraph 11 on the second
9 page refers to monthly meetings during the course
10 of the studies. Did those monthly meetings
11 continue throughout the course of the Industrial
12 Bio-Test animal studies on pcb's to your
13 knowledge?

14 A. No. They did not.

15 Q. When did they stop being monthly?

16 A. I do not know.

17 Q. Did there continue to be periodic
18 meetings at some interval other than monthly
19 throughout the course of the pcb project?

20 A. Yes.

21 Q. So there were meetings, but they are less
22 frequent than monthly?

23 A. Correct.

24 Q. Okay.

1 I have marked as 222 another Monsanto
2 memorandum from W. R. Richard to E. Wheeler with a
3 list. The typed date on it is December 9, 1968
4 consisting of one page. I ask you to review that.

5 (The document above-referred to
6 was marked Bloomington Deposition
7 Exhibit No. 222 for identification.)

8 A. I have reviewed it.

9 Q. To your knowledge, was there ever a
10 written program objectives created for the pcb
11 animal studies at Industrial Bio-Test?

12 A. No.

13 Q. You don't know or there was not?

14 A. There was no program that I am aware of
15 prepared, a written.

16 Q. There was a program but it wasn't
17 written, is that what you are telling me?

18 A. That is my answer.

19 Q. Any particular reason why it wasn't
20 committed to writing?

21 A. I don't know.

22 Q. Did someone convey to you when you became
23 the pcb coordinator for Monsanto what the program
24 objectives were with respect to the IBT animal

1 testing?

2 A. Yes.

3 Q. What was the understanding that you were
4 given of the program objectives?

5 A. To determine the effects of pcb's on
6 mammals and birds, to determine the effect on the
7 reproduction of birds. The effect on egg shell
8 thickness, viability of the eggs. That was it.
9 Also reproduction of mammals.

10 Q. Were there some fish studies as well?

11 A. Fish studies were never initiated.

12 There was some discussion along those
13 lines, but the studies were not initiated because
14 the government laboratories were very active in
15 this area, and we felt that they were more
16 capable.

17 Q. More capable than Monsanto or more
18 capable than Industrial Bio-Test, or both?

19 A. More capable than any commercial
20 laboratories that Monsanto was familiar with.

21 Q. The first numbered paragraph 1 on Exhibit
22 222 refers to a determination whether Jensen and
23 company, I take that to be a reference to the
24 Swedish researcher; is that correct?

1 A. That is correct.

2 Q. Really have Aroclor on not in the tissues
3 of birds.

4 Do you know whether there was ever a
5 conclusion drawn as to whether or not the Jensen
6 studies did in fact find Aroclor?

7 A. Yes. We finally agreed with his
8 findings.

9 Q. The second paragraph of 222 refers to
10 running a material balance on Aroclor to find out
11 where it ends up.

12 Was that done in the course of the
13 Industrial Bio-Test animal studies?

14 A. No.

15 Q. What is a material balance?

16 A. It is a mathematical approach to
17 establish or equate the material introduced into
18 an animal or in the environment and what routes it
19 takes and where do the various parts of the
20 original material end up.

21 Q. Okay.

22 Is there some reason why that wasn't
23 done?

24 A. I don't know.

1 Q. Could that have been done in the course
2 of the tissue sample analysis that Monsanto did
3 perform at its own laboratories on the samples
4 that were supplied by Industrial Bio-Test, if you
5 know?

6 A. It could not be done, because all the
7 tissues had was the residual material. It did not
8 help explain where the rest of the material went
9 and what form it took.

10 Q. In order to do that, you would have to
11 collect the excreta during the course of the
12 study?

13 A. Excreta and as well as the exhalation
14 from the lungs, all outputs from the animal, and
15 you must also know what to look for, which was the
16 complicated part.

17 Q. In other words, what the metabolic
18 product is as well as what the initial material
19 is?

20 A. That is correct.

21 Q. Okay.

22 So it wasn't done because of the
23 complicated and expensive nature of the
24 undertaking, or is that a fair assumption?

1 A. I think complication was the obstacle.

2 Q. Okay.

3 Paragraph 3 in 222 refers to a
4 determination whether Aroclor is an enzyme inducer
5 which affects steroids and calcium metabolism, et
6 cetera. I really don't know what I am saying
7 here, but you can clarify.

8 Do you know whether that was ever done?

9 A. No.

10 Q. Either one of those things?

11 A. I do not know.

12 Q. What is the significance of the issue
13 whether Aroclor is an enzyme inducer, if you know?

14 A. I really don't know.

15 Q. Does that have something to do with
16 causation of cancer to your knowledge?

17 A. No.

18 Q. You don't know or it doesn't have
19 anything to do with that?

20 A. My limited understanding tells me that it
21 affects the liver in such a way that the enzymes
22 the liver produces are changed, either in amount
23 or type. That is all I can --

24 Q. And the liver is one of the body organs

1 that is involved in detoxification of whatever you
2 might take in, or the animal might take in; is
3 that correct?

4 A. That is my understanding.

5 Q. Paragraph 4 says keep track of what
6 government research labs are doing in the way of
7 testing, plus interpret their results for
8 Monsanto.

9 Was there a program put into effect to
10 follow the results reported by government labs?

11 A. Yes.

12 Q. Who was in charge of that?

13 A. Mr. Wheeler and Dr. Scott Tucker were the
14 principal Monsanto representatives.

15 Q. They were both in the medical department?

16 A. No. In the research department.

17 Q. In the research department. Okay.

18 A. I am sorry. Mr. Wheeler is medical and
19 Dr. Tucker is research.

20 Q. He was basically in charge of the
21 analytical laboratories in the research
22 department?

23 A. Yes.

24 Q. Paragraph 5 goes on to refer in some more

1 detail to following the government lab work.

2 I take it that Mr. Wheeler and Dr. Tucker
3 would have been responsible for that?

4 A. Yes.

5 Q. As well.

6 And finally the numbered paragraph 6
7 refers to contacts with Bayer in Germany and
8 keeping track of the Japan incident through KKK?

9 MR. FRUEHWALD: MMK.

10 MR. MC CONNELL: MMK.

11 Q. MMK is a Monsanto subsidiary in Japan, I
12 take it?

13 A. It is Monsanto/Mitsubishi joint venture
14 in Japan.

15 Q. Okay.

16 Let me ask you two different questions.

17 Was there contact with Bayer in Germany,

18 if you know?

19 A. Yes.

20 Q. Who handled that?

21 A. Mr. Wheeler was the principal contact,
22 although three of us paid a personal visit to the
23 Bayer offices.

24 Q. You and Mr. Wheeler and who else?

1 A. Dr. Keller. Robert Keller.

2 Q. Okay.

3 What did you find out in the context of
4 that visit to Bayer?

5 A. At that time they were aware of the
6 findings of pcb's, now this is in 1970.

7 Q. Okay.

8 The visit was in 1970?

9 A. Yes.

10 Q. What month, if you if you recall?

11 A. April-May, 1970. They had started some
12 limited activities in their analytical
13 laboratories. They sensed no particular reason for
14 having concerns and had no plans for conducting
15 any toxicity studies.

16 Q. By the time of that visit in April or May
17 of 1970, Monsanto's toxicity studies at Industrial
18 Bio-Test were already underway?

19 A. Correct.

20 Q. Who was responsible for the Japanese
21 contact through the affiliate in Japan?

22 A. That was Mr. Wheeler.

23 Q. Do you know what the results of that
24 were?

1 Let me ask the question a different way.

2 Didn't we already talk about a memorandum
3 from somebody in Japan that said -- and I am
4 paraphrasing now -- that it was curtains for pcb
5 or the end was coming near?

6 MR. FRUEHWALD: You were referring to one to
7 Mr. Benignus, much later in the game than any of
8 this discussion, as I recall. But it was not
9 during Mr. Papageorge's deposition. It was during
10 Mr. Benignus' deposition.

11 MR. MC CONNELL: You are probably right. It
12 all tends to run together in my brain. All right.

13 Q. Then tell me what your recollection is,
14 if any, of the results of the contact with Japan
15 as referred to in this December 1968 memo?

16 A. This refers to an accident that happened
17 where pcb's got into some rice brand oil.

18 Q. Is that the so-called Yu Sho incident?

19 A. This is the Yu Sho incident.

20 Q. And was Mr. Wheeler able to learn the
21 details of that incident in this follow up?

22 A. Our efforts through our MMK
23 representative were not productive.

24 Q. Okay.

1 Were other efforts made?

2 A. Yes.

3 Our primary source of information came
4 from Japanese representatives who attended
5 meetings in the United States.

6 Q. Were these specific meetings related to
7 pcb's or were these other meetings in which you
8 were able to contact the Japanese representatives?

9 A. These were meetings only to discuss
10 pcb's.

11 Q. Okay.

12 Take a look at the two-page letter that
13 has been marked as Exhibit 223 dated December 20,
14 1968 to Dr. Calandra from Elmer Wheeler.

15 (The document above-referred to
16 was marked Bloomington Deposition
17 Exhibit No. 223 for identification.)

18 A. I have reviewed it.

19 Q. Were those studies that are referred to
20 in Exhibit 223 among the efforts that were
21 undertaken to determine whether in fact it was pcb
22 rather than DDT or some other substance that was
23 found in the Swedish tissue analysis?

24 A. That is a part of the purpose.

1 Q. Okay.

2 What is the rest of the purpose?

3 A. To establish if pcb's themselves create
4 any effects.

5 Q. Would it be fair to characterize the
6 studies described in Exhibit 223 as short-term?

7 A. Yes.

8 Q. The DDT and toxaphane and chlorinated
9 naphthalenes that are referred to in Exhibit 223,
10 were those products that were produced by
11 Monsanto?

12 A. No.

13 Q. So they had to be obtained from from some
14 other source?

15 A. Yes.

16 Q. I will show a letter that has been marked
17 as Exhibit 224 dated February 10, 1969 to Dr.
18 Fancher from Elmer Wheeler.

19 (The document above-referred to
20 was marked Bloomington Deposition
21 Exhibit No. 224 for identification.)

22 A. I have reviewed it.

23 Q. It would be necessary I take it for Dr.
24 Tucker and his lab analysts to have samples of the

1 starting material that was mixed with the feed in
2 order to compare with the analysis of the tissues
3 that were received at the end of the study, to see
4 what they are finding. Is that a fair statement?

5 A. Yes.

6 Q. Showing you what has been marked as
7 Exhibit 225, which is an Industrial Bio-Test memo
8 from Richard J. Palazzolo to Al Wolvin dated
9 February 26, 1969 subject Monsanto J 7010, I will
10 ask you to take a look at that.

11 (The document above-referred to
12 was marked Bloomington Deposition
13 Exhibit No. 225 for identification.)

14 A. I have reviewed it.

15 Q. It is my understanding that according to
16 that memorandum, the way Monsanto wanted to
17 receive the tissues samples from sacrifice birds
18 was that the organs should be removed and packed
19 separately; that is, the individual organ from
20 each individual bird should come as a separate
21 sample.

22 Is that your understanding, with the
23 exception of fat?

24 A. I don't know that Monsanto asked for

1 that. This inter-office memorandum does not
2 indicate whose --

3 Q. Whose idea that was?

4 A. Whose idea that was.

5 Q. In your understanding of the analysis
6 that Dr. Tucker was going to do on the tissue
7 samples from these studies, would it be important
8 to use individual samples rather than a pooled
9 sample?

10 A. This is dependent on the purpose of the
11 study.

12 And pooled samples sometimes do serve a
13 purpose to get a good first look. Then you can
14 zero in in more detail later to the specifics.

15 Q. The difficulty or the difference, I
16 guess, between a pooled sample and individual
17 samples is that all you get when you analyzed a
18 pooled sample is an average figure?

19 A. True.

20 Q. It won't tell you whether one of the
21 animals had a higher level and another one had a
22 lower level?

23 A. That's right.

24 Q. So you would expect in the ordinary

1 sequence of events in a study of this nature that
2 the earlier studies might have involved pooled
3 samples and the later ones involved individual
4 samples, rather than the other way around?

5 A. That would be a normal approach.

6 Q. Exhibit 226 is a memo dated March 19,
7 1969 from J. Plank to MLK, subject Aroclor tissue
8 residue studies B7009 and J7010 - Monsanto.

9 I will ask you to look at that.

10 (The document above-referred to
11 was marked Bloomington Deposition
12 Exhibit No. 226 for identification.)

13 A. I have reviewed it.

14 Q. Do you know why it was that Dr. Tucker
15 was particularly interested in getting the chicken
16 tissue samples?

17 A. No, I don't.

18 Q. What is Halowax 1014, if you know?

19 A. It is a paraffin that has been
20 chlorinated, I don't recall the company but they
21 sell it under the trademark Halowax.

22 Q. It is not Monsanto product?

23 A. That is correct.

24 Q. Was the study that is referred to in

1 Exhibit 226 then also part of the comparative
2 analysis, that is, to see what the end products in
3 animal tissues were of feeding various chlorinated
4 organic compound?

5 A. Yes.

6 Q. Okay.

7 That ultimately led to the conclusion
8 that the Swedish researchers had in fact found
9 pcb's rather than the residue of something else?

10 A. That helped lead to that conclusion, yes.

11 Q. What else went into leading to that
12 conclusion, other than the results of these
13 comparative studies?

14 A. Discussions with government laboratories
15 using -- the laboratories used the methodology
16 that the Swedish investigators used.

17 We concluded that using the methodologies
18 developed by the Swedish investigators, one could
19 detect pcb's in tissue and samples out of the
20 environment.

21 Q. Were the techniques that the Swedish
22 investigators used different from the techniques
23 that were then in effect at Monsanto's laboratory?

24 A. Yes.

1 Q. Okay.

2 So Dr. Tucker was trying out something
3 that was new to him at that point?

4 A. Correct.

5 MR. MC CONNELL: Okay. Let's take a break.
6
7
8

9 (Whereupon a recess
10 was taken.)
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IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

THE CITY OF BLOOMINGTON, INDIANA;)
THE UTILITIES SERVICE BOARD OF)
BLOOMINGTON, INDIANA; and MONROE)
COUNTY, INDIANA,)

Plaintiffs,)

vs.)

Civ No.
IP 83-9-C

WESTINGHOUSE ELECTRIC CORPORATION,))
a Pennsylvania corporation; and)
MONSANTO COMPANY, a Delaware)
corporation,)

-----Defendants-----)

The continued deposition of W. B. PAPAGEORGE,
called for examination by the Plaintiffs, pursuant
to notice and pursuant to the provisions of the
Federal Rules of Civil Procedure of the United
States District Courts, pertaining to the taking
of depositions for the purpose of discovery, taken
before Arnold N. Goldstine, a Notary Public and
Certified Shorthand Reporter within and for the
County of Cook and State of Illinois, at Three
First National Plaza, Chicago, Illinois, on
October 15, 1986, at the hour of one o'clock p.m.

1
2 APPEARANCES:3 Mr. James G. McConnell
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9 -and-

10 Mr. Geoffrey M. Grodner
11 Law Offices of Geoffrey M. Grodner
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13 Suite 100
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16 Plaintiffs;17 Mr. Michael R. Fruehwald
18 Barnes & Thornburg
19 1313 Merchants Bank Building
20 Indianapolis, Indiana 4620421 appeared on behalf of Defendant
22 Monsanto Company.
23
24

1 MR. MC CONNELL: Back on the record.

2 WILLIAM B. PAPAGEORGE,
3 having been previously duly sworn,
4 was examined and testified as follows:

5 DIRECT EXAMINATION (CONTINUED):

6 BY MR. MC CONNELL:

7 Q. Mr. Papageorge take a look at Exhibit 227
8 which is a letter to Dr. Calandra from Elmer
9 Wheeler dated April 15, 1969 and also includes a
10 one page attachment.

11 As of the date of that letter, the first
12 two studies listed on the attachment had already
13 been done; is that correct?

14 (The document above-referred to
15 was marked Bloomington Deposition
16 Exhibit No. 227 for identification.)

17 A. I cannot tell from reading the
18 attachment.

19 Q. Well, we have already talked in some
20 earlier exhibits about the bird studies that
21 compared --

22 A. I am sorry, there is an expression
23 completed, the same as above. So I have to infer
24 that that, too, you are right.

1 Q. Okay.

2 The next two, numbers 3 and 4 are the
3 fish studies which you have already testified were
4 deferred; is that correct?

5 A. It is my understanding the fish studies
6 were deferred.

7 This document shows at least one of these
8 studies underway.

9 Q. Okay.

10 A. I do not understand that.

11 Q. And the letter which is the first page of
12 the Exhibit authorizes studies 5 through 9 to be
13 initiated?

14 A. Yes.

15 Q. And to your knowledge, were all of those
16 studies 5 through 9 ultimately done?

17 A. Study number 9 with reference to calcium,
18 Ca and P content. That was not done.

19 Q. Okay.

20 That is under the chicken reproduction
21 study?

22 A. Yes.

23 Q. There was a chicken reproduction study,
24 though, was there not?

1 A. Yes.

2 Q. With you it didn't involve calcium and?

3 A. Phosphorus.

4 Q. Phosphorus.

5 Q. And study number 9 was not done.

6 Q. The duck study wasn't done at all?

7 A. That's right.

8 Q. Why was that?

9 A. I am under the understanding that they
10 missed the egg laying season for Mallards and
11 could not get the young birds to conduct their
12 study.

13 Q. Ducks only have offspring once a year?

14 A. Yes.

15 Q. As opposed to chickens which lay eggs
16 everyday, I guess. Okay. That makes sense to me.

17 Take a look at Exhibit 228, which is a
18 letter from Dr. Fancher to Mr. Wheeler dated May
19 23, 1969.

20 (The document above-referred to
21 was marked Bloomington Deposition
22 Exhibit No. 228 for identification.)

23 A. I have reviewed it.

24 Q. The first paragraph of that letter refers

1 to adding animals to various groups in the study.

2 Do you see that reference?

3 A. Yes.

4 Q. I take it that that letter is referring
5 to a change in the protocol before the study was
6 begun?

7 A. Yes.

8 Q. Okay.

9 Rather than adding animals to the study
10 in the middle of the study?

11 A. That is correct.

12 Q. In your understanding of the way these
13 animal studies are done, would it ever be
14 appropriate to add animals, new animals, to a
15 study that had been underway for a period of time?

16 A. I don't know of any situation where it
17 would be appropriate.

18 Q. And as I understand Exhibit 228, the
19 reason for the suggested addition of additional
20 animals to the rat study was to allow for an
21 interim sacrifice?

22 A. Yes.

23 Q. Okay.

24 And still have an appropriate number of

1 animals left at the end of the study?

2 A. That is correct.

3 Q. Okay.

4 Take a look at 229, which is a memo dated
5 June 10, 1969 from Dr. Fancher to MLK, JP and CWB,
6 subject Monsanto Aroclor studies in rats.

7 I will ask you if that indicates to you
8 that the additions which were suggested in 228
9 were in fact made before the studies began?

10 A. This inter-office memo does suggest that,
11 yes.

12 Q. I show you a letter that has been marked
13 as Exhibit 230, which is dated June 12, 1969 to
2 Dr. Fancher from Elmer Wheeler.

15 (The document above-referred to
16 was marked Bloomington Deposition
17 Exhibit No. 229 for identification.)

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 230 for identification.)

21 A. I have reviewed it.

22 Q. I take it that Exhibit 230 is the written
23 authorization for adding the extra rats that are
24 discussed in Exhibits 228 and 229; is that

1 correct?

2 A. Yes, that's correct.

3 Q. It also refers to the procedures for
4 Industrial Bio-Test to bill Monsanto for these
5 studies.

6 Is there anything about the billing
7 procedures that are described in Exhibit 230 that
8 was different from your understanding of the
9 ordinary arrangements between Industrial Bio-Test
10 and Monsanto?

11 A. No. It strikes me as being rather
12 typical.

13 Q. Take a look at Exhibit 231, which is a
14 one-page report from the Wisconsin Animal Health
15 Laboratories dated June 24, 1969 from G. S.
16 Jacobsen, that is s-e-n, poultry epidemiologist,
17 to Dr. D. H. Jenkins.

18 I will ask you to review that.

19 (The document above-referred to
20 was marked Bloomington Deposition
21 Exhibit No. 231 for identification.)

22 A. I have reviewed it.

23 Q. Have you ever seen that document before
24 today?

1 A. No, sir.

2 Q. Did anyone ever tell you at any time
3 during the course of your involvement as pcb
4 coordinator for Monsanto that the chickens which
5 had been used in the Industrial Bio-Test study
6 were infested with Marek's disease?

7 A. No.

8 Q. Have you ever seen at any time any report
9 on any of the chicken studies done by Industrial
10 Bio-Test which reflects the fact that the chickens
11 used in the study were diseased?

12 A. No.

13 Q. Did anyone ever tell you at any time that
14 those Industrial Bio-Test chicken studies were
15 perfomed with diseased birds?

16 A. No.

17 Q. If you had known at the time you
18 received, Monsanto received the report of the
19 chicken studies that the study was performed with
20 diseased birds, would that have been an acceptable
21 study as far as you were concerned; as far as you
22 were concerned, you individually?

23 A. I would have to know more about the
24 extent of the disease and what impact it would

1 have on a study, and I would have to rely on the
2 judgment of the -- those that are expert in this
3 field.

4 Q. Meaning the toxicologists at Monsanto; is
5 that right?

6 A. Yes.

7 Q. In any event, if in fact the study which
8 was reported to you was done on a colony of
9 diseased chickens, you would expect the report to
10 reflect that fact, would you not?

11 A. Yes.

12 Q. Take a look at Exhibit 232, which is
13 dated July 21, 1969 to Dr. Fancher from D. H.
14 Jenkins.

15 (The document above-referred to
16 was marked Bloomington Deposition
17 Exhibit No. 232 for identification.)

18 A. I have reviewed it.

19 Q. Did any of the information that is
20 reflected on Exhibit 232 ever come to your
21 attention in the course of your work as the pcb
22 coordinator for Monsanto?

23 A. No.

24 Q. To your knowledge, was the information

1 known to anybody else at Monsanto?

2 A. Not that I know of.

3 Q. Who is Paul Wright?

4 A. Paul Wright is a toxicologist, a former
5 employee of Monsanto, and also former employee I
6 understand of Bio-Test Laboratories.

7 Q. Okay.

8 To your knowledge, did he work for
9 Monsanto before he went to work for Industrial
10 Bio-Test?

11 A. I know that he worked for both companies.
12 I don't know the sequence of which he
13 worked.

14 As best I recall, he was a Monsanto
15 employee, and then he joined the Bio-Test
16 Laboratories, and then returned to Monsanto in a
17 different position. That is the best of my
18 recollection.

19 Q. Okay.

20 Do you know how long he was with
21 Industrial Bio-Test?

22 A. No.

23 Q. Do you know whether he worked on any of
24 the Industrial Bio-Test studies on pcb's for

1 Monsanto?

2 A. I never saw his name associated with
3 those studies, no.

4 Q. Did you see all of the reports of studies
5 from Industrial Bio-Test?

6 A. I have no way of knowing what reports
7 were not shown to me.

8 I saw final reports for each of the
9 studies that I knew had been placed.

10 Q. Okay.

11 A. But I don't know about all of those.

12 Q. Including all of those on the list that
13 we just looked at?

14 A. Yes.

15 Q. And you don't recall seeing Mr. Wright's
16 name on any of those studies that you are
17 testifying about?

18 A. That's correct.

19 Q. Take a look at Exhibit 233, which is a
20 memo dated July 25, 1969 from Otis Fancher to J.
21 C. Calandra and others. Subject visit by Elmer
22 Wheeler and others from Monsanto.

23 (The document above-referred to
24 was marked Bloomington Deposition

1 Exhibit No. 233 for identification.)

2 A. I have reviewed it.

3 Q. That visit that is described in that memo
4 I take it was at a time before you became the pcb
5 coordinator for Monsanto; is that correct?

6 A. That is correct.

7 Q. Were you one of the others who was
8 involved in that visit?

9 A. No.

10 Q. Do you know whether Mr. Benignus was?

11 A. Yes.

12 Q. Yes, he was, or yes, you know?

13 A. I am sorry. I thought you said Wheeler
14 was.

15 Q. Do you know whether he participated in
16 that visit?

17 A. No, I do not know.

18 Q. Did anyone who participated in that visit
19 ever discuss with you the subject of their
20 discussions with Industrial Bio-Test in July of
21 '69?

22 A. I don't remember any discussions specific
23 to that visit. No.

24 Q. Okay.

1 Do you remember discussing with anyone at
2 Monsanto problems in fish studies with the
3 material in the water -- material that was found
4 in the water by Monsanto analysts not being the
5 same as what the test material was supposed to be?

6 A. Not that specific comment. No.

7 Q. Okay.

8 Do you recall any comments in your
9 discussions with others at Monsanto about some
10 problems with fish studies initiated by Industrial
11 Bio-Test?

12 A. Yes.

13 Q. What comments do you recall?

14 A. I recall that they were having
15 difficulties in keeping the pcb's evenly dispersed
16 in the water so that the test fish could be
17 exposed. And that the pcb's appeared to be
18 plating out on the surface of the aquariums.
19 Therefore, becoming unavailable to the test fish.

20 And there didn't seem to be any practical
21 way of solving that particular problem. To the
22 best of my memory, that is the essence of what I
23 was told.

24 Q. And was that the reason that extensive

1 fish studies were not carried out by Industrial
2 Bio-Test?

3 A. That was one of the reasons.

4 And the other, as I mentioned earlier,
5 was the government through several laboratories
6 was starting fish studies and they seemed to be
7 more capable than we were.

8 Q. Okay.

9 And their information, of course, would
10 be made available to you?

11 A. Certainly.

12 Q. Showing you Exhibit 234 which is a
13 one-page memo dated August 1, 1969 from CM to Otis
14 Fancher, copies to others, subject A7204
15 conference, Monsanto.

16 I will ask you if you have ever seen that
17 before?

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 234 for identification.)

21 A. I have not seen this before.

22 Q. Had the problems with the Industrial
23 Bio-Test fish studies been described to you along
24 the lines of what is contained in that memo?

1 A. Not in this kind of detail. No.

2 Q. Is the detail that is included in Exhibit
3 234 consistent with the general understanding that
4 you received about the problems with the IBT fish
5 studies?

6 A. It is consistent. Yes.

7 Q. Do you know whether that kind of detail
8 was provided to Mr. Wheeler or Dr. Kelly or anyone
9 else at Monsanto?

10 A. I do not know.

11 Q. Take a look at Exhibit 235, which is a
12 letter dated September 4, 1969, no addressee,
13 signed by Ward R. Richter. And I will ask you if
14 you have ever seen that?

15 (The document above-referred to
16 was marked Bloomington Deposition
17 Exhibit No. 235 for identification.)

18 A. I have not seen this document.

19 Q. Who is Dr. Ward Richter, if you know?

20 A. I do not know.

21 Q. Do you know whether he was an employee of
22 Industrial Bio-Test or not?

23 A. I do not know.

24 Q. Take a look at Exhibit 236, which is a

1 one-page memo dated September 18, 1969 from J.
2 Plank to R. J. McCormick, and R. Greco.

3 I will ask you if you have ever seen that
4 before?

5 (The document above-referred to
6 was marked Bloomington Deposition
7 Exhibit No. 236 for identification.)

8 A. I have not seen this document before.

9 Q. Do you have any idea why a request would
10 be made for an additional bleeding of rats in
11 connection with the pcb study?

12 A. I do not know.

13 Q. Do you know what SAP stands for?

14 A. No, I don't.

15 Q. Have you ever heard of the term serum
16 alkaline phosphorylase?

17 A. Yes.

18 Q. That is a liver enzyme, is it not?

19 A. That I don't know.

20 Q. Okay.

21 Was serum alkaline phosphorylase to your
22 knowledge one of the tests or things being studied
23 in the Industrial Bio-Test rat studies on pcb's?

24 A. I don't recall that, no.

1 Q. Take a look at Exhibit 237, which is a
2 memo dated October 2, 1969 from Otis Fancher to
3 DHJ.

4 I will ask you if you have ever seen
5 that?

6 (The document above-referred to
7 was marked Bloomington Deposition
8 Exhibit No. 237 for identification.)

9 A. I have not seen this document.

10 Q. Does this memorandum suggest to you that
11 there were some changes being made in the protocol
12 of the chicken reproduction study?

13 A. I would have to see the protocol because
14 the protocol may have been written in such a way
15 to permit this kind of action at certain times.

16 Q. There would be a choice; in other words,
17 at this point we either will or will won't do X?

18 A. Yes. Some protocols are written that
19 way. So I cannot tell whether this is a change or
20 not.

21 Q. Okay.

22 Is it reasonable in your understanding to
23 not prolong the study until one hundred eggs have
24 been collected from groups showing obvious effects

1 of treatment?

2 A. I am not qualified to answer that.

3 Q. Okay.

4 According to this, the tissue samples
5 that were to be collected and sacrificed which is
6 referred to in paragraph 5 were composite samples;
7 is that correct?

8 A. That is what it says.

9 Q. Why, if you know, would it composite
10 samples taken in this study, when individual
11 samples were already taken from an earlier study?

12 A. I don't know.

13 Q. As we discussed before, if composite
14 samples are taken, it may conceal particularly
15 high levels in individual birds within a treatment
16 group, might it not?

17 A. That is is possible.

18 Q. Let's take a break for a second.

19 (Whereupon a short recess was had.)

20 Calling your attention back to Exhibit
21 234, which I will hand you again, according to
22 this internal Industrial Bio-Test memo the key
23 issue is, and I quote, "establish safety of the
24 Aroclors in the environment."

1 Is that something they came up with
2 themselves or was that a charge that was given to
3 Industrial Bio-Test by Monsanto?

4 A. I don't know.

5 Q. As I understand the approach of
6 scientists to this sort of testing, the
7 appropriate type of question would be to
8 investigate whether Aroclors are safe in the
9 environment rather than to establish that they are
10 safe.

11 MR. FRUEHWALD: I am not sure this says what
12 you are saying. Establish safety can be whether
13 it is safe or not to me. Establish that there is
14 safety, if it is safe.

15 MR. MC CONNELL: That's not what it says,
16 though.

17 MR. FRUEHWALD: That is the way you are
18 reading it. That can be read either way in my
19 book.

20 BY MR. MC CONNELL:

21 Q. My question to you is would you expect to
22 see that kind of phraseology in a study protocol
23 or would you expect to see something that said
24 establish whether or determine whether a

1 particular product is safe in the environment?

2 A. It is a matter of phraseology and
3 understanding, and I would interpret that as once
4 you conduct your studies, the answer may well be
5 no, it is not safe. Or the answer is yes, it is
6 safe. I cannot speak for the author of that
7 statement.

8 Q. Okay.

9 In any event, I take it from that
10 statement that the purpose of these studies was to
11 investigate safety of pcb's in the environment
12 rather than in the occupational setting?

13 A. That is correct.

14 Q. Take a look at the two-page memo that we
15 have marked as Exhibit 238, which is an internal
16 Industrial Bio-Test, I have it here, memo dated
17 October 8, 1969 to file from Otis Fancher.

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 238 for identification.)

21 A. I have reviewed it.

22 Q. One of the reasons for taking pooled
23 tissue samples, for example, in a chicken study is
24 that the size of the individual chicken liver or

1 heart or whatever organ is under study isn't large
2 enough for individual analysis at the levels that
3 you expect to find the material present in the
4 tissue. Is that a fair statement?

5 A. Yes.

6 Q. So you put four or five livers together
7 and you get a large enough sample to work up
8 appropriately and look for the pcb's; is that
9 correct?

10 A. Yes.

11 Q. In the case of dogs, do you know whether
12 that is a problem?

13 A. This is dependent on the amount of the
14 chemical that is present.

15 If it is in very, very low quantities,
16 you need a big enough sample to extract this
17 chemical.

18 Other than that, I don't know of any
19 other reason to pool, other than you are just
20 looking really for averages. And all these
21 studies are based, as you know, from averages of
22 groups rather than -- large enough groups so that
23 the average makes some sense.

24 Q. How do you determine whether the group is

1 large enough?

2 A. That is, again, you would have to go to a
3 toxicologist. But it is based on the state of the
4 art of that kind of test, and the experience of
5 the toxicologist regarding the numbers in a
6 particular population and the kinds of answers he
7 might expect, so on.

8 Q. But that is something that is taken into
9 consideration at the time the study is designed,
10 is it not?

11 A. Correct.

12 Q. And you plan for the appropriate number
13 of animals in each relevant group?

14 A. Correct.

15 Q. Do you know whether there was ever
16 individual tissue samples of organs from the dog
17 study analyzed for pcb content at Monsanto?

18 A. No.

19 Q. In the earlier chicken study that we
20 reviewed, where the samples were to be packaged
21 individually, did you ever learn that there was
22 any difficulty in the Monsanto laboratories with
23 Dr. Tucker and his people successfully analyzing
24 those individual tissue samples?

1 A. I don't recall of any difficulty.

2 Q. Does it strike you as unusual that the
3 only tissue samples which were to be analyzed
4 according to this document 238 would come only
5 from the highest no-effect level groups?

6 MR. FRUEHWALD: Let me see the document.

7 I don't believe that's what the document
8 says. It says it is probable that Monsanto
9 analyzed, is that what you are referring to?

10 MR. MC CONNELL: Right.

11 MR. FRUEHWALD: That is different than
12 actually being done or that Monsanto actually did
13 that. This is somebody's guess as to what
14 Monsanto might do in the future.

15 BY MR. MC CONNELL:

16 Q. Let me ask.

17 Do you know whether other groups were
18 analyzed, had tissue samples analyzed, other than
19 the highest no-effect level group?

20 A. I don't remember the specifics of those
21 tests, those analytical tests.

22 Q. Do you have any idea why the highest
23 no-effect level would be singled out?

24 A. I don't.

1 Q. Showing you Exhibit 239, which is a memo
2 dated October 20, 1969 from Otis Fancher to J. C.
3 Calandra. I will ask you if you have seen that
4 before?

5 (The document above-referred to
6 was marked Bloomington Deposition
7 Exhibit No. 239 for identification.)

8 A. I have not seen this before.

9 Q. According to that memo, one of the
10 purposes of Dr. Kelly's visit to Industrial
11 Bio-Test on that occasion was to discuss
12 Monsanto's strategy with respect to saccharin.

13 Was Industrial Bio-Test conducting animal
14 tests on saccharin for Monsanto in 1969?

15 A. I don't know.

16 Q. Was saccharin a product that Monsanto
17 manufactured?

18 A. Yes.

19 Q. To your knowledge, was there a Monsanto
20 strategy with respect to saccharin in 1969?

21 A. I was not aware of any, and am not.

22 Q. Ultimately products, food products with
23 saccharin content were required by the FDA to have
24 some kind of warning about the possibility of

1 cancer; is that correct?

2 A. I don't know if that is an FDA or a
3 Congressional act. FDA wanted to ban saccharin
4 and Congress overruled them.

5 Q. They said it is okay if you put it on
6 with a warning?

7 A. Yes.

8 Q. Do you know when that took place?

9 A. About roughly '77.

10 Q. Okay.

11 To your knowledge, in 1969 did Monsanto
12 have a strategy with respect to pcb's?

13 A. There obviously were business strategies,
14 commercial strategies.

15 I am not aware of any other strategies
16 related to pcb's in 1969, other than this
17 additional need to study them.

18 Q. Okay.

19 That would be the strategy that would
20 impact Industrial Bio-Test, would it not?

21 A. Yes.

22 Q. Okay.

23 Exhibit 239 refers to all other ongoing
24 projects.

1 Other than pcb's and saccharin, do you
2 know what other product testing was going on in
3 1969 at Industrial Bio-Test for Monsanto?

4 A. I do not know.

5 Q. Have you ever heard of a Monsanto product
6 called Naprisin?

7 A. No.

8 Q. Have you ever heard of a Monsanto product
9 called TCC?

10 A. Yes.

11 Q. That is used in deodorant soaps?

12 A. Yes.

13 Q. Was that being tested by Industrial
14 Bio-Test in 1969 and 1970?

15 A. I don't know.

16 Q. Earlier in your testimony you described
17 Paul Wright as a former Monsanto employee. When
18 did he leave the company?

19 A. I don't know that I can come close to the
20 first time he left Monsanto, because I didn't know
21 the man then.

22 Q. Okay.

23 I am looking for the last time.

24 A. The last time around, about 1980, '81.

1 Q. Do you know where he is now?

2 A. No.

3 Q. You are aware, I take it, that he was
4 indicted in connection with some animal studies
5 that were done on Monsanto products in other
6 products at Industrial Bio-Test?

7 A. Yes.

8 Q. That he was ultimately convicted of mail
9 fraud in connection with some of those studies?

10 A. I know he was convicted on some counts,
11 but I don't know what.

12 Q. And he was sentenced to prison?

13 A. I had heard that.

14 Q. Okay.

15 Did he leave Monsanto before or after he
16 was indicted, the last time he left?

17 A. I don't know.

18 Q. Have you ever discussed the pcb animal
19 studies with Paul Wright?

20 A. No.

21 Q. Have you ever discussed Paul Wright's
22 role in the pcb animal studies with anyone at
23 Monsanto other than company attorneys?

24 A. No.

1 Q. Did you know Dr. Calandra of Industrial
2 Bio-Test?

3 A. Yes.

4 Q. Did you know Dr. Fancher of Industrial
5 Bio-Test?

6 A. Yes.

7 Q. Who else at Industrial Bio-Test did you
8 ever meet or deal with?

9 A. Dr. Keplinger. Doctor -- starts with a
10 B, a black man, Doctor -- it escapes me at the
11 moment.

12 Q. You got me. I missed that one.

13 A. I don't recall the others.

14 Q. Maybe well run across it here.

15 Showing you what has been marked as
16 Exhibit 240, which is a one-page memo dated
17 December 3, 1969 from G. Kennedy to Otis Fancher
18 and M. Keplinger, I will ask you if you have ever
19 seen that?

20 (The document above-referred to
21 was marked Bloomington Deposition
22 Exhibit No. 240 for identification.)

23 A. I have never seen this.

24 Q. There is a reference in that memo to the

1 phrase "Monsanto still has hopes of maintaining
2 these products on the market."

3 I take it the products that are referred
4 to is pcb's, is that your understanding?

5 A. From this paragraph I can only infer he
6 is referring to the previously mentioned Aroclor
7 products and two triphenyls. I can only assume
8 that that is what the author here had in mind.

9 Q. Okay.

10 In December of 1969, did Monsanto still
11 have hopes of maintaining Aroclors on the market?

12 A. Yes.

13 Q. And the animal studies that are done at
14 Industrial Bio-Test, were in pursuit of that hope,
15 at least in part?

16 A. Yes.

17 Q. In other words, if the company didn't do
18 anything in an effort to demonstrate the safety of
19 pcb's, it faced the possibility that they would be
20 banned?

21 A. True.

22 But if, in turn, the results are
23 unfavorable, you withdraw.

24 Q. Industrial Bio-Test knew that when they

1 undertook these studies; is that right?

2 A. Knew what?

3 Q. That if the results were unfavorable,
4 Monsanto would withdraw the product from the
5 market?

6 A. I don't know if Bio-Test was in a
7 position to know Monsanto's business decisions.
8 They could only speculate.

9 Q. It wouldn't be terribly speculative to
10 conclude that if the studies showed it to be a
11 terribly poisonous substance in the environment,
12 that the company wouldn't have much choice but to
13 stop making it?

14 A. That is still speculation.

15 Q. Okay.

16 Take a look at Exhibit 241, which is
17 dated December 4, 1969 from Otis Fancher to Moreno
18 Keplinger and others. I will ask you if you have
19 ever seen that before?

20 (The document above-referred to
21 was marked Bloomington Deposition
22 Exhibit No. 241 for identification.)

23 A. I have not seen this document.

24 Q. Was there in fact as the document states

1 in December of 1969 some anxiety on Monsanto's
2 part about the continued viability of its pcb
3 products?

4 A. There was concern at that time and the
5 concern centered around the effects on the
6 environment by the pcb's.

7 I don't know that that concern as yet had
8 translated into viability of the entire product
9 line.

10 Q. Did it eventually?

11 A. Yes.

12 Q. When in your estimation was that line
13 crossed, from concern about environmental effects
14 over to anxiety about the viability of the product
15 line?

16 A. It is hard to pick any particular date.
17 I would suggest that it occurred about the time
18 our vice president spoke before an audience in
19 Washington, at which he said Monsanto is ready to
20 stop production when our customers have indicated
21 they have found alternative materials.

22 And this was 1975, as best as I recall.

23 Q. The man to whom you refer is John Mason?

24 A. No. This was F. J. Fitzgerald.

1 Q. Okay.

2 Would you characterize the phraseology
3 used by Dr. Fancher where he says great anxiety at
4 Monsanto about the whole Aroclor situation as
5 being stronger than what in fact Monsanto was
6 experiencing at the time of this memo in December
7 of 1969?

8 A. I have trouble with the definition of
9 anxiety, since it is a subjective-type word.

10 There was a growing awareness on
11 Monsanto's part that the evidence was mounting
12 against pcb's presence in the environment and
13 potential harm.

14 And at about that time, December '69,
15 there was the recommendation made that the job I
16 eventually was given be created. So if those are
17 symptoms of anxiety, yes, there was a growing
18 anxiety.

19 Q. But the diagnosis of anxiety is Dr.
20 Fancher's and not necessarily shared by you at
21 that time?

22 A. That is accurate. Yes.

23 Q. Okay.

24 Take a look at Exhibit 242, which is a

1 single-page memo dated January 13, 1970 from Dr.
2 Fancher to Moreno Keplinger, subject Monsanto
3 Aroclor studies.

4 (The document above-referred to
5 was marked Bloomington Deposition
6 Exhibit No. 242 for identification.)

7 A. I have reviewed it.

8 Q. Was that after you became pcb
9 coordinator?

10 A. Yes.

11 Q. Okay.

12 Who was Dr. Fitzhugh, who is referred to
13 in that memo?

14 A. Dr. Fitzhugh was at that time a member of
15 the Food and Drug Administration, located in
16 Washington, D. C.

17 Q. Did he subsequently join the staff of the
18 Environmental Protection Agency after that agency
19 was created?

20 A. No, no. Dr. Fitzhugh retired as I recall
21 in 1970, shortly after we visited with him in
22 early 1970.

23 Q. Okay.

24 Why was Dr. Fitzhugh following the

1 Industrial Bio-Test animal studies on pcb's?

2 A. As I recall, Mr. Wheeler had known Dr.
3 Fitzhugh from previous chemical discussions on
4 food additives and all, and Mr. Wheeler had
5 contacted Dr. Fitzhugh to determine if FDA had any
6 programs or interest in pcb's.

7 And from that contact, Dr. Fitzhugh
8 developed a personal interest, as well as a
9 professional interest, in pcb's and was attempting
10 to keep abreast of developments through Mr.
11 Wheeler.

12 Q. Okay.

13 The FDA's interest, I take it, would have
14 been sparked by its learning of the Yu Sho
15 incident among other things?

16 A. That is true.

17 But that didn't happen until to the best
18 of my knowledge -- FDA was aware of the Yu Sho
19 incident in about the third quarter 1970, summer,
20 fall of 1970.

21 Q. But Monsanto knew about it before that,
22 did they not?

23 A. Yes. Yes. Monsanto heard about it in,
24 as I recall, about 1969.

1 If I remember correctly, it appeared in a
2 San Francisco newspaper at about that time.

3 Q. Which time now, 1969?

4 A. '69.

5 Q. But the FDA didn't pick up on it for
6 almost a year after that?

7 A. They didn't pick up on it officially. I
8 don't know if individuals saw it or not.

9 Q. When Monsanto became aware of the Yu Sho
10 incident in 1969, it knew, it being Monsanto, knew
11 that it had customers in the United States who
12 were using its pcb fluids in heat exchange
13 applications in food processing?

14 A. Yes.

15 Q. Why was it that Monsanto didn't bring the
16 Yu Sho incident, which arose out of the same
17 application of pcb's in heat transfer in food
18 processing, to the attention of the FDA, when
19 Monsanto learned about it in 1969?

20 A. We, it is my understanding, we didn't
21 know -- we didn't know enough about the incident
22 to be able to determine that the health effects
23 noted among the consumers of this oil were due to
24 pcb's or to some other chemicals.

1 And that was the reason Monsanto
2 attempted to get more information and failed.

3 Q. Those other chemicals you are referring
4 to are dioxin and furans?

5 A. Later they were demonstrated to be the
6 dioxin, furans, yes. At that time --

7 Q. Nobody knew?

8 A. Nobody knew.

9 Q. Dioxins and furans are contaminants that
10 can be created by heat applied to the pcb liquids;
11 is that correct?

12 A. That is one source, yes.

13 Q. Okay.

14 So it could be, rather than something
15 that was originally in the pcb, it could result
16 from its use or abuse in that heat transfer
17 process?

18 A. In the presence of oxygen, yes.

19 Q. Okay.

20 Q. If it is not air-tight?

21 A. Yes.

22 Q. Okay.

23 And as I understand it, the current
24 thinking in 1986 on Yu Sho is that that is

1 probably how those materials came to be in the pcb
2 that was involved in that incident; is that
3 correct?

4 A. I don't know that I understood it quite
5 that way. The oil itself played, had a
6 contributory role. There is -- some of these
7 oils, some oxygen tied up chemically, and I don't
8 profess to know all the chemistry. But I have
9 learned from the Dr. Blumenthal of FDA who went to
10 Japan personally to investigate, he told me that
11 it is a combination of heat, stressed fluid, plus
12 the oil that created the right atmosphere to
13 create not only the dioxins and furans, but they
14 don't know what else.

15 They are suspicions that there are still
16 other toxic chemicals in addition. That is my
17 understanding.

18 Q. Okay.

19 When you say stressed fluid, you are
20 referring to the fact that the pcb liquid is under
21 pressure?

22 A. It is more a thermal stress. It is
23 heated to its upper limit, where it becomes
24 unstable.

1 Q. Okay.

2 A. In other words, it is not properly used
3 as prescribed.

4 Q. The actual operation of the heat transfer
5 application was not according to the prescribed
6 process, in other words?

7 A. Correct.

8 Q. All right. Whatever.

9 The reason that Monsanto didn't
10 communicate immediately with the FDA was you
11 couldn't find out any of the details about what
12 happened?

13 A. Correct.

14 Q. Okay.

15 Take a look at the exhibit that has been
16 marked as 243, let me back up. I don't know if I
17 ever asked you last question which I really
18 intended to about 242; which was, in January of
19 1970, was Dr. Fitzhugh in fact pressing Monsanto
20 for reports on the studies underway?

21 A. I would not use the word pressing. The
22 man contacted Mr. Wheeler and asked what is the
23 status.

24 Q. Do you know of any circumstances at

1 Industrial Bio-Test in January of 1970 which would
2 have made Industrial Bio-Test feel pressed when
3 Mr. Wheeler turned around and said can we have a
4 status report for the FDA?

5 A. I don't know of any reason.

6 Q. Looking at Exhibit 243, which is a letter
7 dated January 15, 1970 to Elmer Wheeler from Otis
8 Fancher, I will ask you if you have seen that
9 before?

10 (The document above-referred to
11 was marked Bloomington Deposition
12 Exhibit No. 243 for identification.)

13 A. I have not seen this before.

14 Q. Once you became the pcb coordinator, was
15 it Mr. Wheeler's practice or Dr. Kelly's practice
16 to provide you with copies of Industrial Bio-Test
17 progress reports as they were received?

18 A. I got some copies of progress reports. I
19 don't know that I got all copies.

20 Q. Did you at the time in January of 1970
21 and during 1970 have any reason to believe or
22 understand that you were being selectively copied
23 on these reports, rather than included in all of
24 the exchange?

1 A. I had no reason to believe that. No.

2 Q. Okay.

3 As far as you knew, you were getting
4 everything?

5 A. True.

6 Q. Was it the practice ordinarily that
7 reports from Industrial Bio-Test to Monsanto would
8 be transmitted by mail?

9 A. Yes.

10 Q. And to the extent that Monsanto passed
11 those reports along to the FDA or other government
12 agencies, would that routinely have been done by
13 mail as well?

14 A. The answer to by mail is yes.

15 But I don't know whether Mr. Wheeler sent
16 the agencies the Bio-Test reports.

17 I do know that Mr. Wheeler made Monsanto
18 summaries of these status reports, that he would
19 share with the agencies, as well as provide me
20 with a copy.

21 Those reports did not come out at
22 three-month intervals. They came out at roughly
23 six-month intervals. Sometimes six- to nine-month
24 periods, depending on what new information might

1 be included.

2 Q. So when you would receive a report or one
3 of these summaries from Mr. Wheeler, you would
4 also at that time have already received the
5 Industrial Bio-Test reports that were the basis of
6 that summary?

7 A. Yes.

8 Q. But you are saying you don't know whether
9 the underlying Bio-Test reports went to the
10 government agencies or not?

11 A. I do not know that.

12 Q. Presumably if the government agencies
13 felt a compelling need to see the underlying
14 Industrial Bio-Test reports, they had the power to
15 subpoena those reports?

16 A. That I don't know.

17 Q. Was the reason for the preparation by Mr.
18 Wheeler of these progress summaries on a periodic
19 basis to avoid submitting the actual Industrial
20 Bio-Test status reports to the government
21 agencies?

22 A. I have no reason to believe that. It is
23 just that Monsanto's summary reports, as I
24 remember, were more concise.

1 Let me back up. The few Industrial
2 Bio-Test summary reports I saw were fragmented in
3 terms of the rat studies would appear in a sheet
4 for, say, reproduction study, another sheet for
5 1254, another one for 1260.

6 Mr. Wheeler combined all that in rat
7 studies. Then he would summarize.

8 Then another sheet, chicken studies, and
9 he would summarize. So the format was rearranged,
10 and we found that to be easier to communicate with
11 and it didn't confuse the customers and the
12 agencies with too many pieces of paper, too many
13 reports.

14 Q. Better organized, in other words?

15 A. We thought so. Yes.

16 Q. At least from the point of view of
17 someone who wasn't dealing with the ongoing
18 studies on a regular basis?

19 A. That is correct.

20 Q. And these summaries that Mr. Wheeler
21 prepared, I understand from your last answer were
22 also shared with some of your customers?

23 A. Yes.

24 Q. Was Westinghouse one of those customers?

1 A. Yes.

2 Q. And when the information in these
3 summaries prepared by Mr. Wheeler were shared with
4 customers, would that ordinarily be done through
5 the mail?

6 A. Yes.

7 Q. Take a look at Exhibit 244, which is a
8 two-page letter to Otis Fancher from Elmer Wheeler
9 dated March 4, 1970.

10 I will ask you if you have ever seen
11 that?

12 (The document above-referred to
13 was marked Bloomington Deposition
14 Exhibit No. 244 for identification.)

15 A. I don't recall seeing this.

16 Q. Do you know whether the fish studies
17 referred to in Exhibit 244 were actually
18 completed?

19 A. I am not aware of any fish studies
20 completed by Bio-Test Laboratories for Monsanto.

21 Q. Take a look at Exhibit 245, if you would,
22 which is a memo dated March 19, 1970 from C.
23 Mastri, M-a-s-t-r-i, to Moreno Keplinger.

24 (The document above-referred to

1 was marked Bloomington Deposition
2 Exhibit No. 245 for identification.)

3 A. All right.

4 Q. Does that refer to the same fish studies
5 that are mentioned in Exhibit 244, if you can
6 tell?

7 A. It seems to.

8 Q. Take a look at Exhibit 246, which is a
9 letter dated March 31, 1970 in Otis Fancher to
10 Elmer Wheeler.

11 (The document above-referred to
12 was marked Bloomington Deposition
13 Exhibit No. 246 for identification.)

14 A. I have reviewed it.

15 Q. Exhibit 246 refers to the cost estimates
16 of the additional fish toxicity studies.

17 Is that the same as the studies as
18 referred to in 244 and 245, to the best of your
19 knowledge?

20 A. The numbers are the same.

21 Q. Okay.

22 There is also reference in the second
23 paragraph of 246 to a chick edema study. Do you
24 know whether such a study was ever done with

1 Aroclor?

2 A. Yes. In fact, some previous documents
3 talked about withdrawing the fluid from the
4 chicken, so on. The timing doesn't seem to fit.

5 Q. That was before this letter?

6 A. Right.

7 Q. Do you know whether any additional chick
8 edema studies were done after March of 1970?

9 A. I am not aware of any additional ones,
10 no.

11 Q. Okay.

12 That study what they are looking for is
13 the change in the volume of fluid in the sack
14 around the heart of the chicken?

15 A. I don't know if it is the heart, per se.
16 It is the chest cavity.

17 Q. Okay.

18 There is an estimate in the third
19 paragraph for the cost of repeating the chicken
20 study with Aroclor 1242.

21 Do you know whether that was ever done?

22 A. I don't know which study they are talking
23 about here. I don't know if it is the edema study
24 or the reproduction study or the long-term feeding

1 study.

2 Q. Okay.

3 So it makes it kind of hard to answer the
4 question, doesn't it?

5 A. Yes.

6 Q. All right.

7 The next paragraph refers to mutagenic
8 studies using the chick embryo technique.

9 Were those studies ever done, to your
10 knowledge?

11 A. Not to my knowledge.

12 Q. And the last paragraph refers to
13 inhalation study with the thermal decomposition
14 products of Skydrol.

15 Do you know if that was ever done?

16 A. No, I don't.

17 Q. I take it that was one of the hydraulic
18 fluid products?

19 A. It is a hydraulic fluid, but not a pcb.

20 Q. Okay.

21 Was that something that was to replace
22 the pcb hydraulic fluids?

23 A. No, this is the airliner, Skydrol.

24 Q. I should have been able to figure that

1 out.

2 A. This is what your airplanes are using.
3 Jet planes.

4 Q. Take a look at Exhibit 247, which is a
5 letter dated March 31, 1970 from Elmer Wheeler to
6 Dr. Keplinger with an attachment.

7 I will ask you if you have ever seen
8 either the letter or the attachment?

9 (The document above-referred to
10 was marked Bloomington Deposition
11 Exhibit No. 247 for identification.)

12 A. I believe I remember both the attachment
13 and the letter.

14 Q. Other than mutual professional interest,
15 was there any particular reason why Mr. Wheeler
16 was sharing that data with Dr. Keplinger at
17 Industrial Bio-Test?

18 A. I don't know of any other reason.

19 Q. The attachment is some of the fish
20 studies that were done by government laboratories
21 as you discussed in your earlier testimony; is
22 that correct?

23 A. Yes.

24 Q. Did Monsanto ever assist, either in

1 actual tissue analysis or in sharing analytical
2 techniques, in the government fish studies?

3 A. We provided material for their studies.
4 We shared analytical methodologies. We discussed
5 sharing tissue samples, but I don't recall if we
6 implemented that part.

7 Q. Was that discussion limited to fish
8 tissue or were you going to trade them some
9 chicken and dog and rat tissue for some of their
10 fish tissue?

11 A. It was limited to fish.

12 Q. Okay.

13 So if Monsanto never -- if Industrial
14 Bio-Test never completed fish studies, then there
15 wouldn't have been any fish tissue to share.

16 Is that a correct statement or is that
17 not correct?

18 A. No.

19 We would have shared fish tissue from the
20 government laboratory by sharing, they would send
21 us a split sample. Our laboratory would analyze,
22 their laboratory would analyze and compare the
23 answers.

24 Q. So what you are giving them in return for

1 the split sample is your results?

2 A. Correct.

3 Q. Not a sample of some fish that you fed
4 pcb's to?

5 A. I didn't mean to imply the other.

6 Q. I am not sure that you did.

7 (Whereupon a short recess was had.)

8 You don't know whether that ever actually
9 took place or not?

10 A. I don't recall.

11 Q. Take a look at Exhibit 248, which is a
12 letter dated April 8, 1970 to Herbert Blumenthal,
13 Food and Drug Administration, from Dr. Kelly, and
14 I will ask you if you you have ever seen that
15 letter before?

16 (The document above-referred to
17 was marked Bloomington Deposition
18 Exhibit No. 248 for identification.)

19 A. I believe I recall this letter. There
20 were attachments, those summaries we have talked
21 about.

22 Q. Those were the summaries that Mr. Wheeler
23 prepared rather than the Industrial Bio-Test
24 summaries?

1 A. Yes.

2 Q. Who was it, if you know, at Monsanto that
3 determined that the three products to be tested
4 should be 1242, 1254 and 1260?

5 A. I believe that was a consensus opinion,
6 not any one person. That was based on the amount
7 of the material in commerce. This represented the
8 most popular types.

9 Q. You sold more of those three than the
10 other?

11 A. That is correct.

12 Q. Okay.

13 According to this letter, 300 rats were
14 added to the chronic studies after the original
15 2-year project had gotten underway. Do you know
16 how long after?

17 A. No, I don't.

18 Q. Okay.

19 Is that a reference back to the earlier
20 documents we discussed about adding 15 and 15 to
21 each group?

22 A. Could be.

23 Q. Do the numbers work out, if there is a
24 control group and three test groups that's four

1 times 30, times 3, comes out to a little more than
2 300 I guess?

3 A. That is rounded off.

4 Q. Roughly. In other words, the numbers
5 match up?

6 A. Pretty much. Pretty well. We all know,
7 and I don't recall how soon after the start up
8 these were added, what we don't know is whether
9 they added to the group before the exposure
10 started.

11 Many times they will bring in these
12 animals and acclimate them to the laboratory.

13 Q. For a period of a couple of weeks?

14 A. Several years. Then they start exposing.
15 Whereas, these additions might have been brought
16 in during an acclimation period. So we are
17 missing some details here.

18 Q. So to your knowledge was there any effort
19 made at Industrial Bio-Test to distinguish either
20 by markings or some other method of identification
21 the later-added animals from the original animals
22 on this study?

23 A. I don't know the details.

24 Q. Okay.

1 As I understand it, one common technique
2 of identifying the animals in a rat study is by
3 punching a code on their ears?

4 A. Yes.

5 Q. Do you know whether that was done in the
6 Industrial Bio-Test rat studies or not?

7 A. Yes, they had some kind of code that was
8 picked up by computer wands that identified the
9 animal.

10 Q. The last sentence on the first page of
11 Exhibit 248 says:

12 "Histopathology has
13 been completed on the
14 sacrificed animals and Dr.
15 Calandra has reported verbally
16 that there are no positive
17 pathological findings."

18 Do you know as of the date of the letter
19 whether Dr. Kelly himself had reviewed any of the
20 pathology slides from the study that is discussed
21 in the letter?

22 A. I am not aware of Dr. Kelly ever
23 reviewing slides pathologically.

24 Q. So, although he had access to the raw

1 data, either by means of copies or by actually
2 going to Industrial Bio-Test and looking at them,
3 to your knowledge he never actually read any of
4 the slides himself?

5 A. No.

6 Q. He just relied on the written report from
7 the pathologist?

8 A. Right. The experts.

9 Q. Either the Industrial Bio-Test employee
10 or an outside pathologist when they brought one
11 in?

12 A. Yes.

13 Q. Dr. Kelly I take it is a people doctor as
14 opposed to an animal doctor?

15 A. Correct.

16 Q. Do you know whether he would have
17 considered himself qualified to read animal tissue
18 slides?

19 A. I would be surprised if he would have.

20 Q. The last, the next to the last paragraph
21 of the letter says:

22 "If you have any
23 specific questions after
24 reviewing the enclosed status

1 summaries, please feel free to
2 call Dr. Calandra or Dr.
3 Fancher directly."

4 Do you know whether there was in fact at
5 any time direct communication between Dr.
6 Blumenthal and anybody at Industrial Bio-Test
7 concerning the pcb studies for Monsanto?

8 A. Yes.

9 Q. When did that first come to your
10 attention?

11 A. I first was made aware of that informal
12 correspondence between Dr. Blumenthal and the
13 Bio-Test people in I think near the end of 1970,
14 December of 1970, when we had a pcb conference in
15 North Carolina.

16 Q. Who are we?

17 A. Perhaps the wrong use of the word.
18 Monsanto was invited. It was called by the
19 director of the National Institute of
20 Environmental Health Sciences, NIEHS, Dr. Rahl,
21 and he had FDA people there and EPA and USDA and
22 the Japanese and the university people.

23 Q. And Monsanto people?

24 A. Yes.

1 Q. Did you go to that?

2 A. Yes.

3 Q. What is or was the National Institute of
4 Environmental Health Sciences?

5 A. It is one of the governmental scientific
6 agencies or groups, NIEHS.

7 Q. Part of Health, Education and Welfare?

8 A. Yes.

9 Q. Or what is now Health and Human Services,
10 I guess?

11 A. Yes.

12 Q. And they were the sponsor of this
13 conference?

14 A. Yes.

15 Q. Was anybody from Industrial Bio-Test at
16 the conference, to your knowledge?

17 A. Yes. Dr. Keplinger attended. And there
18 was another individual, but I don't recall his
19 name at the moment.

20 Q. Did they discuss what they were doing by
21 way of these Monsanto animal studies?

22 A. Yes. They were on the program.

23 Q. And that was with Monsanto's permission,
24 I take it?

1 A. Yes. In fact it was at our request that
2 they be invited and participate.

3 Q. I take it studies of this type that
4 Monsanto was paying for were deemed by Monsanto to
5 be proprietary?

6 A. Well, proprietary in the sense it is
7 Monsanto's property. But not in the sense that we
8 would not share that information freely.

9 Q. But it is up to Monsanto and not
10 Industrial Bio-Test to determine in any particular
11 instance whether to share it and with whom?

12 A. Right. Correct. That is normal.

13 Q. In other words, you might give things to
14 the government that you wouldn't give to your
15 competitors in Japan, for example?

16 A. That is an example. Yes.

17 Q. So, presumably, if a direct request for
18 information was received at Industrial Bio-Test,
19 they would check with someone at Monsanto before
20 giving out the details of the study?

21 A. Yes.

22 Q. Take a look at Exhibit 249, which is a
23 memo dated April 16, 1970, to Moreno Keplinger
24 from Otis Fancher, and I will ask you if you have

1 ever seen that before?

2 (The document above-referred to
3 was marked Bloomington Deposition
4 Exhibit No. 249 for identification.)

5 A. I have not seen this before. No.

6 Q. To your knowledge, was there a repeat
7 chicken study done with Aroclor 1242?

8 A. Yes.

9 Q. And was that at lower dosage levels than
10 had been included in the original study?

11 A. Yes.

12 Q. Why was it that 1242 was selected as the
13 material for the repeat study?

14 A. Of the three Aroclors tested, the 1242
15 version, somewhere between 1 and 10 parts per
16 million was affecting chicken reproduction. And
17 we wanted to establish is it 1 or is it 10, and we
18 repeated.

19 Q. You would use dosages between one and
20 ten?

21 A. Yes.

22 Q. Rather than 110 and 100?

23 A. That is correct.

24 Q. And was 1242 of the three products that

1 were studied the one that showed an affect in the
2 first study at the lowest level?

3 A. Yes.

4 Q. Okay.

5 Do you recall whether the repeat study
6 successfully established a low-effect level for
7 1242 on chicken reproduction?

8 A. Yes.

9 Q. Did it?

10 A. It did establish or help us understand
11 what level the effect would be noted at.

12 Q. And what level was that?

13 A. That was 3 parts per million or higher.

14 Q. So at 1 part per million there was no
15 effect; is that correct?

16 A. Correct. At 2 there was no effect.

17 Q. So the threshold presumably is somewhere
18 between 2 and 3?

19 A. Somewhere in there.

20 Q. Take a look at Exhibit 250, which is a
21 memo dated April 21, 1970 from Otis Fancher to
22 Moreno Keplinger, subject visit by Elmer Wheeler.

23 (The document above-referred to
24 was marked Bloomington Deposition

1 Exhibit No. 250 for identification.)

2 To your knowledge, were there any
3 biochemical or metabolic studies done in
4 connection with the repeat 1242 chicken study?

5 A. I don't remember any.

6 Q. Do you know why they weren't done?

7 A. I don't remember whether they were or
8 not. I just don't recall.

9 Q. Do you know what it was that they were
10 considering looking for in biochemical or
11 metabolic studies?

12 A. The intent was to establish the mechanism
13 that resulted in thinner egg shells and why these
14 eggs, some of them, would not hatch.

15 Q. In other words, the idea was to go beyond
16 observing what happened and try and find out why?

17 A. That's right.

18 Q. Okay.

19 To your knowledge was there ever an
20 answer established with respect to the why part?

21 A. No. I don't remember.

22 Q. Without regard to whether the studies
23 were carried out or not?

24 A. No.

1 Q. There was never an answer established?

2 A. That's right.

3 Q. Take a look at Exhibit 251, which is a
4 memo dated April 30, 1970 from D. Arnold, to
5 Moreno Keplinger, copy to Fancher and Calandra.

6 Do you recall ever being informed of the
7 difficulties with the rat study that are mentioned
8 in Exhibit 251?

9 (The document above-referred to
10 was marked Bloomington Deposition
11 Exhibit No. 251 for identification.)

12 A. No.

13 Q. Did you ever learn during the time you
14 were pcb coordinator at Monsanto that there had
15 been problems at Industrial Bio-Test in the animal
16 watering room with respect to the environment in
17 which the rats were living?

18 A. No.

19 Q. Did it ever come to your attention during
20 the time you were the pcb coordinator at Monsanto
21 that the Industrial Bio-Test rat studies on pcb's
22 as well as other materials for Monsanto and other
23 Bio-Test clients were plagued by a high rate of
24 animal deaths, both in the study groups and in the

1 control groups?

2 A. No.

3 Q. Did it ever come to your attention during
4 the time you were pcb coordinator at Monsanto that
5 the rats who died during the course of the pcb
6 studies decomposed so rapidly that their bodies
7 couldn't be recovered for purposes of dissection or
8 autopsy?

9 A. No.

10 Q. After you left the role of pcb
11 coordinator at Monsanto, did you ever become aware
12 of any of those things?

13 A. Not as it relates to pcb's.

14 Q. As it relates to other Industrial
15 Bio-Test studies?

16 A. I have heard allegations that they
17 related to other studies, yes.

18 Q. Other studies that were done around this
19 time period, '70, '69, '71?

20 A. There were other studies that were either
21 in place or just completed in about 1975 or
22 thereabouts.

23 Q. Was the reason that Paul Wright left
24 Monsanto, did it have anything to do with his

1 indictment in connection with his role at IBT?

2 A. I don't know.

3 Q. When did the Industrial Bio-Test criminal
4 indictments of Paul Wright, Marino Keplinger and
5 Dr. Calandra and whoever the fourth guy was first
6 come to your attention?

7 A. I don't recall the specific year. It
8 seems to me early eighties. 1980 or '81. That is
9 as close as my memory will help me here.

10 Q. When you learned about that, did it raise
11 any questions in your mind about the validity of
12 the pcb studies that Bio-Test had done for
13 Monsanto?

14 A. Yes.

15 Q. Did you pursue that at all?

16 A. Yes.

17 Q. What did you do in connection with that
18 inquiry?

19 A. I went to the toxicology department and
20 asked if the pcb studies were part of that group
21 of studies.

22 Q. What did they tell you?

23 A. They told me that they were not.

24 Q. Did you ask whether any inquiry as of

1 1980 or '81 was being made into the supporting
2 data of the pcb studies to determine whether the
3 same sort of problems existed in those studies?

4 A. Yes.

5 We had an auditing team looking at all of
6 Monsanto's studies conducted by Industrial
7 Bio-Test Laboratories and the pcb studies were in
8 that group.

9 Q. Did you ever see a copy of that auditing
10 team report?

11 A. No.

12 Q. Was there a written report?

13 A. I don't know.

14 Q. Did anyone at Monsanto ever tell you that
15 the auditing team concluded the pcb studies were
16 free of these problems, or did they just tell you
17 that the pcb studies were not part of the
18 indictments?

19 A. It was -- neither of those expressions
20 fit my understanding.

21 The impression I got, and this was a
22 verbal discussion, oral discussion, is that the
23 pcb studies, they audited the study, did not
24 reveal any gross discrepancies which would have

1 caused any concern for the validity of the test
2 results, the conclusions.

3 Q. Who was on the auditing team?

4 A. I don't know the individuals. As I
5 recall this was conducted by Booz, Allen &
6 Hamilton, consultants.

7 Q. Do you know if they are ordinarily in the
8 animal study business?

9 A. They have many areas of expertise. I am
10 not familiar with all of them. No.

11 Q. It wasn't Monsanto's own toxicologists in
12 that work, in that audit?

13 A. No. This was an outside consultant.

14 Q. Okay.

15 At that time that the IBT indictments,
16 Industrial Bio-Test indictments, came to your
17 attention, pcb's had already been banned; is that
18 correct?

19 A. Yes.

20 Q. And Monsanto some years prior ceased
21 manufacturing pcb's?

22 A. Yes.

23 Q. So in terms of the priority of Monsanto
24 products that could or might be affected by audit

1 of Industrial Bio-Test studies, pcb's were kind of
2 at the bottom of that list?

3 A. As far as affecting the product. It was
4 nonexistent any longer, therefore, yes, they were
5 low on the priority. Yes.

6 Q. Others of the studies of concern in the
7 audit involved products that were still being
8 produced by Monsanto at that time?

9 A. Yes.

10 Q. Was Monsanto ever required by the FDA or
11 the EPA or any other government agency to repeat
12 studies that had been done by Industrial Bio-Test
13 as a result of the investigation that led to the
14 indictments?

15 A. Yes.

16 Q. And which products were involved in those
17 repeat studies, if you can recall?

18 MR. FRUEHWALD: Let me interpose an objection
19 here and instruct the witness not to answer.

20 I don't see the relevance of this. And
21 this may be getting into proprietary information
22 that is really irrelevant to the pcb issues. And
23 I don't know the background to it.

24 But I think it is an area which maybe

1 Monsanto has some regulatory concerns about, that
2 doesn't need to be explored in this litigation.

3 Unless you can tell me some reason why an
4 inquiry into other products would be of relevance
5 to this issue. I don't understand the relevance
6 of it. Because this may be confidential for
7 Monsanto.

8 I would just as soon raise an objection
9 here and instruct the witness not to answer.

10 MR. MC CONNELL: It is only relevant to the
11 extent that it reflects the magnitude of the
12 problem that was presented by this whole thing to
13 Monsanto.

14 And I think that fits into the issue of
15 whether I am right or you are right about what it
16 was that was going on here.

17 Obviously, at the time of the indictments
18 pcb's had already been banned and neither Monsanto
19 nor the government was interested in repeating
20 those studies. They would have accomplished
21 nothing for anybody at that point. The ban was in
22 effect. Monsanto had stopped production.

23 Just to put that fact into perspective, I
24 wanted a list of the other products.

1 If you have a proprietary objection to
2 that or want some kind of protective order or
3 something, we can discuss it and we could cover
4 that by an interrogatory, rather than have the
5 witness answer the question.

6 MR. FRUEHWALD: I prefer to go that route
7 because I have not consulted with Monsanto on
8 their position on other products and this sounds
9 to me like it could be a sensitive area that I
10 wouldn't like to have explored without
11 consultation.

12 MR. MC CONNELL: I appreciate your concern and
13 your objection is noted and we will talk about it,
14 you and I. Certainly not a critical item to my
15 case in this lawsuit.

16 Q. Okay.

17 Take a look at 252 -- it just occurred to
18 me as a follow-up question, that is all -- which
19 is a memo from Otis Fancher to Marino Keplinger
20 dated May 5, 1970. And I will ask you if you were
21 aware that the study that is referred to in
22 Exhibit 252 was to be postponed?

23 (The document above-referred to
24 was marked Bloomington Deposition

1 Exhibit No. 252 for identification.)

2 A. This is the first I have seen of this.

3 I was not aware of any request for
4 delaying.

5 Q. Do you know why Mr. Wheeler wanted to be
6 back from Europe before the study was started?

7 A. No, I don't.

8 Q. Okay.

9 Could it have had anything to do with the
10 problems which we discussed earlier about Marek's
11 disease in the chicken colony at Industrial
12 Bio-Test,

13 A. I don't know.

14 Q. Do you know whether Mr. Wheeler was aware
15 in May of 1970 of the problems with disease in the
16 chicken colony?

17 A. I don't know.

18 Q. You don't know. Okay.

19 Exhibit 253 is a letter dated May 12,
20 1970 to Dr. Kelly from Dr. Keplinger. I will ask
21 you if you have seen that?

22 (The document above-referred to
23 was marked Bloomington Deposition
24 Exhibit No. 253 for identification.)

1 A. I had not seen this.

2 Q. Do you remember being advised of the
3 conclusion that there was no effect observed at
4 the 1 part per million level in the dog studies?

5 A. I do.

6 Q. This Exhibit 253, was that before the
7 final report of the study was issued?

8 A. Yes.

9 Q. Did you ever see the original body weight
10 data that is referred to as having been enclosed?

11 A. No.

12 Q. Would it have meant anything to you if
13 you did see it?

14 A. It all depends on how it is displayed.

15 Q. Exhibit 254 is a letter dated May 25,
16 1970 to Dr. Fancher from Elmer Wheeler.

17 I will ask you if you have ever seen
18 that?

19 (The document above-referred to
20 was marked Bloomington Deposition
21 Exhibit No. 254 for identification.)

22 A. I remember the substance of this letter.
23 But I don't recall the letter itself.

24 Q. How was the substance conveyed to you?

1 A. Discussions with Mr. Wheeler.

2 Q. Was that personal, face-to-face or by
3 phone?

4 A. This subject came up when we returned
5 from Europe and had a meeting of the Monsanto
6 individuals during which we reported on our trip
7 to Europe and then we covered the toxicity studies
8 and this repeat study.

9 Q. When you returned from Europe, was that
10 the trip to Bayer that we discussed earlier?

11 A. That was one of the customers we talked
12 to. Yes.

13 Q. Okay.

14 A. Not customer. Competitor.

15 Q. They are a European manufacturer of
16 pcb's?

17 A. Yes.

18 Q. Did the other business on that trip
19 relate to pcb's as well?

20 A. It was all pcb's.

21 Q. Okay.

22 Who else did you visit besides Bayer?

23 A. We visited the laboratory in Stockholm,
24 in which these analytical studies were first

1 started.

2 Q. Dr. Jensen's laboratory?

3 A. Yes.

4 Q. All right?

5 A. We saw his supervisor, Dr. Whitman. Mr.
6 Jensen was vacationing. We went to the University
7 of Utrecht in Holland. Spoke with representatives
8 of the other European competitors, the Italian and
9 the French, as well as Bayer representing the
10 German.

11 We went then to the Ministry of, I
12 believe it is, Wildlife, but I am not certain, in
13 the United Kingdom. They had to do with interest
14 in birds, wild birds.

15 We visited the government chemist in the
16 United Kingdom. That is the top analytical
17 laboratory in the UK. I believe that covers them
18 all.

19 Q. Okay.

20 When you returned and had this discussion
21 with others at Monsanto, did you specifically
22 discuss the clean up of impurities that is
23 referred to in Exhibit 254?

24 A. I don't know that that was the topic at

1 that particular meeting. This came up at sessions
2 of that group at previous times.

3 (Whereupon a short recess was had.)

4 BY MR. MC CONNELL:

5 Q. With respect to 254, it refers to a clean
6 up of impurities.

7 MR. FRUEHWALD: It doesn't refer to that. It
8 says some clean up.

9 MR. MC CONNELL: Some clean up.

10 Q. I assume that means that the material
11 that was used in the repeat study was purer
12 material than what had been used in the earlier
13 study. Is that a fair assumption?

14 A. Yes, sir.

15 Q. What was it that was cleaned up, if you
16 recall?

17 A. In the production process, the refining
18 step, which is a distillation, can be controlled
19 to make at that time two kinds of 1242. There is
20 the run-of-the-mill 1242, which was sold primarily
21 to heat transfer and the so-called plasticizer
22 applications.

23 They could fine tune the refining step
24 and produce a cleaner 1242 for the dielectric

1 application, which was a tighter specification.
2 This letter tells me that it was the electrical
3 grade 1242 that was sent the second time instead
4 of the typical 1242.

5 Q. Okay.

6 Before the time when Monsanto made the
7 decision to eliminate all of the nonelectrical
8 uses of pcb's, what was the relative proportion of
9 electrical versus nonelectrical grade of 1242 that
10 was sold?

11 A. You asked me what proportion of the 1242
12 was the dielectric grade. I honestly don't
13 remember.

14 Q. Was it more or less than half?

15 A. I think it was less than half of the 1242
16 on the dielectric, but I am not certain of that.

17 Q. I take it that the type that was sold to
18 Westinghouse-Bloomington was the electrical grade
19 or the dielectric grade?

20 A. Yes.

21 Q. In any event, was this exhibit dated
22 before that decision was taken to eliminate the
23 nonelectrical uses of pcb's or was it at about the
24 time that was under consideration?

1 A. This was right -- let me think of it.
2 This was at about the time that the decision had
3 been approved to withdraw from the other
4 applications.

5 Q. So in light of the decision not to sell
6 what you described as run-of-the-mill 1242
7 anymore, the substitution of the electrical grade
8 in the context of the experiment was not an
9 unreasonable thing to do?

10 A. That is what we thought.

11 Q. Okay.

12 I take it, then, that the statement
13 involves some clean up merely reflects the change,
14 the difference in the production quality; it
15 doesn't represent anything that was done to the
16 sample after it was taken to clean it up for the
17 purposes of the animal study?

18 A. No. This is the sample right out of the
19 production unit.

20 Q. Take a look at Exhibit 255, which is a
21 memo dated May 25, 1970, from Otis Fancher to
22 Moreno Keplinger.

23 I take it that reflects a telephone
24 authorization to proceed with the repeat chicken

1 study on 1242; is that correct?

2 (The document above-referred to
3 was marked Bloomington Deposition
4 Exhibit No. 255 for identification.)

5 A. Yes. This is the same date that the
6 letter was dictated so the letter confirmed the
7 telephone.

8 Q. They could go ahead without waiting for
9 the actual post office to deliver the letter?

10 A. Correct.

11 Q. Take a look at Exhibit 256, which is a
12 single-page memo dated May 25, 1970, no indication
13 of who it is to or who it is from. It is on
14 Industrial Bio-Test letterhead, subject is IBT
15 number P 7297, client Monsanto, test materials
16 Aroclor 1242, 1254 and 1260.

17 It appears to me that that exhibit refers
18 to the chicken reproduction study.

19 (The document above-referred to
20 was marked Bloomington Deposition
21 Exhibit No. 256 for identification.)

22 MR. FRUEHWALD: The number on the test matches
23 up to the number assigned to the three generation
24 rat study.

1 MR. MC CONNELL: Okay..

2 Q. That is the rat study?

3 A. That would indicate a mammal.

4 Q. You are right. Chickens don't do that as
5 far as I know.

6 Do you know, there is an indication on
7 there, did you ever see that, by the way?

8 A. No, I have not.

9 Q. There is an indication on there under the
10 1242 material at the 100 parts per million level,
11 that only 2 males survived, fill rest of level
12 with 1 and 10 part per million offspring.

13 Do you see where I am reading, right
14 here. Then that appears to be scratched out and
15 the word "discontinued" penned in there.

16 Do you know what that refers to?

17 A. No, I don't.

18 Q. Were you ever advised that animals from
19 the 1 and 10 part per million offspring were
20 substituted into the 100 part per million group in
21 the rat reproduction study?

22 A. No.

23 Q. Under the 1254 product, by the 100 parts
24 per million, it says 2 males and 7 females saved

1 from "a" litters to be replaced by "b" pups if
2 possible.

3 Do you know what that refers to?

4 A. No, I don't.

5 Q. Why would they want to replace pups from
6 one litter to another?

7 A. I don't know.

8 Q. Any valid reason that you can think of in
9 the context of this?

10 A. No.

11 Q. As I understand the way that two
12 generation or three generation study was done,
13 there were two mates at each generational level,
14 an "a" and a "b"; is that correct?

15 A. Yes.

16 Q. And I guess that is designed to tell
17 whether the effects, if any, that are observed are
18 enhanced in the second mating?

19 A. Correct.

20 Q. Okay.

21 A. The same parents.

22 Q. The same parents. It is like your first
23 child and your second child, only in the case of
24 rats they usually have more than one at a time, to

1 see if there is a greater effect on the second
2 mating at each level; is that correct?

3 A. Right.

4 Q. So a substitution of "a" for "b" would
5 make it difficult to interpret what the results
6 were?

7 A. It would seem to me it would complicate
8 it.

9 Q. Do you know whether that was in fact
10 done?

11 A. I don't know.

12 Q. Okay.

13 Did the low number of surviving males at
14 the 100 parts per million level in the 1242 affect
15 the validity of the results of the study, if you
16 know?

17 A. No. I don't.

18 Q. Okay.

19 Do you know if the fact that only two
20 males survived at the 100 parts per million level
21 of 1242 was due to the effects of the Aroclor in
22 the feed or to some other problem in the study?

23 A. I don't know.

24 Q. Was there anything in the report of the

1 three generation rat study that you recall that
2 would answer that question?

3 A. No.

4 Q. Was there a comment on the low survival
5 rate?

6 A. I don't recall any.

7 Q. Does the information that is contained in
8 Exhibit 256, was that brought to your attention at
9 any time before today?

10 A. No.

11 Q. Did you have occasion at any time to
12 discuss with anybody else at Monsanto the
13 existence of any problems with animal survival
14 rates in the three generation rat reproduction
15 study?

16 A. No.

17 Q. Did you ever have such discussion with
18 anybody at Industrial Bio-Test?

19 A. No.

20 Q. So as far as you knew, before I showed
21 you this document, there was nothing out of the
22 ordinary about that three generation rate study?

23 A. That is correct.

24 Q. Take a look at Exhibit 257, which is

1 dated June 11, 1970. Subject new study for
2 Monsanto Aroclors from Dr. Keplinger to DHJ.

3 Does this refer to the repeat chicken
4 study on 1242 that we have been discussing?

5 (The document above-referred to
6 was marked Bloomington Deposition
7 Exhibit No. 257 for identification.)

8 A. It appears to be, it implies that. It is
9 not specific.

10 Q. So the only thing about that study that
11 was changed from the previous study was the dosage
12 levels were reduced in order to refine knowledge
13 about where the no-effect level fell?

14 A. That is correct.

15 Q. Okay.

16 Was 1242 selected for that study because
17 it was the product that had the greatest effect on
18 the chicken reproduction?

19 A. Yes.

20 Q. Take a look at Exhibit 258 which is dated
21 July 8, 1970, from Otis Fancher to Moreno
22 Keplinger, subject Monsanto chicken study with
23 rogue metabolites.

24 Do you have any idea what that refers to?

1 A. Rogue is a trademark for one of
2 Monsanto's agricultural chemicals.

3 Q. So this has nothing to do with pcb's
4 then?

5 A. That is correct.

6 Q. I was looking around for some unexpected
7 pcb metabolite. Thank you.

8 MR. FRUEHWALD: The number of the job doesn't
9 match up with any of the numbers here.

10 MR. MC CONNELL: No. And I didn't see any
11 report in these files on such a study either, but
12 now I understand why. This apparently, this memo
13 was misfiled in the pcb chicken file where it
14 didn't belong.

15 (The document above-referred to
16 was marked Bloomington Deposition
17 Exhibit No. 258 for identification.)

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 259 for identification.)

21 Q. Take a look at Exhibit 259.

22 Take a look at Exhibit 259 which is a
23 two-page letter from Kent Davis to Walter Hanson
24 subject histological examination of livers from

1 rats fed Aroclor 1254 and Aroclor 1260 for ninety
2 days.

3 I will ask you if you have ever seen that
4 before?

5 A. I have not seen this before.

6 Q. To your knowledge, does that refer to a
7 study that was done by the government rather than
8 by Industrial Bio-Test?

9 A. It was not done by Industrial Bio-Test.
10 I don't know who performed it.

11 Q. Did you become aware at some point during
12 the time that you were the pcb coordinator at
13 Monsanto of a controversy among animal
14 pathologists about how to interpret certain things
15 that were seen on rat liver slides?

16 A. Yes.

17 Q. From rats that were fed pcb's?

18 A. Yes.

19 Q. Do you know if this Exhibit 259 relates
20 to that controversy?

21 A. Yes, I have read it and it seems to.

22 Q. Okay.

23 It has to do with interpretation and
24 possible use of electron microscopy to review

1 sections of the rat livers?

2 A. Yes.

3 Q. In the design of the two-year chronic
4 oral feeding study in rats with Aroclors, was the
5 purpose of the study to look for cancer?

6 The Industrial Bio-Test study test that
7 was done for Monsanto, as you understood it, was
8 the purpose of it to look for cancer in the rat
9 livers or was the purpose to look for any
10 pathological change in the rat livers?

11 A. Look for any pathological change, not
12 only in livers, but the whole animal.

13 Q. Can you tell how Industrial Bio-Test came
14 to be in possession of a copy of that government
15 memo that is Exhibit 259?

16 A. No, I cannot.

17 Q. Did I ask you if you had ever seen that
18 before?

19 A. Yes, I answered I have not seen it
20 before.

21 Q. You have not. Okay.

22 Take a look at exhibit --

23 Let me ask you, in the course of the
24 Industrial Bio-Test rat studies, to your knowledge

1 did they ever use electron mycroscopy to review
2 their rat liver sides?

3 A. No.

4 Q. Do you know why?

5 A. No, I don't.

6 Q. Do you know whether the controversy
7 surrounding interpretation or reading of the rat
8 liver slides was ever resolved to the satisfaction
9 of Monsanto and Industrial Bio-Test pathologists?

10 A. No. It has not been resolved.

11 Q. As of 1986, it still hasn't been
12 resolved?

13 A. That is correct.

14 Q. Take a look at Exhibit 260, which is a
15 one-page memo dated August 24, 1970 from C. Mastri
16 to Marino Keplinger, and calling your attention
17 particularly to the line that is marked A 8570,
18 Monsanto Aroclor fish.

19 (The document above-referred to
20 was marked Bloomington Deposition
21 Exhibit No. 260 for identification.)

22 The memo indicates the change in the
23 expected release date of that study.

24 To your knowledge, was that study in fact

1 ever completed and reported on?

2 A. The fish study referred to in the
3 document to my knowledge was never completed and I
4 have never seen it reported.

5 Q. Take a look at Exhibit 261, which is a
6 memo dated August 23, 1970 from Otis Fancher to
7 Mareno Keplinger and others.

8 (The document above-referred to
9 was marked Bloomington Deposition
10 Exhibit No. 261 for identification.)

11 Do you know why it was that there was a
12 need to get status reports on all the Aroclor
13 studies for Dr. Hunt by August 27, 1970?

14 A. I had asked Mr. Wheeler to provide me
15 with status reports on the studies that I could
16 share with customers and anyone else who
17 requested, researchers, government agencies and
18 the like.

19 This reflects the way that data was
20 accumulated, from the laboratory to Dr. Hunt to
21 Mr. Wheeler.

22 Q. To you?

23 A. To me eventually.

24 Q. So there is nothing particularly

1 significant that you can recall about the date of
2 August 1970?

3 A. No. But it seems to fit this six-month
4 or so intervals that I asked for.

5 Q. Did you have a specific request from
6 Westinghouse-Bloomington for updates on these
7 animal studies?

8 A. Not a specific request. But I had
9 committed to supplying updates when I got them.
10 So a request wasn't necessary.

11 Q. Who did you provide that information to
12 at Westinghouse?

13 A. A remember a Mr. T K Sloat, and Don, it
14 was an individual at the Bloomington in the
15 Indiana plant.

16 Q. McLain?

17 A. Don McLain.

18 Q. Where was Mr. Sloat?

19 A. Mr. Sloat was at the transformer plants,
20 I forget whether it is South Boston or Sharon.
21 Then there was an individual in Pittsburgh in the
22 research center for Westinghouse. His name
23 escapes me at the moment.

24 Q. But you do specifically recall providing

1 these periodic reports on the Industrial Bio-Test
2 studies to Don McLain at Bloomington?

3 A. Yes.

4 Q. Do you know about how many such reports
5 you supplied over the years?

6 A. Twice a year?

7 A. At least four, maybe six.

8 Q. All together or per year?

9 A. No, no. All together.

10 Q. All together.

11 A. Every six or eight months I would have a
12 revision. Most of them were distributed at
13 meetings of users of pcb's.

14 Q. Called for that purpose or perhaps for
15 some other purpose?

16 A. The general purpose of pcb update.

17 Q. Once again, these would be the reports or
18 the summaries of the reports that Mr. Wheeler had
19 prepared?

20 A. Yes. Monsanto letterhead.

21 Q. Take a look at Exhibit 262, which is a
22 memo dated September 17, 1970 from J. F. Vanruska
23 to J. C. Calandra and others, subject Monsanto
24 Aroclor dog studies.

1 I will ask if you ever saw that document
2 before today?

3 (The document above-referred to
4 was marked Bloomington Deposition
5 Exhibit No. 262 for identification.)

6 A. I have not seen this before.

7 Q. Did you become aware at or about the date
8 of that memo in September of 1970 that four dogs
9 on the pcb study had died?

10 A. No.

11 Q. Did you ever become aware that four of
12 the dogs had died during the course of that study?

13 A. I became aware of dogs dying but I don't
14 recall the number four.

15 Q. Okay.

16 When did you first become aware that any
17 of the dogs had died?

18 A. At a meeting in Chicago called by EPA on
19 pcb's in November 1975.

20 Q. And how did you learn of that at the
21 meeting?

22 A. I was in the audience and Dr. Calandra
23 was describing the status of the pcb studies and
24 he divulged that information during his

1 presentation.

2 Q. Did he say whether the deaths were
3 related to the fact of pcb treatment?

4 A. Not at that, no.

5 Q. He didn't say one way or the other?

6 A. No. He just reported that these effects
7 were noted.

8 Q. Before that November of 1975 meeting, had
9 you received periodic progress reports through Mr.
10 Wheeler on the Beagle dog study?

11 A. Yes.

12 Q. None of those reports had reflected any
13 deaths among the dogs; is that correct?

14 A. That's correct.

15 Q. So for a period of a little over five
16 years, after the dogs had died, nobody told you
17 about it?

18 A. That's right.

19 Q. How many dogs were in each of the
20 treatment groups in that Beagle study; was that a
21 three-year study?

22 A. Yes.

23 I don't remember the numbers.

24 Q. Less than ten was it not, if you recall?

1 A. I just don't recall.

2 MR. FRUEHWALD: Jim, don't you have the
3 reports of these final reports?

4 I don't think Mr. Papageorge has reviewed
5 these things for years and you are asking about
6 various matters which should be disclosed in
7 subsequent reports.

8 That is why I am noting in terms of some of
9 these questions as to what he recalls being told,
10 the reports will say certain things and they
11 haven't been reviewed prior to this deposition.
12 So there may be some inaccuracies in there.

13 MR. MC CONNELL: I will tell what you my
14 problem is with that, and I don't mean to belabor
15 it. Although I am entitled to test his
16 independent recollection before I show him the
17 documents.

18 The reports that I have, that I got from
19 Industrial Bio-Test, are the Industrial Bio-Test
20 reports. I do not have, or at least if I have
21 them, I haven't seen the Monsanto summaries that
22 he has mentioned which is what he saw as well as
23 the Bio-Test reports.

24 And so the only way I can get at what he

1 recalls being in those is by asking him.

2 MR. FRUEHWALD: For example, a question about
3 how many dogs were in the study. That should be
4 indicated in the report that you are going to have
5 later on.

6 Some of these questions about whether
7 deaths are reported, I mean this study may report
8 them or may not. If he hasn't read them for years
9 he may not recall that. So his recollection of
10 what the report says is probably not as good
11 evidence as the report itself, that you have
12 presently got somewhere in the pack.

13 Questions like that seem to me to be not
14 very productive, given that we have got a report
15 which presumably specifies that type of
16 information, and his recollection is a poor second
17 to that. But carry on.

18 MR. MC CONNELL: It seems pretty clear to me
19 Mr. Papageorge is fairly certain he didn't hear
20 about any dog deaths until November of '75.
21 Although they occurred sometime before September
22 of 1970. So, that is the point.

23 MR. FRUEHWALD: That's right, he doesn't
24 recall hearing about it. Perhaps it is in the

1 report. I just don't know.

2 The report is very lengthy and perhaps at
3 the back of the report or somewhere in the report
4 they have got a report of some decrease in the
5 populations which would be deaths. That is my
6 point.

7 These reports are coming up and they are
8 in most cases very lengthy. There may be some
9 information in them which is not currently
10 recalled but is, nonetheless, reported.

11 BY MR. MC CONNELL:

12 Q. Take a look at Exhibit 263, which is a
13 letter from Dr. Keplinger to Mr. Wheeler dated
14 September 17, 1970.

15 (The document above-referred to
16 was marked Bloomington Deposition
17 Exhibit No. 263 for identification.)

18 Do you recall seeing that letter?

19 A. I do not recall seeing this.

20 Q. The last paragraph of the letter refers
21 to a teratology study or studies. What animal was
22 that done on?

23 A. I don't know what animal.

24 Q. Okay.

1 Do you recall there being a rat
2 teratology study in connection with pcb's at some
3 point?

4 A. No.

5 Q. Teratology refers to the study of birth
6 defects; is that correct?

7 A. That's correct.

8 Q. And that is different from the
9 reproduction study that we have seen already?

10 A. That is correct.

11 Q. Do you know what the recommendation of
12 Dr. Fitzhugh was as referred to in the last
13 paragraph of that letter?

14 A. I do not.

15 Q. Take a look at Exhibit 264, which is a
16 letter dated November 5, 1970 from Dr. Keplinger
17 to Elmer Wheeler.

18 (The document above-referred to
19 was marked Bloomington Deposition
20 Exhibit No. 264 for identification.)

21 Does that refresh your recollection about
22 the possibility of rat teratology studies on
23 Aroclor?

24 A. No.

1 I just don't have any vivid recollection
2 of teratology studies. This letter does not help
3 refresh that recollection.

4 Q. It does refer to specific studies with
5 Aroclor 1242, 1254 and 1260, does it not?

6 A. Yes, it does.

7 Q. I show you what has been marked as 265,
8 which is a memo dated November 13, 1970 from Otis
9 Fancher to Mareno Keplinger.

10 (The document above-referred to
11 was marked Bloomington Deposition
12 Exhibit No. 265 for identification.)

13 Does that reflect a phone authorization
14 to proceed with the rat teratology studies that
15 are described in Exhibit 264?

16 A. That is what it says.

17 Q. Take a look at Exhibit 266, which is a
18 memo dated November 13, 1970 from Dr. Fancher to W
19 it looks like WCK, subject Monsanto billing.

20 (The document above-referred to
21 was marked Bloomington Deposition
22 Exhibit No. 266 for identification.)

23 Q. Do you recall that instance of an extra
24 or special out of the ordinary payment to

1 Industrial Bio-Test by Monsanto?

2 A. No.

3 Q. Do you know any reason why an extra 50 to
4 \$60,000 would have been paid in November of 1970?

5 A. I do not.

6 Q. Who would know that?

7 A. Mr. Wheeler.

8 Q. Was he the one who authorized
9 disbursements to Industrial Bio-Test for Monsanto?

10 A. Yes.

11 Q. Take a look at 267, which is a letter
12 dated November 17, 1970 from Elmer Wheeler to Dr.
13 Keplinger.

14 (The document above-referred to
15 was marked Bloomington Deposition
16 Exhibit No. 267 for identification.)

17 I will ask you if that appears to you to
18 be a written authorization to proceed with the rat
19 teratology studies on the Aroclors?

20 A. It appears to be an authorization to
21 start those studies, yes.

22 Q. Exhibit 268 is a memo dated November 20,
23 1970 from D. H. Jenkins to Moreno Keplinger,
24 subject J 8746 Monsanto Aroclor.

1 I will ask you if you have ever seen that
2 before today?

3 (The document above-referred to
4 was marked Bloomington Deposition
5 Exhibit No. 268 for identification.)

6 A. I have not seen this document before.

7 Q. Do you recall learning at or about the
8 time of that document, November of 1970, that
9 there was a delay in the schedule of the chicken
10 reproduction study as a result of the inability to
11 get the egg size up to the desired weight?

12 A. I do not recall that at all.

13 Q. Do you recall ever discussing with anyone
14 at Monsanto or at Industrial Bio-Test a change in
15 the protocol of the chicken study as a result of a
16 delay in reaching the desired egg size before
17 collecting eggs for sitting?

18 A. I do not recall that.

19 Q. Do you know what the protocol specified
20 initially before the change as to what the eggs
21 size was before collection was to begin?

22 A. No, I do not.

23 Q. Would you expect the survivability or
24 hatchability of the -- that is two different

1 things. Strike that.

2 Would you expect the hatchability of the
3 eggs to be affected by the fact that collection
4 for sitting began at a lower average weight?

5 A. I don't know personally the relationship
6 between weight of the egg and ability to hatch.

7 Q. Do you know whether there was ever in any
8 of the reports you saw on the chicken reproduction
9 study, whether the issue of -- strike that.

10 Do you recall whether any of the reports
11 you saw on the chicken study ever addressed the
12 issue of whether this delay in reaching the
13 desired egg size was attributable to the fact that
14 the chickens were being fed pcb's?

15 A. I do not recall any reference to egg
16 weight, and relating it to any exposure levels of
17 chemicals.

18 Q. Take a look at Exhibit 269, which is a
19 letter dated December 8, 1970, two-page letter
20 from Dr. Keplinger to Elmer Wheeler.

21 I will ask you if you recall ever seeing
22 that letter?

23

24 (The document above-referred to

1 was marked Bloomington Deposition
2 Exhibit No. 269 for identification.)

3 A. I do not recall seeing this document.

4 Q. Do you recall ever discussing with anyone
5 at Monsanto the suggestion that money could be
6 saved by using common control animals or groups of
7 common control animals in the various studies?

8 A. Yes.

9 Q. When did that first come to your
10 attention?

11 A. I think I recall this approach being
12 discussed sometime in the middle of 1970 as a
13 possibility.

14 Q. And that was ultimately put into effect,
15 was it not?

16 A. Yes.

17 Q. Do you recall ever talking with anybody
18 at Monsanto or Industrial Bio-Test about the
19 suggestion that the histology study and blood
20 chemistry study on animals in the lower feeding
21 levels could be eliminated from the animal
22 studies?

23 A. No.

24 Q. Do you know if that was ever done?

1 A. I do not know.

2 Q. If you only check the blood chemistry and
3 the pathology of the controls in the highest feed
4 level, how could you determine where the no-effect
5 level lies within the range of test groups?

6 MR. FRUEHWALD: Would you read that question
7 back, please.

8 (The record was read.)

9 Are you talking about the effect level on
10 blood chemistry?

11 MR. MC CONNELL: Or pathology.

12 MR. FRUEHWALD: It seems like that it would be
13 independent of blood chemistry being checked.

14 MR. MC CONNELL: Well, the letter suggests
15 that blood chemistry and pathology test be
16 eliminated on animals in the lower feed levels.

17 Q. My question is if you do that, how can
18 you tell whether there is an effect or not at
19 those lower levels?

20 You don't know whether that was ever put
21 into effect or not?

22 A. That is correct.

23 Q. Take a look at Exhibit 270, which is a
24 letter dated December 16, 1970 from Kathryn Lesiak

1 to Elmer Wheeler.

2 (The document above-referred to
3 was marked Bloomington Deposition
4 Exhibit No. 270 for identification.)

5 Do you recall ever seeing that letter?

6 A. I do not recall seeing this.

7 Q. Does that letter suggest that the rat
8 teratology study was in fact undertaken by
9 Industrial Bio-Test?

10 A. That is what it suggests.

11 Q. Take a look at Exhibit 271, which is a
12 letter dated January 26, 1971 from Dr. Keplinger
13 to Elmer Wheeler.

14 (The document above-referred to
15 was marked Bloomington Deposition
16 Exhibit No. 271 for identification.)

17 Do you recall seeing that letter?

18 A. I do not recall seeing this letter.

19 Q. Do you recall any discussion at Monsanto
20 about whether or not 10 parts per million was in
21 fact a no-effect level for 1242?

22 A. Yes.

23 Q. When were you first involved in any of
24 those discussions?

1 A. In about the early part of '71. As I
2 remember I was first aware of it when I received
3 one of those status reports.

4 Q. If the first paragraph of Exhibit 271,
5 Dr. Keplinger writes the 1 and 10 parts per
6 million levels of 1242 show no significant effect,
7 and in the last paragraph he writes that Dr.
8 Fitzhugh, he said he just wanted to make sure that
9 the 10 parts per million level of 1242 is a
10 no-effect level.

11 In your mind, is there a difference
12 between no significant effect and no effect?

13 A. No. There is no difference.

14 Q. This letter, Exhibit 271, does it suggest
15 to you that Dr. Keplinger had any doubt in his
16 mind whether 10 parts per million was a no-effect
17 level for 1242 in this particular study?

18 A. Yes.

19 Q. Yes, he did have doubt or no, he didn't
20 have doubt?

21 A. No. Your question said does this suggest
22 that Dr. Keplinger had no doubts. I agree, he had
23 no doubts.

24 Q. He had no doubts.

1 What was the particular significance, if
2 you know, to Dr. Fitzhugh, whether 10 parts per
3 million was a no-effect level?

4 A. I do not know.

5 Q. When you read the first paragraph where
6 it refers to a significant effect, do you take
7 that to refer to the concept of statistical
8 significance?

9 A. Yes.

10 Q. Okay.

11 So it is not the vernacular use but the
12 scientific use of the term significant?

13 A. That is my understanding. Yes.

14 Q. And Exhibit 271 refers to the
15 reproduction study; is that correct?

16 A. Yes.

17 Q. Do you recall a trip to Industrial
18 Bio-Test on February 16, 1971 in the company of
19 Mr. Wheeler?

20 A. I recall several trips. I don't know the
21 specific dates. I don't recall the specific
22 dates.

23 Q. Okay.

24 Let me show you Exhibit 272, which is a

1 memo dated February 15, 1971 from Dr. Fancher to
2 Dr. Keplinger.

3 I will ask if that refreshes your
4 recollection about a February 16, '71 visit by you
5 and Mr. Wheeler to Industrial Bio-Test?

6 (The document above-referred to
7 was marked Bloomington Deposition
8 Exhibit No. 272 for identification.)

9 A. I have a hard time recalling the specific
10 dates.

11 Q. Do you recall what the subject was of
12 that meeting?

13 A. Yes. This was a tour of the
14 laboratories. And a series of presentations by
15 Industrial Bio-Test people describing the status
16 of pcb studies being conducted at that laboratory.

17 Q. Okay.

18 Do you recall who in particular from
19 Industrial Bio-Test made those presentations?

20 A. I recall some of the people. Dr.
21 Calandra and Dr. Keplinger and Dr. Fancher and
22 there were two or three others whose names I don't
23 recall.

24 Q. Okay.

1 And did they cover the chicken studies
2 and the rat studies and the dog studies?

3 A. Dog studies and the problems with the
4 fish studies.

5 Q. Okay.

6 Anything else?

7 A. That covers it. I don't recall anything
8 else.

9 Q. At that meeting other than the ongoing
10 difficulties in getting a fish study successfully
11 completed, was there any indication to you from
12 any of the Industrial Bio-Test presenters that
13 there were any difficulties in successfully
14 completing any of the other ongoing studies?

15 A. No.

16 Q. Nobody said anything about Marek's
17 disease in the chickens?

18 A. Not in my presence.

19 Q. Nobody said anything about the fact that
20 four dogs had died?

21 A. No.

22 Q. In the dog study?

23 A. No.

24 Q. Nobody said anything about a high death

1 rate in the rats either in the two-year study or
2 the reproduction study?

3 A. No.

4 Q. Okay.

5 As far as you knew at the time of the
6 meeting that is referred to in Exhibit 272, in
7 February of 1971, were the studies with the dogs,
8 the rats and the chickens on schedule?

9 A. Yes.

10 Q. Was there any discussion of a teratology
11 study at that meeting that you recall?

12 A. I just don't recall teratology studies.

13 Q. To your knowledge, well, that is poor
14 form, strike that.

15 At any time during the period when you
16 were the pcb coordinator at Monsanto, was it ever
17 brought to your attention that there was a concern
18 about a connection between birth defects and
19 pcb's?

20 A. No.

21 Q. Okay.

22 Has such a concern come to your attention
23 since the time you were pcb coordinator?

24 A. I don't recall any.

1 Q. Well, this looks to me, 273 looks to me
2 to be exactly the same as 272. So we will just
3 pass over that, except for the numbers that are
4 stamped on it.

5 (The document above-referred to
6 was marked Bloomington Deposition
7 Exhibit No. 273 for identification.)

8 (The document above-referred to
9 was marked Bloomington Deposition
10 Exhibit No. 274 for identification.)

11 Take a look at a memo dated March 17,
12 1971 from J. Plank to JFV, whoever that is,
13 subject Monsanto Company IBT numbers P 7297 and
14 B 7298. I will ask if you have ever seen that
15 before?

16 A. I had not seen this document before.

17 Q. Do you know who Dr. Suckow, S-u-c-k-o-w,
18 is?

19 A. No.

20 Q. Do you have any idea why in March of 1971
21 there would be a second pathologist reading the
22 slides from the rat reproduction study?

23 A. No, I do not.

24 Q. Do you recall in about March 1971 a

1 concern being raised about urinary bladder tumors
2 in connection with the pcb's in the rats?

3 A. No.

4 Q. Do you recall ever learning that that was
5 an item of concern?

6 A. No.

7 Q. Okay.

8 Q. Do you recall in any of the rat study
9 reports that you saw there being any mention one
10 way or the other of findings in the urinary
11 bladder?

12 A. No.

13 Q. In the last line of that memo, Exhibit
14 274, the word autolysis appears, do you know what
15 that means?

16 A. No, I do not.

17 Q. Did you ever become aware at any time
18 before today that in the course of the rat study
19 on pcb's, that Industrial Bio-Test did for
20 Monsanto, that animals would die and decompose
21 before their bodies could be recovered by the
22 technicians?

23 A. I had not heard that, no.

24 Q. Okay.

1 In your mind, would the fact that that
2 happened on numerous occasions raise doubts about
3 the validity of the overall results of the study?

4 A. If that did occur, would it raise doubts?

5 Q. Yes.

6 A. Yes, in my mind, yes.

7 Q. And that is because there is no way to
8 tell what findings might have existed in the
9 tissues of those rats that died and decomposed
10 before they could be examined?

11 A. Correct.

12 Q. Would you have expected Industrial
13 Bio-Test to report the fact to Monsanto if it was
14 a fact that there was a number of rats who died,
15 which died and decomposed before they could be
16 examined during the course of a rat study on
17 pcb's?

18 A. Would I expect them to?

19 Q. Yes.

20 A. If that were a true happening, I would
21 expect that. Yes.

22 Q. Do you recall ever hearing or seeing the
23 term autolysis used in connection with any of
24 these IBT studies?

1 A. No.

2 Q. When you toured the Industrial Bio-Test
3 Laboratories, did they take you into the rooms
4 where the test animals were kept?

5 A. Yes.

6 Q. The rats as I understand it were kept
7 together in groups, in group cages; is that
8 correct?

9 A. Yes.

10 Q. And each dosage level would have one or
11 more group cages?

12 A. Yes.

13 Q. That is, there weren't any 10 parts per
14 million rats in with 100 parts per million rats?

15 A. No, they are segregated.

16 Q. So even if an animal died during the
17 night and was found by the technician in the
18 morning, you could tell what group it was from by
19 what cage the body was in?

20 A. Correct.

21 Q. Beyond that, you might not be able to
22 identify the individual animal depending upon the
23 state of his decomposition?

24 A. I don't understand the question.

1 Q. You mentioned the ear punching and this
2 wand phenomenon. I assume that when the animal
3 was decomposed --

4 A. The tags, or the clips, the hardware that
5 as I understood you could still identify the
6 corpse.

7 Q. Okay.

8 So the tag would be there even though
9 the --

10 A. Yes.

11 Q. Okay.

12 Take a look at Exhibit 275. We did it
13 again here.

14 Will you look at 275 and I will look at
15 276, which is the same document, which is a letter
16 or a memo dated April 23, 1971 from Otis Fancher
17 to Moreno Keplinger, subject Aroclor tissues.

18 And I will ask you if you have seen that
19 before?

20 (The document above-referred to
21 was marked Bloomington Deposition
22 Exhibit No. 275 for identification.)

23

24 (The document above-referred to

1 was marked Bloomington Deposition
2 Exhibit No. 276 for identification.)

3 A. I have not seen this memorandum before.

4 Q. Do you recall in April or about April of
5 1971 questions arising about missing tissue
6 samples from the twelve-month collection in the
7 rat studies, B 7298?

8 A. I recall missing tissues. I don't recall
9 which study these tissues came from. And the
10 timing is about on or about the early part of '71.

11 Q. Do you know why as the exhibit describes
12 these are considered to be of critical importance,
13 that is, the missing tissues from B 7298?

14 A. No. I do not.

15 Q. The paragraph immediately under the one
16 that is identified as J 7300 says:

17 "In the case of all
18 studies were any tissues
19 saved from animals which died?"

20 Up until the date of this document, April
21 23, 1971, were you aware of any animals that had
22 died in any of the studies?

23 A. Yes. I was aware of what I was led to
24 believe was a normal amount of death in this

1 population. Yes.

2 Q. And was that in connection with which
3 animals, chicken, rats, dogs?

4 A. All of them.

5 Q. Okay.

6 Did anybody ever quantify for you what a
7 normal amount of death might be?

8 A. Not in numbers, no.

9 Q. Do you know the answer to the question
10 whether any tissues were saved from the animals
11 which died?

12 A. I do not know.

13 Q. According to this memo, the questions
14 that are set out here were put to Dr. Fancher or
15 someone at Industrial Bio-Test by Bob Keller.

16 A. That is what this memo implies, yes.

17 Q. Mr. Keller is a Monsanto employee, is he
18 not?

19 A. Yes.

20 Q. Or is it Dr. Keller?

21 A. Dr. Keller.

22 Q. Dr. Keller.

23 Did you ever talk to Dr. Keller about

24 whether there was an abnormal or normal death rate

1 in the animals in these studies?

2 A. No. He is an analytical chemist.

3 Q. So his concern was to get the appropriate
4 tissue samples for his analysts to work on; is
5 that correct?

6 A. Yes, for Dr. Tucker's group to work on,
7 yes.

8 Q. Was he above Tucker?

9 A. Yes.

10 Q. So this inquiry generally is directed to
11 find out what he can expect to be coming in for
12 the analysts to work on in the foreseeable future,
13 is that the gist of it?

14 A. Could be one of the reasons. The other
15 is to perhaps expedite, where are these samples.

16 Q. The ones that are unaccounted for?

17 A. Yes.

18 Q. Where are they and when can we get them
19 so we can finish up?

20 A. Right.

21 (Discussion had off the record.)

22 Q. Take a look at Exhibit 277, which is a
23 copy of what appears to me to be a page from a
24 laboratory notebook at Industrial Bio-Test.

1 Although, given the way they provided things to
2 us, I can't be sure that that is what it is, dated
3 April 30, 1971. And I will ask if you recall ever
4 seeing that?

5 (The document above-referred to
6 was marked Bloomington Deposition
7 Exhibit No. 277 for identification.)

8 A. I have never seen this document before.

9 Q. Do you recall ever being advised, through
10 a study report or otherwise, that some of the rats
11 in the study number P 7297 had histology, positive
12 histology findings in the urinary bladders?

13 A. I do not.

14 Q. You do recall that that question was of
15 concern during the course of that study?

16 A. No. I don't believe urinary problems
17 related to pcb studies.

18 Q. It was your understanding, though, that
19 if such a finding were observed during the course
20 of the pcb rat studies, that it would be reported?

21 A. Yes.

22 Q. Okay.

23 They weren't just focusing on the liver
24 exclusively?

1 A. No, no. Any positive findings.

2 Q. Look at Exhibit 278, which is a memo
3 dated May 3, 1971 from Dr. Fancher to Dr.
4 Keplinger subject visit to Monsanto.

5 Is the visit that is referred to in that
6 memo, one of the regular back and forth exchanges
7 during the course of these studies?

8 (The document above-referred to
9 was marked Bloomington Deposition
10 Exhibit No. 278 for identification.)

11 A. Yes.

12 Q. The only difference being on this
13 particular occasion Dr. Fancher came to Monsanto
14 in St. Louis rather than somebody from Monsanto
15 traveling to Industrial Bio-Test?

16 A. That is correct.

17 Q. Do you recall being a participant in that
18 meeting in May of '71 in St. Louis?

19 A. I recall being a participant in meetings
20 in which Dr. Fancher made presentations. I do not
21 recall the specific dates.

22 Q. Okay.

23 Do you recall one or more than one of
24 those being in St. Louis rather than at Industrial

1 Bio-Test?

2 A. Yes.

3 Q. Okay.

4 Take a look at Exhibit 279, which is a
5 memo dated May 13, 1971 from Dr. Fancher to Dr.
6 Keplinger and others, which purports to be a
7 summary of the meeting that is referred to in 278.

8 (The document above-referred to
9 was marked Bloomington Deposition
10 Exhibit No. 279 for identification.)

11 A. I do not recall seeing this document
12 before.

13 Q. Do you recall being at a meeting at which
14 those subjects that are described in the documents
15 were discussed?

16 A. Yes.

17 Q. The first paragraph numbered 1 refers to
18 the rat tissues from the two-year study and that
19 the samples should be pooled; is that correct?

20 A. Yes.

21 Q. Do you know at any point in that two-year
22 study whether there were individual, not-pooled
23 samples that were sent to Monsanto for analysis?

24 A. I do not recall.

1 Q. The second paragraph refers to
2 maintaining some of the animals from the three
3 generation rat study on Aroclor-free diets for
4 thirty days. I presume that means after the end
5 of the study?

6 A. Correct.

7 Q. And then submitting the tissues for
8 analysis to be compared with tissues from animals
9 who were sacrificed without a thirty-day clearing
10 period. Is that the gist of what is described in
11 paragraph 2?

12 A. Yes.

13 Q. And what is the purpose of that
14 comparison?

15 A. This is to determine if the animal can
16 clear itself of the pcb's or to what extent it can
17 clear itself of pcb's.

18 Q. To determine a half life or something of
19 that nature?

20 A.- That term was used. It is to determine
21 how long the pcb's stay within the animal after
22 the exposure is stopped.

23 Q. Okay.

24 Do you recall what the results of that

1 comparison were?

2 A. No, I don't.

3 Q. Paragraph 3 refers to the same sort of
4 clearing period of thirty days in connection with
5 the dog study. And was the same kind of
6 comparison done?

7 A. Yes.

8 Q. In connection with the dog study?

9 A. Yes.

10 Q. The samples, the tissue samples from the
11 dog study, were also to be pooled?

12 A. Yes.

13 Q. Paragraph 4 refers to an effort to
14 determine whether the pcb material was transferred
15 across the placenta in connection with the rat
16 study.

17 Was an attempt made to do that?

18 A. Yes.

19 Q. Were you able to determine whether or not
20 that took place?

21 A. I don't remember that. I don't recall
22 the results of those analyses.

23 Q. Okay.

24 Why is that of interest, if you know?

1 A. Whether the substance transfers across
2 the placenta?

3 There is always a general interest in the
4 transfer of chemicals through the placenta,
5 whether they be pcb's or any other. This could
6 explain in some instances the reproduction or
7 teratology or mutagenic changes that are noted.
8 It is just part of the information gathering, that
9 is important.

10 Q. One thing that might be helpful to know?

11 A. Yes.

12 Q. Take a look at Exhibit 280, which is a
13 letter dated May 17, 1971 to Elmer Wheeler from
14 Dennis Lindberg. Do you recall seeing that
15 letter?

16 (The document above-referred to
17 was marked Bloomington Deposition
18 Exhibit No. 280 for identification.)

19 A. No. I do not recall seeing this.

20 Q. At this date, May of 1971, do you know
21 why a 90-day subacute dog study was being
22 scheduled?

23 A. This material was a modification of the
24 previous Aroclor 1242.

1 Q. So you are beginning the same process
2 with a substitute material that you had earlier
3 done with the 1242?

4 A. Yes.

5 Q. That is, the 90-day study helps you home
6 in on the appropriate dosage levels for a
7 long-term study?

8 A. And it also helps to determine if this
9 material is significantly different than the
10 predecessor material from which it was derived.

11 Q. Okay.

12 Was there a significant difference that
13 you recall between 1242 and 1016?

14 A. No.

15 Q. Was that true throughout all of the
16 studies that were done on 1016?

17 A. I believe this was the study.

18 Since there was no difference, no further
19 studies were planned.

20 Q. So there were never any rat or chicken
21 studies with 1016 to your recollection?

22 A. I don't recall any. No.

23 Q. Take a look at Exhibit 281, which is
24 dated May 18, 1971 from Otis Fancher to Dr.

1 Keplinger.

2 To your knowledge, is the request in that
3 memo a request for additional tissues from the
4 chicken study or that there hadn't been early
5 tissues supplied before May of '71?

6 (The document above-referred to
7 was marked Bloomington Deposition
8 Exhibit No. 281 for identification.)

9 A. I would interpret this as a request for
10 tissues from studies made before the studies we
11 recently talked about, the chicken reproduction.
12 There were preliminary studies early on.

13 Q. So they are going back to the early
14 studies to look at those tissues?

15 A. To early '68, '69 era.

16 Q. Do you know if samples had been retained
17 so that that request could become applied with?

18 A. I understand, yes, I understand they
19 were. They were made available.

20 Q. Take a look at Exhibit 282, which is
21 dated May 3, 1971 from Dr. Keplinger to DHJ,
22 whoever that may be, subject Monsanto Aroclor
23 studies, IBT numbers J 8746 and J 9834, I guess.
24 This is a request for what would be a routine

1 interim report to be submitted to Monsanto, I take
2 it?

3 (The document above-referred to
4 was marked Bloomington Deposition
5 Exhibit No. 282 for identification.)

6 A. Yes.

7 Q. Take a look at 283, which is a memo dated
8 June 3, 1971, from Dr. Fancher to Dr. Keplinger
9 and others, subject visit by Mr. Wheeler, Dr. Hunt
10 of Monsanto.

11 Again I will ask you if you that meeting
12 that is referred to is one of the regular periodic
13 meetings to review the progress of these pcb
14 studies?

15 (The document above-referred to
16 was marked Bloomington Deposition
17 Exhibit No. 283 for identification.)

18 A. Yes.

19 Q. Exhibit 284 is a memo dated June 11, 1971
20 from Dr. Keplinger to DHJ re Monsanto study
21 J 9884, Aroclor 5432. That 5432, is that a pcb
22 product?

23

24 (The document above-referred to

1 was marked Bloomington Deposition
2 Exhibit No. 284 for identification.)

3 A. No.

4 Q. Okay.

5 What kind of material is that, just for
6 curiosity sake?

7 A. It is a chlorinated triphenyl.

8 Q. Exhibit 285 is a memo dated June 11, 1971
9 from Dr. Keplinger to Paul Wright, subject
10 Monsanto 90-day studies on Aroclor 1221, 1016,
11 5432 and 5442, and I will ask you if you have seen
12 that?

13 (The document above-referred to
14 was marked Bloomington Deposition
15 Exhibit No. 285 for identification.)

16 A. No, I have not.

17 Q. According to that memo, dosage levels
18 were to be changed in each of the studies
19 described on there.

20 The 1 part per million group was changed
21 to 30 parts per million, the 10 part per million
22 group was changed to 300 parts per million and the
23 100 parts per million group no change.

24 Do you recall ever discussing dosage

1 changes of that nature with anybody?

2 A. No.

3 Q. Do you have any idea why such a change
4 would be made in a 90-day study?

5 A. No.

6 Q. Is it possible because there is no effect
7 being seen at the 100 parts per million level?

8 A. Yes. It is possible.

9 Q. But the better practice would be to start
10 over with those different dosage levels?

11 A. You can't call it a 90-day study at 1
12 part per million, if you are going to change the
13 dose to 300.

14 Q. But if you change the dose to 300 and
15 feed for 90 days after having fed at 1 part per
16 million for some period every time, can you call
17 it a 90-day study at 300 parts per million?

18 A. It is made less clear because of the
19 initial exposure.

20 Q. Would it be correct that the better
21 practice would be to start a new group of animals
22 at the second set of dosage levels?

23 A. That would be my opinion, yes.

24 Q. Okay.

1 286 is a memo from Dr. Keplinger to JWG
2 dated June 16, 1971, subject Monsanto Aroclor
3 dynamic fish studies. And it refers to a visit
4 that you were going to make to some researchers in
5 Missourri.

6 Do you recall that visit?

7 (The document above-referred to
8 was marked Bloomington Deposition
9 Exhibit No. 286 for identification.)

10 A. I recall the visit. But they are
11 mistaken in associating the University of
12 Missouri. It is a federal laboratory located in
13 the same city that the university is located.

14 Q. Okay.

15 What is involved in what is described in
16 Exhibit 286 as a dynamic fish study?

17 A. These are test facilities in which the
18 test water flows through troughs and the fish are
19 exposed to that water that flows through, and the
20 water contains the material being tested. As
21 distinguished from aquarium, where the water is
22 stagnant and the chemicals are introduced into
23 this pool of water and it doesn't move.

24 Q. Okay.

1 One of the things that that might
2 accomplish is to overcome this problem of the
3 pcb's sticking to the sides of the tank and not
4 exposing the fish?

5 A. Yes.

6 Q. Okay.

7 To your knowledge, the dynamic fish
8 studies that are described as being put off in
9 that memorandum never were completed by Industrial
10 Bio-Test?

11 A. That's right.

12 Q. Okay.

13 Was that the type of study that had been
14 done at the federal laboratory in Missouri, the
15 dynamic type?

16 A. Yes. Either had been done or was
17 scheduled to be performed.

18 Q. Okay.

19 Exhibit 287 is a letter dated June 28,
20 1971 from Dr. Keplinger to Mr. Wheeler.

21 I will ask you if you have seen that
22 letter?

23

24 (The document above-referred to

1 was marked Bloomington Deposition
2 Exhibit No. 287 for identification.)

3 A. I have not seen this letter.

4 Q. Do the dosage changes that are referred
5 to in 287 match up with the levels that were
6 described in the memo that we marked as 285?

7 A. They do match.

8 Q. So as of the date that that letter was
9 received by Dr. Wheeler, sometime after June 28,
10 he was aware that the doses were changed rather
11 than new studies being initiated at different
12 doses?

13 A. He received notice. Yes.

14 Q. Right.

15 He may have known about it before he
16 received the letter, I take it?

17 A. Yes.

18 MR. FRUEHWALD: We are assuming in this
19 question that this feeding had started. I am not
20 sure that is clear from these documents that they
21 actually started this feeding before this change
22 of dosage. But --

23 MR. MC CONNELL: I don't know the answer to
24 that.

1 MR. FRUEHWALD: Document 280 indicates that
2 the feeding should start in May.

3 MR. MC CONNELL: The sequence of the documents
4 suggest to me that at least for a period of days
5 or a week or two the feeding had started, but it
6 doesn't really come right out and say that.

7 Q. You don't know the answer to that one way
8 or the other, do you, Mr. Papageorge?

9 A. Only from what is inferred here.

10 Q. You didn't participate in whatever
11 discussions were had around that time?

12 A. Not until I saw these documents, I was
13 not aware of a change in the dosage.

14 Q. Okay.

15 Exhibit 288 is a letter dated June 28,
16 1971 from Dr. Keplinger to Mr. Wheeler.

17 I will ask you if you have ever seen
18 that?

19 (The document above-referred to
20 was marked Bloomington Deposition
21 Exhibit No. 288 for identification.)

22 A. This is a duplicate of the previous
23 exhibit? No.

24 Q. I don't think so.

1 A. No. No.

2 Q. It is the same date, but I think it
3 refers to chickens, whereas the other one is about
4 the dogs.

5 A. It is not specific, except by reference
6 to a previous study the chickens are involved.

7 Q. Right.

8 The reference to hatchability and
9 survival of chicks?

10 A. Refers to another study. The implication
11 is that these studies were also referring to
12 chicks. I had not seen this before.

13 Q. Okay.

14 And 287, going back to that for a minute,
15 the reference in the last paragraph, the dog study
16 which was 5432, will need to be extended to allow
17 a full ninety days of feeding at 300 parts per
18 million, suggests that at least with respect to
19 that compound, feeding at some other level had
20 already started?

21 A. Yes.

22 Q. Okay.

23 The studies that are referred to in
24 Exhibit 288, which we take from the context to be

1 chicken studies, again is a refinement of the
2 earlier studies by reducing the dosage levels, to
3 try and home in on exactly where the no-effect
4 level would occur; is that correct?

5 A. It appears to be, yes.

6 Q. Okay.

7 Exhibit 289 is a four-page document dated
8 July 31, 1971 entitled memorandum for the record
9 to Dr. Leo Friedman from H. Blumenthal. And I
10 will ask you if you have seen that document before
11 today?

12 (The document above-referred to
13 was marked Bloomington Deposition
14 Exhibit No. 289 for identification.)

15 A. I have reviewed the exhibit.

16 Q. Have you ever seen it before today?

17 A. I have not.

18 Q. Were you were you aware of the Food and
19 Drug Administration's interest in the question of
20 pcb's around this time, 1971?

21 A. Yes.

22 Q. And the reason for that was, among other
23 things, that they were concerned about pcb
24 contamination of various types of food?

1 A. Yes.

2 Q. And were you aware that the FDA was
3 considering establishing acceptable levels of the
4 presence of pcb in various types of food?

5 A. Yes.

6 Q. What was your understanding of the
7 various mechanisms by which there might come to be
8 pcb in food?

9 We have already talked about one in
10 connection with Yu Sho.

11 A. It was found in dairy products, milk.

12 Q. Okay.

13 A. It was found in cereals. Because of the
14 package, the paperboard, the ink on the package.
15 And about this time I believe it showed up in
16 poultry. I believe that is about when it
17 happened. Where a poultry feed ingredient was
18 contaminated with pcb's.

19 I don't recall any other known
20 contaminations to FDA in the middle of 1971.

21 Q. Do you recall whether it was ever
22 determined what the source was in the milk?

23 A. Yes. There was a coating applied to
24 concrete silos to inhibit the degradation of the

1 concrete by the acid formed in the silage.

2 Q. And that had pcb's in it?

3 A. And the coating had pcb's as an
4 ingredient and found its way into the silage and
5 into the cattle and into the milk.

6 Q. All of the uses that you have described
7 that led to these various food contamination
8 episodes either had been or were in the process of
9 being discontinued by Monsanto at the time of this
10 memo; is that correct?

11 A. Yes.

12 Q. Did you ever determine what the source of
13 the contamination in the poultry feed was?

14 Was that some kind of a heat-transfer
15 problem?

16 A. This was the heat transfer of this
17 ingredient that was used in preparing poultry
18 feed.

19 Q. Having reviewed Exhibit 289, as you sit
20 here today is your understanding of the results as
21 they existed in July of 1971 of the various
22 Industrial Bio-Test studies the same as the
23 understanding that is reflected in this exhibit?

24 A. Yes. This information is very similar to

1 the summaries that I was receiving. It reflects
2 the summaries.

3 Q. So the information the FDA had was the
4 same, essentially, as the information you had, as
5 of July 1971?

6 A. Yes.

7 Q. It says on page 3 at the bottom of this
8 memo, quoting now from the memo:

9 "Our conclusions at
10 this time are that pending
11 completion of studies in
12 progress --"

13 I take it this refers at least in part to
14 the Industrial Bio-Test studies?

15 A. Yes.

16 Q. Continuing:

17 "-- we are in a poor
18 position to recommend
19 guideline levels for
20 contamination. This lack of
21 complete toxicologic data when
22 coupled with our essential
23 lack of information about
24 "background levels of

1 contamination in foodstuffs in
2 general, makes it all the more
3 imperative that we resist
4 setting guidelines on anything
5 more than a case-by-case basis
6 at this time."

7 Did the FDA or any individual at the FDA
8 ever convey the essence of the conclusion of this
9 memo that I just read to you?

10 A. Yes. Dr. Blumenthal conveyed those
11 thoughts to Dr. Kelly and Mr. Wheeler.

12 Q. Okay.

13 And they conveyed that back to you?

14 A. Yes.

15 Q. Was that at or about the July 30, 1971
16 date of that memo?

17 A. Yes.

18 MR. MC CONNELL: It is a quarter of.

19 (Whereupon, the deposition was
20 continued to October 16, 1986
21 at 8:30 o'clock a.m.)

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24