

COPY

Superior Court of the State of California
For the County of Los Angeles

TRANSWESTERN PIPELINE)
COMPANY,)

Plaintiff,)

vs.)

Case No. BC 026959

MONSANTO COMPANY and)
DOES 1 through 200, inclusive,)

Defendant.)

Volume I

June 11, 1992

Deposition of **ROBERT ELLIS KELLER**, taken on
behalf of Plaintiff.

GORE REPORTING COMPANY

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1 Superior Court of the State of California
2 For the County of Los Angeles
3

4 TRANSWESTERN PIPELINE)
5 COMPANY,)
6 Plaintiff,)
7)

8 v.) No. BC 026959
9)

10 MONSANTO COMPANY and)
11 DOES 1 through 200,)
12 inclusive,)
13 Defendants.)
14
15

16 Volume I
17
18

19 Deposition of ROBERT ELLIS KELLER,
20 taken on behalf of Plaintiff, at the offices
21 of Bryan, Cave, McPheeters & McRoberts, 500
22 North Broadway in the City of St. Louis,
23 State of Missouri, on the 11th day of June,
24 1992, before J. Bryan Jordan, certified
25 shorthand reporter and notary public.

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1 Whereupon. . .

2 ROBERT ELLIS KELLER,

3 of sound mind, having been first duly sworn
4 to tell the truth, the whole truth, and
5 nothing but the truth in the case aforesaid,
6 testified upon his oath as follows, to-wit:

7 EXAMINATION

8 QUESTIONS BY MR. TALLON:

9 Q. Please state your full name for
10 the record.

11 A. Robert Ellis Keller, K-e-l-l-e-r.

12 Q. And please describe your education
13 for us.

14 A. B.A. degree in chemistry,
15 University of Iowa; M.S. degree, chemistry;
16 University of Iowa, Ph.D. degree in
17 chemistry, University of Iowa.

18 Q. In what year did you receive your
19 Bachelor's from the University of Iowa?

20 A. 1947.

21 Q. And in what year did you receive
22 your Master's?

23 A. '49.

24 Q. And in what year was your Ph.D.
25 conferred?

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1 A. '51.

2 Q. In what year did you begin working
3 for Monsanto Company?

4 A. 1953. '52.

5 Q. Did you begin work with the
6 Monsanto Company after finishing your degree,
7 your Ph.D. degree?

8 A. Yes. I had -- between the degree
9 and Monsanto, I had two years with Smith,
10 Kline & French Laboratories in Philadelphia.

11 Q. As a research chemist?

12 A. Yes, senior research chemist.

13 Q. Dr. Keller, you have been deposed
14 before in another case like this?

15 A. Yes.

16 Q. Was it in one case or in more than
17 one case?

18 A. More than one case.

19 Q. In about how many cases would you
20 say you have given a deposition?

21 A. About two.

22 Q. And do you recollect the names of
23 either of those two cases?

24 A. One I do. The other, not
25 specifically.

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1 Q. What is the name of the case that
2 you remember?

3 A. Outboard Marine.

4 Q. Did the other case have anything
5 to do with polychlorinated biphenyls?

6 A. Yes.

7 Q. And can you briefly describe for
8 me the nature of that action?

9 A. Very briefly, as I recollect,
10 involved a building in San Francisco that had
11 been contaminated by equipment where Monsanto
12 product had been used. I can't tell you much
13 more than that.

14 MR. ZIMMER: I can help on that
15 one. It was the One Market Plaza litigation,
16 and his transcript was sealed along with that
17 of all witnesses taken on behalf of other
18 parties pursuant to an ADR confidentiality
19 agreement.

20 MR. TALLON: Are you using the
21 term "ADR" to refer to alternate dispute
22 resolution?

23 MR. ZIMMER: That's correct. And
24 anticipating your next question, that's why
25 you didn't receive a copy of that particular

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1 transcript but I believe you did of the
2 Outboard Marine transcript.

3 MR. TALLON: That's correct.

4 BY MR. TALLON:

5 Q. Just briefly, Dr. Keller, when you
6 referred to the building in San Francisco as
7 having been contaminated, what about it was
8 contaminated?

9 A. I really didn't get involved.
10 That wasn't my role. I can't recall.

11 Q. Do you remember what it was that
12 your testimony went to, what subjects you
13 talked about in your deposition?

14 A. Primarily, what Monsanto knew
15 about PCB's and when.

16 Q. Was there a particular Aroclor or
17 aroclors that you were discussing during the
18 course of your testimony in that matter?

19 A. I don't recall which Aroclor
20 product was involved. I think there was a
21 range of aroclors discussed.

22 Q. Dr. Keller, are you a member of
23 any society for chemists or any professional
24 society?

25 A. The principal one is the American

1 Chemical Society.

2 Q. Are you a member of that society
3 today?

4 A. Yes.

5 Q. And have you been for some time?

6 A. Yes.

7 Q. Approximately how long?

8 A. Forty-five years.

9 Q. Have you ever held any positions
10 as an officer or director of that society?

11 A. Chairman of local sections.

12 Q. Have you ever written for
13 publication by the American, that is to say
14 in a publication sponsored by the American
15 Chemical Society?

16 A. Yes.

17 Q. On how many occasions?

18 A. Twenty, twenty-five.

19 Q. When you are referring to those
20 twenty to twenty-five occasions, are you
21 referring to technical papers that have been
22 published in a memorandum form or in a
23 booklet form by the American Chemical Society
24 or something else?

25 A. Technical papers published in

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1 their technical journals.

2 Q. Have any of the papers that you
3 have published in concert with the American
4 Chemical Society addressed in broad terms the
5 subject of PCB's?

6 A. No.

7 Q. Have you ever written a
8 publication in any other forum?

9 A. No.

10 Q. When first you began work at
11 Monsanto Company in 1952, were you here in
12 St. Louis?

13 A. Yes, I was.

14 Q. And what position did you assume
15 upon entering employment with Monsanto?

16 A. Senior research chemist in the
17 R & D department of the Organic Chemicals
18 Division of Monsanto.

19 Q. And broadly speaking, could you
20 tell me what responsibilities you had as a
21 senior research chemist when you began work
22 with Monsanto in 1952?

23 A. It was primarily to develop
24 analytical methods which could be used to
25 support development of products and processes

1 out of the division.

2 Q. For approximately how long did you
3 hold the position as senior research chemist
4 in the Research and Development Department of
5 the Organic Chemicals Division?

6 A. Two years.

7 Q. And then what position did you
8 take on?

9 A. I was promoted to project leader.

10 Q. And what did the responsibilities
11 of project leader entail for you in 1954?

12 A. Expanded responsibilities of the
13 senior research chemist function.

14 Q. And what expanded responsibilities
15 were they?

16 A. Broader projects, assignment of
17 one or two or more people.

18 Q. Assignment of one or two or more
19 people meaning that people now reported to
20 you for the first time?

21 A. Yes, mm-hmm.

22 Q. Was there one or two, or more?

23 A. One or two.

24 Q. How long were you in the position
25 as project leader?

1 A. Two years.

2 Q. Until approximately 1956?

3 A. Yes, that would be right, '55 and
4 '56.

5 Q. And what position did you take on
6 in 1956?

7 A. That was research group leader.

8 Q. Was that also in the Organic
9 Chemicals Division?

10 A. Yes.

11 Q. And I was assuming, but simply to
12 make clear, was your position as project
13 leader also in the Organic Chemicals
14 Division?

15 A. Yes, mm-hmm. All of these are in
16 the Organic Chemicals Division until I tell
17 you different, at least.

18 Q. Thank you. What were your
19 responsibilities as research group leader,
20 beginning in 1956?

21 A. That was concurrent with the
22 establishment of a formal analytical group,
23 and as part of that, it involved expanded
24 analytical projects and support of division
25 research; increased personnel assignment.

1 Q. How long did you hold that
2 position as research group leader?

3 A. Six years.

4 Q. That was until about --

5 Q. 1962?

6 A. '62, mm-hmm, right.

7 Q. And what position did you take on
8 in 1962?

9 A. Senior -- or -- senior research
10 group leader.

11 Q. And what responsibilities did you
12 have in that role?

13 A. It was continued to be expanded
14 responsibilities with expanding analytical
15 into what's called spectroscopy.

16 Q. For the record, Doctor, could you
17 please define spectroscopy?

18 A. That's an instrumental technique
19 used for primarily analysis of different
20 materials for components.

21 Q. Is that different than gas
22 chromatography?

23 A. Yes.

24 Q. Was gas chromatography available
25 as an analytical tool in 1962?

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1 A. Yes.

2 Q. Doctor, if you can, would you
3 please define for me the term chlorinated
4 hydrocarbons?

5 MR. ZIMMER: As he sits here
6 today, or at any particular point in time?

7 MR. TALLON: Right now.

8 A. Chlorinated hydrocarbons, to me,
9 is some combination of carbon, chlorine and
10 hydrogen.

11 BY MR. TALLON:

12 Q. To you as a chemist, does the term
13 "chlorinated hydrocarbons" include the family
14 known as polychlorinated biphenyls?

15 A. It can.

16 Q. Does it also include compounds
17 other than polychlorinated biphenyls?

18 A. Yes.

19 Q. How long were you in your position
20 as senior research group leader?

21 A. Four years.

22 Q. Until 1966 or so?

23 A. '6, right.

24 Q. And what position did you take on
25 in 1966?

1 A. Section manager.

2 Q. Of what section?

3 A. In the first year it started out
4 was physical analytical and instrument
5 development section.

6 Q. And in 1966, what was the business
7 of that section?

8 A. To -- this was a continuing
9 support of Organic Division R & D.

10 Q. What manner of support?

11 A. Through technology and techniques
12 supplied by the groups that I mentioned that
13 make up the section, analytical, instrument
14 development, spectroscopy.

15 Q. For example, what did those
16 sections do to support the Organic Chemicals
17 Division?

18 A. All right, the instrument group
19 developed primarily process instruments for
20 monitoring plant processes. The analytical
21 group was, as I described earlier, directed
22 toward development of methodology and
23 application of same for support of R & D. The
24 spectroscopy group, same direction through
25 instrument techniques, excluding gas

chromatography.

2 Q. Did you exclude gas chromatography
3 from your description of the responsibilities
4 of the instrument group because somebody else
5 was doing it or because no one else was doing
6 it?

7 A. Well, the instrument group was a
8 group committed to producing an end product,
9 if you will, a piece of hardware, so it, that
10 group could use gas chromatography but the
11 other groups, analytical, for example, would
12 use gas chromatography for analysis of
13 matrices of materials to get data on a batch
14 basis.

15 Q. How long did you hold your
16 position as section manager?

17 A. Three years.

18 Q. Until 1969 or so?

19 A. '69. And during the course of
20 that, the last two years, the-- it went from
21 the name I gave you as a section to "applied
22 sciences section." The last two years of
23 those three years, I was a section manager.

24 Q. And in 1969, what position did you
25 take on?

1 A. Manager of Applied Sciences.

2 Q. How did that differ with what you
3 had done immediately beforehand?

4 A. Part of the same and more.

5 Q. What was the "more"?

6 A. Okay, let me just add to this. At
7 that point in time, this was 1970, the
8 company had restructured and the Organic
9 Chemicals Division, of which up till this
10 point I'd been part of, was put together with
11 the Inorganic Division of Monsanto and made
12 into an operating company unit called
13 Monsanto Industrial Chemicals. At that
14 point, 1970, then the function of applied
15 sciences was created to provide full support
16 across its larger function of Monsanto
17 Industrial Chemicals.

18 To the previous groups that I've
19 commented then were added -- well, let me
20 preface, there were two functions in the
21 inorganic chemicals division: Research and
22 instrument group and analytical group. These
23 two were joined together, then, as one unit.

24 Additionally, we had a computer
25 sciences group, applied math, radiochemistry,

1 full radiochemistry with an NRC broad
2 license, so that we had a complementary
3 supporting skills put together as a broad
4 base from that point on, and I was in that
5 position for eleven years.

6 Q. You were in the position as
7 Manager of Applied Sciences?

8 A. Applied Sciences for Monsanto
9 Industrial Chemicals.

10 Q. If you started in the position of
11 Manager of Applied Sciences circa 1979, that
12 would bring you to about 1980, if you held
13 the position for eleven years, right?

14 MR. ZIMMER: I think it was '69.

15 MR. TALLON: '69?

16 A. About '81, I believe.

17 BY MR. TALLON:

18 Q. '81?

19 A. Should be close.

20 Q. And did you take on a new position
21 in '81?

22 A. Well, the next, let's see, three,
23 four years, then, through some internal
24 structuring of Monsanto, then it became --
25 then I became Manager of Applied Technology

1 with the same functions. Primarily, name
2 change, and that was up until late 1985.

3 Q. And in 1985 did you leave, retire
4 from the company?

5 A. I retired and then did consulting
6 work as a private consultant for the next
7 four years.

8 Q. Dr. Keller, in indicating that you
9 did consulting work as a private consultant
10 for the next four years, were you indicating
11 for Monsanto?

12 A. No.

13 Q. Did you do any work as a private
14 consultant during the four years that you
15 have thus far mentioned for Monsanto?

16 A. No.

17 Q. That would bring us to about 1989.
18 Since then, have you done any consulting work
19 for Monsanto?

20 A. No. Since then, I've operated,
21 been as an independent contractor on a
22 two-year project which I've just come off of
23 for the St. Louis Science Center and the
24 National Science Foundation.

25 Q. And are you currently doing any

consulting work for Monsanto?

2 A. No.

3 Q. Are you -- just to be sure I
4 understood your testimony, are you drawing a
5 distinction between acting as an independent
6 contractor and a consultant?

7 A. Well, it just happens that I
8 committed the last two years to the St. Louis
9 Science Center and the National Science
10 Foundation to their project, so I took myself
11 out as a private consultant.

12 Q. And when you say committed, you
13 mean that you were during that two-year time
14 period doing work exclusively for the Science
15 Center?

16 A. They had covered me, right.
17 Mm-hmm.

18 Q. Other than as you have described
19 since your retirement from Monsanto, have you
20 done any work for compensation for that
21 company?

22 A. No.

23 Q. Doctor, during the course of your
24 employment in the various positions that
25 you've just identified for us, were you

1 responsible for developing any new products?

2 A. No.

3 Q. Is it fair to say from your
4 description of your job responsibilities that
5 new product development did not fall within
6 the ambit of your job?

7 A. That's right.

8 Q. Was it any part of your job during
9 the period from, what did we say, 1952
10 through 1985 to do testing on new products
11 before they were released for sale by
12 Monsanto to consumers?

13 A. I can't recall any. I say that
14 because that responsibility fell to our
15 production plant facilities.

16 Q. And did you have supervision over
17 the persons who would do that work at the
18 production plant facilities?

19 A. I had a coordinated role with the
20 plant chief chemists, but I had no
21 responsibilities for their operations within
22 each plant.

23 Q. Dr. Keller, during the period that
24 you served as Manager of Applied Sciences,
25 which I understand was from approximately

1 1969 to a date sometime in 1981, to whom did
2 you report?

3 A. Well, let's see. In 1969, it
4 would be Oliver DeGarmo, and from 1970 on,
5 Tracy Patrick.

6 Q. And what position did your
7 supervisor in 1969 hold?

8 A. Associate Director of Research.

9 Q. And from 1970 on, what was the
10 title of your supervisor?

11 A. Same.

12 Q. During the period you served as
13 Manager of Applied Sciences from 1969 to
14 sometime in 1981, did you report to the
15 medical director of Monsanto?

16 A. I had no reporting relationships
17 to him.

18 Q. Did the medical director have any
19 reporting relationships to you?

20 A. No.

21 Q. To use a term that you used a
22 moment ago, did you coordinate with the
23 medical director?

24 A. We coordinated, yes.

25 Q. And can you tell me how that

1 coordination worked during the period that
2 you served as Manager of Applied Sciences?

3 A. Primarily, the Medical Department
4 was what we called a client. The R & D
5 groups of research were clients, and our
6 relationship was on a client basis, and with
7 projects that they requested, and if the
8 Medical Department had work of the type we
9 could support and they wanted us to do it,
10 they would make a request, usually through
11 the R & D group involved with that product.

12 Q. Do you ever recollect having
13 handled any toxicological studies at the
14 request of the medical director or his
15 department?

16 A. Yes. Qualify.

17 Q. Okay, what's the qualification?

18 A. What do you mean, handle? Could
19 we play that question back again, please?

20 Q. Yes, of course. Did the medical
21 director ever request your group to perform
22 any toxicological studies with respect to
23 Monsanto products during the period -- well,
24 while you were at Monsanto?

25 A. The answer to that is no, because

1 we weren't doing toxicological studies.

2 Q. Were you ever requested to
3 coordinate toxicological studies at the
4 behest of the medical director that were
5 performed by outside consultants?

6 A. Yes, and for analytical support.

7 Q. Are you familiar with the name Dr.
8 Calandra?

9 A. Yes.

10 Q. Did you ever coordinate with Dr.
11 Calandra in the toxicological work done by
12 his group, or his company, for Monsanto?

13 A. Yes.

14 Q. Doctor, during the period that
15 you've described dating from approximately
16 1952 through 1950 -- 1985, did you personally
17 do any work in your department with or with
18 respect to a product sold as Turbinol 153?

19 A. No.

20 Q. Did you do any work in your
21 department or do you know of any work done in
22 your department with a product known as MCS
23 153?

24 A. Yes.

25 Q. Did you do any work in your

1 department with respect to a product known as
2 OS 81?

3 A. Not that I recall.

4 Q. During your -- I'm sorry?

5 A. Can we play back the question on
6 the first two products before the last one
7 you mentioned?

8 Q. The questions that I had asked
9 were, did you -- well, let me just ask
10 another question.

11 During the period that you were
12 employed by Monsanto, did you do any work, or
13 did you know of work being done by those you
14 supervised with respect to products sold by
15 Monsanto under the name of either Turbinol
16 153 or MCS 1653?

17 A. Those products, no. That answer
18 should be no.

19 Q. Which, of course, makes me wonder
20 why originally you said yes when I asked you
21 about MCS 153.

22 A. Well, because 153 is in my mind
23 today, but back then, I had no involvement.

24 Q. You mean 153 is in your mind today
25 as a result of your preparation for this

1 session today?

2 A. Mm-hmm. (Nods head in affirmative
3 manner).

4 Q. During the course of your
5 employment with Monsanto, did you ever have
6 any kind of communication with anyone you
7 believed to be employed by a representing
8 Texas Eastern Transmission Corporation?

9 A. No.

10 Q. During the entire course of your
11 employment with Monsanto, did you have any
12 kind of communication with anyone you
13 believed to be representing Transwestern
14 Pipeline Company?

15 A. No.

16 Q. During the course of your
17 employment with Monsanto, did you have any
18 communication of any kind with any person
19 that you believed to be employed by or
20 representing NCR, National Cash Register?

21 A. Not that I recall.

22 Q. Doctor, when you began work with
23 Monsanto in 1952, were you aware that
24 Monsanto produced products whose constituent
25 elements included polychlorinated biphenyls?

1 A. At some point along the way, after
2 joining Monsanto, I'm sure I became aware of
3 this, but today, I can't tell you when.

4 Q. Doctor, can you define today your
5 understanding of the term "chlorinated
6 polyphenyls"?

7 A. My understanding is that it's two
8 six-member chlorine rings linked together
9 with varying amounts of chlorine attached to
10 one or both rings.

11 Q. And is the chlorine ring to which
12 you referred also sometimes known as a
13 benzene ring?

14 A. Yes.

15 Q. And does the term "chlorinated
16 polyphenyls" also describe compounds that
17 have more than two benzene rings?

18 A. Restate that, please, to me.

19 Q. Yes. Does the term "chlorinated
20 polyphenyls," to you, also include compounds
21 that have more than two benzene rings? In
22 other words, three or more?

23 A. Only polychlorinated biphenyls
24 mean that to me.

25 Q. Mean what to you?

1 A. That it's two rings.

2 Q. Okay, so a chlorinated biphenyl
3 has two benzene rings, correct?

4 A. Mm-hmm. (Nods head in affirmative
5 manner).

6 Q. And the term "chlorinated
7 polyphenyls", does that mean to you that
8 there are -- that that term describes only
9 compounds with two benzene rings or can it
10 include compounds with more than two benzene
11 rings?

12 A. As I recall, it could be more.

13 Q. So is it fair to say that the term
14 "chlorinated polyphenyls" can encompass
15 chlorinated biphenyls but may also encompass
16 other substances?

17 A. That would be my interpretation.

18 Q. Doctor, are you familiar with the
19 term "chick edema factor"?

20 A. Yes.

21 Q. And what does that term mean to
22 you?

23 A. It's skin rash or irritation
24 caused by product.

25 (Discussion off the record

and short break.)

2 BY MR. TALLON:

3 Q. Okay, Doctor, just to jump back
4 for a moment, to whom did you report in 1966,
5 '67 and '68, before becoming Manager of
6 Applied Sciences? You were then the section
7 manager, as I recall.

8 A. Oliver DeGarmo.

9 Q. Is Mr. DeGarmo still employed by
10 Monsanto today?

11 A. No.

12 Q. Is he retired?

13 A. Retired.

14 Q. Do you know where he's living?

15 A. Yes.

16 Q. Where?

17 A. Kirkwood, Missouri.

18 Q. Doctor, do you recollect during
19 your tenure any work being done with Aroclor
20 1242 with chick edema factor tests?

21 A. Not that I recall.

22 Q. Do you recall ever having reported
23 to you that Proctor & Gamble was doing chick
24 edema factor tests with Aroclor 1242?

25 A. No.

Q. Did you know a Kenneth H. Maddy
during the course of your employment by
Monsanto?

A. No.

MR. TALLON: Let me show you a
document that we'll ask the court reporter to
mark as the next exhibit in order.

(Plaintiff's Deposition
Exhibit 278 marked for
identification.)

BY MR. TALLON:

Q. Take a moment and review that.
(Witness peruses said
document.)

BY MR. TALLON:

Q. Doctor, my question for you is,
having reviewed the exhibit before you, do
you have any enhanced recollection about work
being done by Proctor & Gamble with respect
to Aroclor 1242 and chick edema factor?

A. No.

Q. Does reviewing that letter or that
exhibit supply you with any enhanced
recollection about the identity of Kenneth
H. Maddy?

1 A. I just don't recall where he was
2 at that point. I don't recall.

3 Q. You don't --

4 A. I don't recall him.

5 Q. There's a typed notation at the
6 bottom of the page. It says, "9/19/61,
7 talked with Maddy, and he is sure it won't
8 bother us. REK."

9 Do you know whether you are
10 responsible for the typed notation that
11 appears at the bottom of that exhibit which
12 precedes the initials "REK"?

13 A. I don't recall this notation.

14 Q. Do you have any present
15 recollection of having discussed with Elmer
16 Wheeler Aroclor 1242 and chick edema factor
17 tests?

18 A. I have no recollection of that.

19 Q. And you are -- you know who Mr.
20 Wheeler is and what his position was in 1961?

21 A. Yes.

22 Q. All right, thank you.

23 MR. TALLON: Let's mark as the
24 next exhibit a four-page document bearing
25 production numbers TRAN 085902, 085919,

058926, and 085930.

2 (Plaintiff's Deposition
3 Exhibit 279 marked for
4 identification.)

5 BY MR. TALLON:

6 Q. Would you take a moment and review
7 that exhibit, please, Dr. Keller?

8 (Witness peruses said
9 document.)

10 MR. ZIMMER: All right.

11 BY MR. TALLON:

12 Q. Doctor, do these appear to be to
13 you organizational charts for the Monsanto
14 Industrial Chemicals company technology
15 planning and evaluation for various dates in
16 the Seventies starting with June 1st, 1972?

17 A. Yes.

18 Q. If you would focus for a moment,
19 please, on the first of those four pages, the
20 organizational chart dated June 1, 1972, I
21 see over in the left-hand side of the page
22 that there is a box titled "Manager, Applied
23 Sciences," and than box is the name
24 "R. E. Keller." That refers to you; correct?

25 A. Correct.

1 Q. Underneath the box with your name
2 in it, there are two other boxes. One
3 labeled "Group Leaders" and one labeled
4 "Senior Research Specialist." You see those?

5 A. Yes.

6 Q. Did the employees whose names
7 appear on those boxes report to you as of the
8 date of this organizational chart?

9 A. Yes.

10 Q. Did this organizational chart
11 describe the organization of your group at
12 any time before June 1, 1972?

13 A. Essentially the same. You say
14 before '72. Can you clarify that for me.

15 Q. Yes, in particular, you had told
16 me that you became the Manager of Applied
17 Sciences in 1969 and served in that position
18 through approximately 1981.

19 A. I believe I said that in '69, I
20 was a section manager. It was still a
21 section. In 1970, when the company
22 reorganized, it became Applied Sciences as a
23 unit, and then I became a Manager of Applied
24 Sciences.

25 Q. So Manager of Applied Sciences

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really started in '70?

2 A. Mm-hmm. (Nods head in affirmative
3 manner).

4 Q. And until '69, you were a section
5 manager?

6 A. Right.

7 Q. Okay. Is the -- well, let me put
8 it to you this way. Did the employees whose
9 names were listed in the box as group leaders
10 report to you at any point before 1972?

11 A. Yes.

12 Q. Did Mr. Dietrich report to you
13 before '72?

14 A. Yes.

15 Q. How much before?

16 A. Approximately eight or nine years.

17 Q. What was his job?

18 A. He was a research, senior research
19 chemist, entry level, as a spectroscopist.

20 Q. Did he have employees reporting to
21 him at any time during the period he reported
22 to you?

23 A. Yes, as shown by this diagram. He
24 was a group leader.

25 Q. He was a group leader who reported

1 to him based on your reading of this diagram?

2 A. In 1972?

3 Q. Mm-hmm.

4 A. Jim Mieure, Bernie Katlafsky. As
5 I best recall, Kinast. Beyond that, I'd have
6 to go to other charts. I'm not sure.

7 Q. Have you ever seen other
8 organizational charts for the group in which
9 you worked which were more expansive in the
10 sense that they included names of more
11 people?

12 A. I have seen them, but not since
13 leaving Monsanto.

14 Q. In 1972, was Mr. Dietrich a senior
15 research chemist, spectroscopist?

16 A. No, he was a group leader in '72.

17 Q. And what group did he lead?

18 A. The spectroscopy group.

19 Q. What was Mr. Emery's position in
20 '72?

21 A. Group leader of the Physical
22 Chemistry Group.

23 Q. And he had employees reporting to
24 him?

25 A. Yes.

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Q. What was Mr. Fowler's position in
2 '72?

3 A. Group leader responsible for
4 process instrument development.

5 Q. And Mr. Tucker? What was his
6 position in '72?

7 A. He was group leader responsible
8 for the Analytical Chemistry Group.

9 Q. Did he also have employees
10 reporting to him?

11 A. Yes, mm-hmm.

12 Q. There is another box just
13 underneath the box identifying the group
14 leaders who we've just reviewed, Senior
15 Research Specialist. Do you see that?

16 A. Yes.

17 Q. And what is the name of the
18 gentleman that appears in that box?

19 A. Jack Hinchon, H-i-n-c-h-e-n.

20 Q. Did he report to you, or to one of
21 the group leaders?

22 A. He reported to me.

23 Q. And what was his job in 1972?

24 A. Applied math and statistics.

25 Q. I see from looking at the

1 organizational chart dated June 1, 1972, that
2 O. DeGarno -- DeGarmo was the Manager of
3 Process Technology. Was that a group
4 different than the group for which Mr. Fowler
5 was responsible?

6 A. Yes.

7 Q. And how did they differ?

8 A. DeGarmo's area was responsible for
9 developing new processes, whereas Fowler's
10 group was responsible for developing
11 instruments needed for those processes.

12 Q. I also see from looking at the
13 chart dated June 1st, 1972, that a
14 J. S. Metcalf was the Manager of Quality and
15 Environmental Control. Do you see that?

16 A. Yes.

17 Q. Way up on the top to the right.

18 A. Mm-hmm. (Nods head in affirmative
19 manner).

20 Q. Did you know what Mr. Metcalf's
21 job was? That is to say, what his job
22 responsibilities were in June of 1972?

23 A. Vaguely.

24 Q. Vaguely, what were they?

25 A. To review products and work with

1 the business group's research on coordinating
2 whatever would be needed for quality and
3 environmental concerns.

4 Q. Could you just flip for a moment,
5 Doctor, to the next page? It's the chart
6 dated October 1, 1975. The organization just
7 under your name appears to have been modified
8 slightly in that Mr. Fowler is now in his own
9 box. You see that?

10 A. Yes.

11 Q. And what does that signify to you?

12 A. Mr. Fowler was having physical
13 problems, and it is my best recollection at
14 this point, there was an effort to share some
15 of the burdens of that group.

16 Q. And how did that result in his
17 being in a separate unit within your
18 department if indeed that is what this
19 signifies?

20 A. As opposed to group leaders?
21 Simply a different title, so it was a
22 different box.

23 Q. It is also depicted on the chart
24 dated October 1, 1975, that Mr. Metcalf, by
25 October 1, 1975, has the title "Manager of

1 Product Acceptability." Do you see that?
2 It's on the, the right-hand side of the page.

3 A. Yes.

4 Q. Do you have an --

5 A. May I qualify this?

6 Q. Yes, sure.

7 A. Former comment on your question
8 about --

9 Q. Fowler?

10 A. Fowler. And I was -- I jumped
11 ahead because I was looking in my own mind,
12 Dr. Fowler passed away, and I'm not sure just
13 when at this point, but that's part of the
14 picture, and the basis for my comment.

15 Q. Referring back for a second to the
16 October 1, 1975, organizational chart, Mr.
17 Metcalf, on this chart, has the title
18 "Manager, Product Acceptability." Do you see
19 that?

20 A. Mm-hmm. (Nods head in affirmative
21 manner).

22 Q. Was that a new position as of
23 October 1975, so far as you know?

24 A. So far as I know.

25 Q. Do you know what his

1 responsibilities were in that position?

2 A. The only comment I can make on
3 that is, as I knew it, it was the same as,
4 responsibility-wise, essentially, as he had
5 before.

6 Q. Do you have any understanding as
7 to why the title was changed?

8 A. I think the company at this point
9 was concerned about doing everything possible
10 to address products and make sure they were
11 acceptable, and it was a way of formalizing
12 in that direction.

13 Q. The name change was? Is that what
14 you mean?

15 A. Mm-hmm. (Nods head in affirmative
16 manner) Yes.

17 Q. Doctor, are you familiar with the
18 name Gunnar Widmark?

19 A. Yes.

20 Q. And will you identify Mr. Widmark
21 for the record?

22 A. He was Professor of Analytical
23 Chemistry at the Analytical Chemistry
24 Institute, University of Stockholm, Sweden.

25 Q. And under what circumstances did

1 you first hear of Mr. Widmark's name or
2 Professor Widmark's name?

3 A. It was a publication by Widmark
4 and Jensen in the "New Scientist," December
5 of 1966.

6 Q. And that publication related to
7 work done by Professors Widmark and Jensen
8 with respect to polychlorinated biphenyls?

9 A. Yes.

10 Q. How did that publication come to
11 your attention, as best you recall today?

12 A. Through our European Monsanto
13 offices, London, and to our Medical
14 Department and product business group.

15 Q. In what fashion did the
16 publication become known to you through the
17 European Monsanto offices in London?

18 A. Well, as I best recollect, there
19 was a memo or memos to Medical Department
20 personnel regarding this publication.

21 Q. And how did that come to your
22 attention that there were memos to the
23 Medical Department personnel?

24 A. The Medical Department, and I
25 don't remember which one, and the business

1 group responsible for PCB-type products, PCB
2 at that time, brought it to my attention, and
3 I don't recall how that was done now; don't
4 know.

5 Q. When you state in your answer that
6 you don't recall how it was done, do you mean
7 that to indicate that you don't recall
8 whether it was a memo, or a letter, or a
9 telephone call?

10 A. Correct. I don't recall what the
11 mechanism was.

12 Q. Do you recall whom it was that
13 communicated the information to you that the
14 study by Widmark and Jensen had been
15 published?

16 A. No, I don't.

17 Q. Do you remember anything about the
18 content of the communication that came to
19 you, notwithstanding that you don't recall
20 exactly what form the communication took?

21 A. I don't remember the content.

22 Q. Do you recall whether or not you
23 had any reaction to the information that such
24 a study had been published by Widmark and
25 Jensen?

1 A. I found that the article that
2 we're talking about in "New Scientist" was
3 interesting, somewhat surprising.

4 Q. Do you remember, by the way,
5 Doctor, getting an actual copy of the article
6 as published?

7 A. I have in mind a copy of it from
8 someone, but I can't add anymore than that to
9 it.

10 Q. Do you recollection being asked to
11 do anything or to take any action in
12 connection with the news being disseminated
13 that the work by Widmark and Jensen had been
14 published?

15 A. Well, the action that we took was
16 in concert with the Medical Department in the
17 business group to do everything possible to
18 get as much information as we could on what
19 this story really was and what it was all
20 about.

21 Q. Just to be clear, were you asked
22 to do something in that respect?

23 A. I don't recall if I was asked
24 personally. I was involved. Whether someone
25 specifically asked me, I don't recall.

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1 Q. Do you have any understanding as
2 to why such responsibility would fall to you,
3 as opposed to someone else within the
4 Monsanto organization who was a chemist or a
5 Manager of Applied Sciences?

6 MR. ZIMMER: You mean other than
7 what he's indicated already about working in
8 concert with the business group and the
9 Medical Department?

10 MR. TALLON: Right.

11 A. My responsibility simply covered
12 any analytical aspects of this interest, and
13 none of the other concerns, toxicology, et
14 cetera.

15 BY MR. TALLON:

16 Q. The polychlorinated biphenyl
17 products were products manufactured by the
18 group to which your group was attached;
19 correct?

20 A. What do you mean, 'attached'?

21 Q. I mean, you were the Manager of
22 Applied Sciences in a group that manufactured
23 polychlorinated biphenyl-based products.

24 A. No.

25 Q. Okay, then what was the connection

1 of your group with the products that included
2 polychlorinated biphenyls?

3 A. That group was one of a number of
4 functioning R & D groups by product area
5 within the Research and Development
6 Department, and our group was a part of a --
7 of technology, planning and evaluation,
8 another group along in a stable of business
9 R & D groups, and these were clients back to
10 us.

11 Q. Right. I guess, just to be clear,
12 to your knowledge, when the Gunnar Widmark
13 and Soren Jensen work was first published,
14 were polychlorinated biphenyl based products
15 being produced by Monsanto Industrial
16 Chemicals Company?

17 A. Yes.

18 Q. And the technology administration
19 and Applied Sciences Group was a unit within
20 Monsanto Industrial Chemicals Company?

21 A. Correct.

22 Q. And the R & D departments were
23 clients of your group, those were also within
24 Monsanto Industrial Chemicals Company?

25 A. Correct.

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1 Q. Are you familiar with the name
2 D. Wood?

3 A. My only recollection is, he was
4 one of the people involved with some
5 correspondence regarding Widmark and Jensen's
6 work.

7 Q. Was he, at the time of the
8 publication of the Jensen and Widmark work,
9 based in London?

10 A. Yes.

11 Q. Do you know if Mr. Wood is still
12 living?

13 A. I do not know.

14 Q. Where was he when you last knew of
15 his whereabouts?

16 A. Twenty-five years ago; I don't
17 know.

18 Q. You have no information as to his
19 whereabouts more recently than twenty-five
20 years ago?

21 A. No.

22 Q. Doctor, one of the things you said
23 to me a few moments ago is that you found the
24 article by Jensen and Widmark interesting and
25 somewhat surprising. What was it that you

1 found interesting, as best you recall today?

2 A. Interesting from the technology
3 standpoint of the techniques used to find the
4 polychlorinated biphenyl products.

5 Q. Do you remember what it was about
6 the techniques used to find the
7 polychlorinated biphenyl products that struck
8 you as being interesting from a technological
9 standpoint?

10 A. It was the use of a gas
11 chromatograph with a mass spectrometer as an
12 instrument system.

13 Q. Did you, at the time of the
14 publication, form any opinion as to whether
15 or not the results of the work done by
16 Widmark and Jensen were technologically
17 valid?

18 A. We had no reason to doubt what
19 they reported.

20 Q. Did you -- did there ever come a
21 time when you concluded personally that the
22 results of the work were valid?

23 A. Yes, later.

24 Q. Approximately how much later?

25 A. Within a year.

1 Q. Doctor, I'd like to show you a
2 document which we'll mark as the next exhibit
3 in order. It's a one-page letter dated
4 December 29, 1966, and it bears production
5 number TRAN 055797.

6 (Plaintiff's Deposition
7 Exhibit 280 marked for
8 identification.)

9 BY MR. TALLON:

10 Q. Would you take a moment and review
11 that, please? And by a moment, I mean as
12 much time as you want.

13 (Witness peruses said
14 document.)

15 A. All right.

16 BY MR. TALLON:

17 Q. Doctor, do you recollect ever
18 having seen the document which is before you,
19 before today?

20 A. I can't recall when I see this.
21 This was 19 -- December of 1966.

22 Q. There's a -- although this
23 particular exhibit suffers from having been
24 photocopied a number of times, there's a
25 notation at the top, in between those two

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1 black circles, that looks like it says "Bob
2 Keller." Does looking at that refresh your
3 recollection in any way as to whether you've
4 seen this before?

5 A. It looks like someone penciled my
6 name on it. I don't recall if it got to me.
7 I simply don't recall seeing it.

8 Q. Did you know a Mr. Ford, employed
9 by Monsanto in December 1966?

10 A. By name only. I, to my knowledge,
11 I have never met him.

12 Q. And what was his position with
13 Monsanto in 1966, as best you know?

14 A. I can't tell you that. I don't
15 know.

16 Q. You indicated a moment ago that
17 you'd never met him. Did you ever have any
18 telephone communication with Mr. Ford or any
19 kind of correspondence with him on the
20 subject of the Widmark and Jensen work?

21 A. Not that I recall.

22 Q. One of the other things you said
23 to me just a moment ago, Dr. Keller, was that
24 in addition to finding the Widmark and Jensen
25 work interesting, you found it somewhat

1 surprising. Can you tell me, please, what it
2 was that you found somewhat surprising?

3 A. Well, I guess the surprising part
4 would be that there appeared to be,
5 apparently, polychlorinated biphenyl-type
6 materials found in aquatic systems. To our
7 knowledge at that time, that had never been
8 reported before.

9 Q. Was there anything else that you
10 found surprising with respect to the -- your
11 initial exposure to the Widmark and Jensen
12 work?

13 A. That's primarily it, to my best
14 recollection.

15 Q. Have you ever met Gunnar Widmark?

16 A. Yes.

17 Q. And Soren Jensen?

18 A. No.

19 Q. Did you take a trip to Europe for
20 the purpose of meeting Mr. Widmark?

21 A. Yes.

22 Q. And when did that occur?

23 A. The spring of 1969.

24 Q. Just to touch back for a moment,
25 one of the things that you mentioned a moment

1 ago is that following the announcement of
2 publication of the Widmark and Jensen work,
3 you and others took action to get
4 everything -- to do everything possible to
5 get information? What personally did you do,
6 or request others to do, on your behalf in
7 order to get information?

8 A. We felt that if this problem was
9 real, we needed to learn as much information
10 as possible as soon as possible. We
11 immediately decided to put ourselves in a
12 position where we would produce our own
13 results in terms of environmental findings
14 and get equipped with proper resources,
15 equipment, personnel, facilities, where we
16 could do work reported by Widmark and Jensen,
17 and as part of that, we -- the key, as
18 mentioned already, was a gas chromatography
19 mass spectrometer equipment, and the
20 equipment they had was put out by an
21 instrument company in Sweden, presumably with
22 the purpose of selling instruments, and they
23 used it. With our departure, immediately,
24 after reading this from Widmark-Jensen, was
25 to acquire this equipment but none was

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1 available in this country. Was not a shelf
2 item, it was a very expensive, even at
3 dollars in those days, so we ordered
4 equipment, the mass spectrometer from a
5 German firm, and this is in 1967, early, and
6 proceeded to get the other equipment,
7 appropriate gas chromatograph, decided that
8 we needed the proper personnel to try to use
9 this equipment, and acquired Scott Tucker as
10 a professional to work on this, this area.
11 And these were actions taken in the immediate
12 analytical area.

13 Q. And in the immediate analytical
14 area, do you mean to say or have you just
15 said that the things you've just described
16 are the things that fell within your
17 responsibility?

18 A. They fell within my
19 responsibility.

20 Q. When was Scott Tucker hired?

21 A. 1967.

22 Q. Can you be any more precise than
23 that?

24 A. No, I can't. I don't have that.

25 Q. Let me show you, Doctor, a

1 document that bears production numbers --
2 actually, two series of production numbers,
3 but I'll use the one closer to the bottom of
4 the page, SCM 037311 through 314, and after
5 the reporter marks it, I'll ask you if you
6 can identify it for me.

7 (Plaintiff's Deposition
8 Exhibit 281 marked for
9 identification.)

10 (Witness peruses said
11 document.)

12 BY MR. TALLON:

13 Q. Have you seen the exhibit before
14 you before today?

15 MR. ZIMMER: He means other than
16 if it was shown to you by counsel.

17 A. Yes.

18 BY MR. TALLON:

19 Q. Did you prepare it?

20 A. Yes.

21 Q. Are those -- well, is that your
22 signature which appears at the foot of the
23 last page?

24 A. It looks like it.

25 Q. And it appears to be dated

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1 3-10-69. Is that right?

2 A. Yes.

3 Q. Is that on or near the date when
4 you prepared this exhibit?

5 A. To my best recollection, mm-hmm.

6 Q. Is there any other handwriting on
7 this document which is yours?

8 MR. TALLON: And I'll note for the
9 record that the only other place there
10 appears to be handwriting is at the top of
11 Page 4, the top of Page 2 and the top of Page
12 1.

13 A. I assume those are my penciled
14 corrections, but I can't say for sure.

15 BY MR. TALLON:

16 Q. What about in the upper right-hand
17 corner of Page 1? Do you see that notation?

18 A. Yes.

19 Q. Is that your handwriting?

20 A. Well, I can't say for sure on
21 that.

22 Q. Do you know if that says "take"?

23 MR. ZIMMER: If it's not his
24 handwriting, he would be speculating.

25 A. I don't know what that means.

1 BY MR. TALLON:

2 Q. Do you know if you took a copy of
3 this exhibit with you to Europe when you made
4 your trip in 1969?

5 A. I have no recollection of that.

6 Q. Were you asked to prepare this
7 exhibit?

8 A. That I don't recall, but I'll tell
9 you why I prepared it, if I haven't already
10 answered the question.

11 Q. Well, I was about to say, for what
12 reason or reasons did you prepare it?

13 A. It was primarily to have in mind
14 better the picture from Jensen's first work
15 to our departure time on our first trip to
16 Europe. It was no more than that.

17 Q. And just to be clear, Dr. Keller,
18 what picture was it that you wanted to have
19 in mind?

20 A. To have the benefit of, as I
21 already commented, we decided we needed to
22 get all information possible about this
23 situation, and the way to do that was to put
24 it together and document it accurately and
25 precisely, and this was a proper time to do

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1 it.

2 Q. And it was the proper time for
3 what reason or reasons?

4 A. Because Monsanto felt that they
5 needed to resolve this problem, and if we
6 were going to do that and if we were going to
7 commit considerable resources, we needed to
8 have the benefit of all the information that
9 anyone else had that would be available to
10 us.

11 Q. And, you know, I apologize, I'm
12 not completely sure that you answered the
13 question a moment ago.

14 Did someone ask you to do this or
15 did you create this exhibit of your own
16 volition?

17 A. I -- I don't recall if I was asked
18 to do this. I did it, it could have been
19 that I did it of my own but I don't remember.

20 Q. To your knowledge or rather to
21 your recollection, did you furnish copies of
22 this exhibit to anyone else?

23 A. I did not furnish copies to anyone
24 else that I recall.

25 Q. Are you able to discern, Dr.

1 Keller, from a review of this exhibit, when
2 the equipment that you'd mentioned earlier in
3 your testimony today was ordered for
4 purchase?

5 A. I don't recall when a purchase
6 order went in. I do know that there had to
7 be at least a six-month delay on equipment
8 from Germany, upon receipt of order, and my
9 best recollection is that we had the
10 equipment, the mass spectrometer from Germany
11 and the appropriate gas chromatograph, and
12 what it took to put those together, set up
13 and somewhat in operation by the end of '67,
14 so that's the best time frame I can provide.

15 Q. You had mentioned that the
16 equipment was very expensive, even in 1967
17 dollars.

18 A. Mm-hmm.

19 Q. Approximately how much money were
20 you thinking of when you gave that answer?

21 MR. ZIMMER: For all of the
22 equipment combined?

23 MR. TALLON: Well, we were going
24 to discuss the, the particulars of it, but
25 I'm wondering if the doctor had a particular

1 overall figure in mind when he gave his
2 answer.

3 A. Well, the gas chromatograph and
4 the mass spectrometer and a year later, we
5 added a computer system, which it really took
6 to make it work, we had at least a quarter of
7 a million dollars in it.

8 BY MR. TALLON:

9 Q. To the best of your ability to
10 say, what percentage of that \$250,000 or so
11 was represented by the purchase of the gas
12 chromatograph and the mass spectrometer?

13 A. Well, the computer, the gas
14 chromatograph, and the mass spectrometer
15 would account for that 250 thousand.

16 Q. Right, and now I'm wondering if
17 you have any ability to say what percentage
18 of the 250 thousand were represented by the
19 gas chromatograph and the mass spectrometer.

20 A. Okay. The mass spectrometer was
21 around a hundred thousand. The computer was
22 around a hundred thousand, and the gas
23 chromatograph and periphery equipment, which
24 I'm not going to try and describe, made up
25 the fifty thousand.

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1 Q. In order for -- were those
2 expenditures authorized by you?

3 A. They were put through as a capital
4 addition request by me and approved in normal
5 changes, capital approval channels. My
6 signature was on it, but it wasn't a final
7 approval signature.

8 Q. When you say your signature was on
9 it, are you referring to a form for
10 authorizations for expenditure?

11 A. Capital request form.

12 Q. Capital request? Doctor, do you
13 have any ability to say how long after
14 learning of the Soren -- the Jensen and
15 Widmark work, you submitted your capital
16 request form for the purchase of the
17 equipment to which you have referred?

18 A. I can't recall anymore than I
19 explained on the time frame of how long it
20 took to get the equipment, and when it was
21 first physically put to set up.

22 Q. And I believe you've testified
23 that it was set up by the end of 1967?

24 A. That's my best recollection.

25 Q. Therefore, the capital request

1 must have been put in in time for it to be
2 operational by that time period; correct?

3 MR. ZIMMER: It's argumentative,
4 calls for speculation. He's indicated he
5 doesn't know when it was made.

6 You can answer if you know any
7 more about than when it was ordered. That's
8 what he's after.

9 MR. TALLON: I don't think it's
10 mysterious. I'm just trying to establish
11 that in order for it to be working by the end
12 of 1967 it must have been ordered in time for
13 it to be there and working by then.

14 A. I can't give you a time when it
15 was ordered. I don't know at this point.

16 BY MR. TALLON:

17 Q. Do you believe it was in '67?

18 A. Yes.

19 Q. Did you have any discussions with
20 other employees of Monsanto about whether or
21 not to purchase the equipment?

22 A. I cannot give you exact names of
23 people, but it was our practice when we made
24 expenditures of that size, we talked, both
25 internally at Monsanto and externally, as

1 much as possible to make the right decision
2 on what equipment to get, so with that in
3 mind, the answer is yes.

4 Q. I take it from your answer that
5 you don't remember individuals to whom you
6 spoke? Is that right?

7 A. No.

8 Q. Do you remember at any point being
9 requested to justify the expenditure?

10 A. That would have been in the
11 capital appropriation write-up.

12 Q. Do you have any recollection of
13 what justification you furnished for the
14 expenditure of \$250,000 in 1967 dollars?

15 A. It was to acquire this instrument
16 and system for support of company product
17 development, as well as environmental
18 problems and concerns.

19 Q. Environmental problems and
20 concerns resulting from the Widmark and
21 Jensen work?

22 A. That could be a part of it.

23 Q. Was there any -- well, was the
24 Widmark and Jensen work a trigger for
25 acquisition of this equipment or were there

1 other reasons why it was deemed that in 1967,
2 it was appropriate to acquire the equipment?

3 A. It was -- it certainly helped.

4 Q. What other factors went into the
5 decision to acquire the equipment, other than
6 the help provided by the Widmark and Jensen
7 publication?

8 A. Well, structurally, we were
9 getting set up to provide more support across
10 the R & D effort, and it was a part of that,
11 but a large part of it, certainly, came from
12 our environmental concerns, including PCB's.

13 Q. Before the publication of the
14 Widmark and Jensen work, had you requested or
15 discussed with anyone the acquisition of a
16 gas chromatograph and mass spectrometer
17 supported by a computer system?

18 A. That was prior to --

19 Q. Prior to the publication.

20 A. 1966 publication?

21 Q. Yes.

22 A. I don't recall on that.

23 Q. Doctor, do you have any
24 recollection of the limits of your
25 authorization for capital requests in 1966 or

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1 1967?

2 A. I don't recall, but it would have
3 been nominal, a few thousand dollars, in that
4 range.

5 Q. Is it fair to say that the amounts
6 involved here mandated the approval of
7 personnel and higher in the organization than
8 you?

9 A. Correct.

10 Q. Do you know to whom your capital
11 request form was sent for approval?

12 A. That would have been through
13 the -- my best recollection, that would have
14 been to the managing director level or
15 general manager level and I don't remember
16 which one was in place at that time, but it
17 would have been at a very high level.

18 Q. When you say you don't remember
19 which was in place at that time, you don't --
20 are you meaning to say that you don't know
21 whether the use managing director or
22 general manager was in use?

23 A. Correct. I just don't remember.

24 Q. Notwithstanding the title in use
25 at that time, do you remember the person who

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1 had the responsibility or ability to approve
2 a capital request of the amount that you've
3 referred to?

4 A. I can't recall that. I just
5 can't.

6 Q. Now that we've talked about the
7 subject for a few more moments, do you have
8 any greater recollection of having discussed
9 the proposal to purchase the equipment with
10 anyone else working for Monsanto at the time?

11 A. I don't recall at this point
12 anyone else.

13 Q. Does it refresh your recollection
14 if I ask whether you discussed purchase of
15 the equipment with Elmer Wheeler?

16 A. I don't recall that.

17 Q. Does it refresh your recollection
18 if I ask you whether you discussed purchase
19 of the equipment with Emmett Kelly?

20 A. I don't recall that.

21 Q. Does it refresh your recollection
22 if I ask you whether you had any discussions
23 about the purchase of the equipment with Mr.
24 Emery?

25 A. No. No, no recollection there.

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1 Q. Doctor, what did you do with the
2 equipment once you got it?

3 A. We went forward full-bore to get
4 it set up and operational. This was a
5 challenge, in that we acquired a German
6 instrument, mass spectrometer, and a separate
7 gas chromatograph, which had to be wedded
8 together through an interface or separator
9 device because of pressure differences,
10 extreme pressure differences between the gas
11 chromatograph and the mass spectrometer, plus
12 the need to eliminate much of the gas
13 throughput from the gas chromatograph that
14 would interfere with the mass spectrometer,
15 so the mass spectrometer was installed with,
16 I believe, a German serviceman, and the
17 system, as I best recall, was in the
18 laboratory facility and turned on, and
19 operational from that standpoint, not from
20 the standpoint of having methodology samples
21 coming in, being ready to run them, so forth,
22 late 1967; and Scott Tucker was, at this
23 point, starting to get quite involved with
24 all that.

25 Q. Okay, and I gather from your

1 testimony that at a point in time, the gas
2 chromatograph was able to be interconnected
3 with the mass spectrometer?

4 A. Yes, it did become operational and
5 to the point that we could proceed, then,
6 with full effort on developing methods as
7 they were best needed, priority-wise, to
8 obtain proper samples for analyses.
9 Concurrent with this it was necessary for the
10 mass spectroscopist not only to learn how to
11 use this system but to interpret results out
12 of it, which was extremely complicated.

13 Also concurrent with going into
14 '68 was trying to tie to this a computer
15 system, which really was the key to making
16 the whole thing work. To this point, there
17 was no such system available in the United
18 States. The first one that I recall in the
19 United States was from Burke & Elmer, and
20 again as I best recall, it would have been
21 about the time we were starting up our
22 system.

23 Q. Burke & Elmer manufactured the
24 computer?

25 A. The mass spectrometer gas

1 chromatograph part of it, not the computer
2 part.

3 Q. Just to be clear, Burke & Elmer
4 manufactured equipment that you purchased or
5 you were aware that Burke & Elmer
6 manufactured other equipment?

7 A. No, they manufactured this system
8 that we're talking about, the GC, the mass,
9 for application to PCB-type analyses. It was
10 the first U.S. company that would, was
11 providing a system that could be bought,
12 brought into your facility and used for that
13 purpose.

14 Q. Did you acquire a Burke & Elmer
15 unit?

16 A. No.

17 Q. Do you know approximately when
18 Burke & Elmer began sale of such units?

19 A. Well, this would be, I would say
20 my best recollection is late '68, perhaps.

21 Q. Doctor, was there any discussion
22 that you remember having had about the
23 relationship of PCB's as found in the Jensen
24 and Widmark work to DDT?

25 A. Yes. There was a discussion, yes.

1 Q. And what is your understanding, if
2 you have one, about the relationship of DDT
3 to PCB's in the Jensen and Widmark work?

4 A. You are talking pesticides, that
5 type of materials?

6 Q. Yes, I am.

7 A. Well, Widmark, as I recall, was
8 involved in looking at pesticides by
9 chromatography, and being -- and was aware of
10 not being able to explain everything they saw
11 by that technique, and out of the application
12 of their system, GC/mass, they were able to
13 come up with what was reported then, so this
14 was, this was discussed on a limited basis.
15 That's about all I recall.

16 Q. Just to understand your answer
17 further, is it your understanding that
18 Widmark and Jensen were looking for
19 pesticides and also found PCB's?

20 A. That's my understanding. That's
21 the way I remember it.

22 Q. Do you recall having any reaction
23 to the apparent pairing of DDT's and PCB's
24 reported in the Widmark and Jensen work?

25 A. Can you elaborate on apparent

1 pairing?

2 Q. Well, I'm just trying -- I don't
3 want to tell you what was in the study. I'm
4 attempting to work with your recollection,
5 and I understood your answer of a moment ago
6 to say that Widmark was looking for
7 pesticides and found PCB's; correct?

8 MR. ZIMMER: In addition to
9 pesticides?

10 MR. TALLON: Yes.

11 A. I recommended, as opposed to
12 Widmark being out there suddenly searching
13 for PCB's. For some reason, he was involved
14 with, as I recall, with pesticides, and they
15 had this problem of not being able to explain
16 miscellaneous peaks popping up on them, so
17 they applied the equipment we talked about.

18 BY MR. TALLON:

19 Q. Yes, and is it your understanding
20 that the peaks are identified through
21 analysis as being evidence of PCB's?

22 MR. ZIMMER: Which peaks?

23 MR. TALLON: The peaks that Dr.
24 Keller just referred to.

25 MR. ZIMMER: The ones that were

1 not identified as pesticides?

2 MR. TALLON: Right.

3 A. If you are asking did Widmark
4 identify PCB's in the presence of
5 pesticides --

6 BY MR. TALLON:

7 Q. Yes.

8 A. My answer is yes.

9 Q. That was my question, yes.

10 Was there a discussion that you
11 recall among Monsanto personnel about the
12 explanation, if there was one, for finding
13 PCB's in the presence of pesticides as
14 reported by Widmark and Jensen?

15 A. There was no clear explanation of
16 source of the PCB's being found. There was
17 concern on the part of Widmark on the
18 specific chlorinated levels of PCB's found.
19 Widmark did comment that possibly the PCB's
20 were coming from tainted ships or something
21 from the harbors.

22 Q. Do you recall any concern being
23 expressed by anyone at Monsanto with whom you
24 spoke or communicated about the fact that
25 PCB's were found together or in the presence

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1 of pesticides?

2 A. By Widmark?

3 Q. Yes.

4 A. Now, can we play that question
5 back? You can play it back.

6 MR. ZIMMER: Just have it read
7 back.

8 MR. TALLON: Yes, let's do that.

9 THE COURT REPORTER:

10 "Q. Do you recall any concern
11 being expressed by anyone at Monsanto with
12 whom you spoke or communicated about the fact
13 that PCB's were found together or in the
14 presence of pesticides?"

15 A. Yes, there was considerable
16 concern at Monsanto about the finding of
17 PCB's, less concern about the pesticide but
18 great concern about the PCB's.

19 BY MR. TALLON:

20 Q. And as best you can recollect
21 today, can you describe the basis for such
22 concern or concerns?

23 MR. ZIMMER: Calls for speculation
24 as to the basis of that for such concern on
25 anyone's behalf but his own.

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1 BY MR. TALLON:

2 Q. As expressed to you.

3 A. Well, the basis of concern is that
4 Monsanto was always concerned if they had a
5 product that was getting into the environment
6 or released, which for some reason, others
7 would show could be a problem, or Monsanto
8 would show could be a problem, and this was a
9 product that Monsanto had had for many years
10 and had no problems with it, had done
11 everything that was diligent to assure proper
12 operations at that point in time, and they
13 wanted to get this thing resolved.

14 BY MR. TALLON:

15 Q. Was there any concern expressed to
16 you at the time related to the specific
17 characteristics of PCB's, such as their
18 virtual indestructibility?

19 A. Well, of course, that's a
20 characteristic of the product.

21 Q. Right.

22 A. One of the reasons for its use,
23 that it's a rather stable-type material.

24 Q. Understood. Were there any
25 concerns among those expressed to you in the

1 time period that we are discussing that
2 related to that particular characteristic of
3 the product?

4 MR. ZIMMER: Its stability?

5 MR. TALLON: That's the one that
6 he just mentioned.

7 MR. ZIMMER: I want to make sure
8 we're not referring back to virtual
9 indestructibility, which I think assumes
10 facts not in evidence, but as long as it's
11 stability, that's fine.

12 A. You say concern, I have nothing I
13 can recollect here that would focus on this.

14 BY MR. TALLON:

15 Q. Doctor, before you took a trip to
16 Europe, are you aware of whether or not other
17 representatives of Monsanto visited with
18 Widmark or with Jensen to discuss the results
19 of their published works?

20 A. I'm not aware of a Monsanto visit.
21 Widmark did visit Monsanto.

22 Q. After the publication of his work?

23 A. Yes, after. It's possible our
24 European offices, someone could have visited
25 there and I just simply don't remember that

1 if that happened.

2 Q. Do you remember if Elmer Wheeler
3 ever traveled to Europe for the purpose of
4 meeting with Widmark or Jensen?

5 A. Not to my knowledge prior to our
6 trip in 1969.

7 Q. Do you recollect whether Dr.
8 Richard traveled to Europe for the purpose of
9 meeting either Widmark or Richard before your
10 trip in 1969?

11 A. No.

12 MR. ZIMMER: Do you mean Widmark
13 or Jensen?

14 Q. What did I say?

15 MR. ZIMMER: Richard.

16 MR. TALLON: That's what I meant.

17 BY MR. TALLON:

18 Q. Who accompanied you on the trip in
19 1969?

20 A. Mr. Wheeler, of the Medical
21 Department, myself, and on several parts of
22 the trip, Mr. Hardy out of the Monsanto
23 London office, and a visit to Widmark, Bill
24 Richard, manager of the Product Group, I
25 believe, was on that leg of the trip.

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1 Q. Did Mr. Papageorge attend any
2 portion of that trip?

3 A. No, not that I recall.

4 Q. Doctor, do you recollect ever
5 having had any discussions with Emmett Kelly
6 with respect to contacting the Swedish
7 researchers following the publication of
8 their work?

9 A. That was Swedish --

10 Q. Widmark and Jensen.

11 A. I don't recall, specifically, any
12 discussion with Dr. Kelly.

13 Q. Just to be clear, does your answer
14 that you don't remember specifically suggest
15 that you have a general recollection?

16 A. I don't recall anything.

17 MR. TALLON: Let me show you a
18 document that bears production numbers BIR
19 007699.

20 I'll ask the reporter to mark that
21 as the next one in order. It also has
22 another notation on it, but we won't read
23 that one into the record.

24 (Plaintiff's Deposition

25 Exhibit 282 marked for

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1 identification.)
2 (Witness peruses said
3 document.)

4 BY MR. TALLON:

5 Q. Doctor, for the record, that
6 appears to be a memorandum from Dr. Kelly to
7 Mr. Wilde dated February 21, 1967, which
8 appears to have been copied to you. Do you
9 recollect having seen that memorandum before
10 today?

11 A. I don't recall this memorandum.

12 Q. Does reading the paragraph
13 numbered 3 refresh your recollection in any
14 respect as to whether you communicated with
15 Dr. Kelly on the subject of contact with the
16 Swedish people or with Jensen and Widmark?

17 A. I don't recall any discussion of
18 that type.

19 Q. Did there come a time, Doctor,
20 when the equipment that you had purchased,
21 the mass spectrometer and the gas
22 chromatograph and the computer, were
23 sufficiently integrated and running that they
24 were used to perform tests"?

25 A. Do you want to play that question

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1 back?

2 THE COURT REPORTER:

3 "Q. Did there come a time,
4 Doctor, when the equipment that you had
5 purchased, the mass spectrometer and the gas
6 chromatograph and the computer, were
7 sufficiently integrated and running that they
8 were used to perform tests?

9 A. Yes.

10 BY MR. TALLON:

11 Q. And approximately when, to the
12 best of your recollection, did that time
13 arrive?

14 A. Throughout 1968.

15 Q. Can you describe for me in general
16 terms what tests were conducted using the new
17 equipment, as those tests related to PCB's?

18 A. They were -- the test was used to
19 to look at a variety of material selected by
20 the business unit in conjunction with the
21 Medical Department, and ranged from certain
22 environmental materials, which I have no
23 recollection what they were at this time, all
24 the way to support of toxicity studies out of
25 the Medical Department or through the Medical

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1 Department, involving tissue analyses, so
2 forth.

3 Also included would be certain
4 environmental types of materials, perhaps
5 water samples from streams, lakes, so forth.

6 Q. To the best of your knowledge,
7 were written records prepared of the results
8 of the tests performing or used -- performed
9 with the use of that new equipment?

10 A. Yes.

11 Q. And to the best of your knowledge,
12 did you see such written reports?

13 A. Part of them.

14 Q. What part did you see?

15 A. Part that would be formalized as a
16 report out of Applied Sciences, part of a
17 group report with my name on it as a copyee.
18 I would not see the standard group reports
19 going back to the clients on certain parts of
20 the project.

21 Q. As I am unfamiliar with these
22 reports, Doctor, could you explain to me what
23 information would be included in the section
24 of the reports that you believe you did not
25 see?

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1 A. It was standard practice of the
2 Analytical Group and the other groups, too,
3 to receive client work projects on a standard
4 form: What the material was, a reason for
5 the request, what the problem was, what
6 information was needed, and the result then
7 would be put on the back of this same copy,
8 with appropriate copies made, and retained,
9 and sent back to the client. These, in turn,
10 could become a basis for more formal
11 reporting later, and I did not see those
12 group reports going out, because it was such
13 that the group leader could handle, he or she
14 was responsible for the professional work
15 being done, and back to the client.

16 Q. Were the results of the tests
17 being conducted with the new equipment
18 reported to you orally at any point?

19 A. That was a standard practice
20 continuously.

21 Q. Was it fair to say, therefore,
22 that you were being kept abreast of the
23 results of the testing going on using the new
24 equipment?

25 A. Yes, to varying degrees, depending

1 on which part of it was being worked on, and
2 so forth. It varied greatly.

3 Q. Was Mr. Tucker the gentleman
4 responsible for conducting the tests?

5 A. Yes.

6 Q. Did he have anyone working for
7 him?

8 A. Yes, he did.

9 Q. Can you identify those gentlemen,
10 or gentlemen/ladies?

11 A. There was a William Mees, M-e-e-s,
12 a Chester Brackbill, and without an
13 organization chart, I can't help you.

14 Q. Is Mr. Tucker still working for
15 Monsanto today --

16 A. No.

17 Q. -- as far as you know?

18 A. No.

19 Q. Is he retired?

20 A. No. He left Monsanto.

21 Q. And do you know where he is today?

22 A. I understand he's in North
23 Carolina, but I don't know exactly where.

24 Q. North Carolina?

25 A. Mm-hmm. (Nods head in affirmative)

manner).

2 MR. ZIMMER: I believe his
3 deposition is scheduled for later this month.

4 BY MR. TALLON:

5 Q. Mr. Mees, do you know where he is
6 today?

7 A. He is retired.

8 Q. Do you know where he is today?

9 A. He's in the St. Louis area.
10 That's all I can say.

11 Q. And do you know where Mr.
12 Brackbill is today?

13 A. He is retired and in the St. Louis
14 area.

15 Q. Were you ever asked to draw any
16 overall conclusions from the results of
17 individual tests being conducted by Mr.
18 Tucker and his group?

19 A. I can't recall any specific
20 situation where that happened.

21 Q. Were there different aroclors used
22 or searched for in Mr. Tucker's tests, so far
23 as you know?

24 A. Yes.

25 Q. Do you know what aroclors were

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1 used or searched for in Mr. Tucker's tests in
2 1968?

3 A. It would have involved the 1200
4 series.

5 Q. Would that have included, to the
6 best of your knowledge, Aroclor 1242?

7 A. Yes.

8 Q. And Doctor, to be sure that we're
9 using the same terms with the same meanings,
10 could you define what you mean when you refer
11 to Aroclor 1242?

12 A. It's -- it denotes two phenyl
13 rings, the 12, and 42 percent chlorine on the
14 rings.

15 Q. 42 percent in absolute terms or on
16 average?

17 MR. ZIMMER: What do you mean by
18 absolute terms, Counsel?

19 BY MR. TALLON:

20 Q. I mean, is it 42 percent period or
21 is it 42 percent on average by weight?

22 A. You'll have to ask the Business
23 Group on that. I'm not sure.

24 BY MR. TALLON:

25 Q. Okay. Do you know whether Aroclor

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1 1242 contains any more highly chlorinated
2 aroclors, or only aroclors in 42 percent
3 weight?

4 A. Well, Aroclor 1242 is composed
5 primarily of four chlorine-type isomers and
6 lower, and not the higher-chlorinated
7 isomers.

8 Q. Are there any more highly
9 chlorinated isomers in the Aroclor 1242, to
10 your knowledge?

11 A. To my knowledge, Aroclor 1242 is
12 essentially free of that, of higher
13 chlorinated species, 5 and 6 chlorinated
14 species.

15 Q. Just to be sure, did you say
16 essentially free of or free of?

17 A. I'm not aware of 5 and 6 in
18 Aroclor 1242.

19 Q. Doctor, did you ever do any work
20 while you were employed by Monsanto to try to
21 refine detection methods for the presence of
22 PCB's?

23 A. Can you expand a little bit on
24 detection methods? I'm not trying to be
25 evasive, but --

1 Q. Well, let me back up, perhaps, for
2 a more vocal question. Let's say by 1966,
3 how would you look for -- what methods would
4 you use to determine the presence of PCB's in
5 a given substance?

6 A. We would have -- I can't recall
7 that we did that, ever, to specifically
8 identify PCB's as such. We had techniques,
9 gas chromatography, and with known systems,
10 where if you have a product and you know
11 exactly what's in that product, you can then
12 use gas chromatography to advantage and be
13 safe. Once it gets in the environment, then
14 that's a different story, so we had that
15 capability of gas chromatography and that
16 would have been the technique of choice.

17 MR. TALLON: Let me show you a
18 document that we'll mark as the next exhibit
19 in order, and it's a one-page memorandum
20 dated February 15th, 1968, bearing production
21 number TRAN 008410, and we'll ask the court
22 reporter to mark that.

23 (Plaintiff's Deposition
24 Exhibit 283 marked for
25 identification.)

1 (Witness peruses said
2 document.)

3 BY MR. TALLON:

4 Q. Doctor, do you recollect ever
5 having seen that memorandum before today?

6 A. I don't recall this.

7 Q. Do you recall ever having been
8 asked by a Mr. Donald E. Rousch whether
9 contamination of cooking oils with Aroclor
10 1242 could be detected at the level of a
11 hundred parts per million?

12 A. I don't recall that.

13 MR. TALLON: Let me show you
14 another document which is a one-page memo
15 dated March 26, 1968, and bearing production
16 number TRAN 057807, and I'll ask the court
17 reporter to mark that.

18 (Plaintiff's Deposition
19 Exhibit 284 marked for
20 identification.)

21 BY MR. TALLON:

22 Q. Take a moment and review that,
23 please.

24 (Witness peruses said
25 document.)

1 BY MR. TALLON:

2 Q. Doctor, does reading that
3 memorandum dated March 26, 1968, refresh your
4 recollection in any respect about any work
5 that you or your group did with respect to
6 detection of PCB's in cooking oil?

7 A. Doesn't help a bit, but I don't
8 recall.

9 MR. ZIMMER: Can we go off the
10 record for a second?

11 MR. TALLON: Yeah.

12 (Discussion off the record.)

13 MR. ZIMMER: Back on.

14 BY MR. TALLON:

15 Q. Doctor, when did -- when was the
16 first time that it was suggested to you that
17 you should travel to Europe with the other
18 gentlemen whose names you mentioned in
19 1969 -- to travel in 1969?

20 A. Well, my best recollection would
21 be it would be late 1968 or very early 1969.

22 Q. And to the best of your
23 recollection, from what source did you learn
24 that such a trip could take place?

25 A. Through the Medical Department and

1 the Business Group, Functional Fluids.

2 Q. Do you recall that particular
3 person or persons communicating with you
4 about the possibility of such a trip?

5 A. Yes.

6 Q. Who?

7 A. Elmer Wheeler.

8 Q. And do you recollect Mr. Wheeler
9 communicating with you orally, or in writing,
10 or both?

11 A. Certainly, orally. I don't recall
12 anything in writing.

13 Q. Do you recollect anyone other than
14 Mr. Wheeler having communicated with you in
15 late '68 or early '69 about the possibility
16 of such a trip?

17 A. Yes.

18 Q. Who?

19 A. That would have been Dr. Richard.

20 Q. Do you recollect anyone other than
21 Mr. Richard having communicated with you
22 about such a trip in the time period to which
23 you have referred?

24 A. No.

25 Q. And what, if any, communications

1 do you recollect today having received from
2 Dr. Richard on the subject of the trip in
3 late '68 or early '69?

4 A. The message from Mr. Wheeler and
5 Mr. Richard was that it seemed appropriate to
6 obtain information firsthand from Widmark.
7 Also, it was at that point my input that it
8 would help also for us to do this to compare
9 our progress on methodology with Widmark and
10 their operations on a one-to-one basis.

11 Q. Is it your recollection that Dr.
12 Richard and Mr. Wheeler contacted you
13 together in order to discuss this trip?

14 A. I don't remember that.

15 Q. Do you recollect specific
16 statements made to you about the trip in late
17 '68 or early '69 by Dr. Richard, as opposed
18 to Mr. Wheeler?

19 A. I have no recollection of that,
20 either.

21 Q. Do you recollect specific
22 statements made to you by Mr. Wheeler on the
23 subject of the trip in either late '68 or
24 early '69?

25 A. No.

1 Q. You said that your input was that
2 it would be helpful to compare methodology,
3 face-to-face?

4 A. Correct.

5 Q. And in what respect did you
6 believe then that such a face-to-face meeting
7 to compare methodology would be helpful?

8 A. Because it was at the stage where
9 we were just becoming reasonably competent on
10 applying the techniques, the method,
11 development of skills and instrumentation
12 techniques, and we felt that Widmark and
13 Jensen could contribute significantly and,
14 perhaps, move us along even faster in our
15 efforts to get on top of this, and this was
16 consistent with Widmark, also. He was a very
17 willing -- he had worked through communiques
18 with, as indicated earlier, with our European
19 offices, and he was very willing to do this
20 with us.

21 Q. Had you communicated in any
22 fashion with Widmark before actually making
23 the trip?

24 A. I did not.

25 Q. Who did?

1 A. Elmer Wheeler.

2 Q. Do you know what subject or
3 subjects Mr. Wheeler and Widmark discussed?

4 A. My best recollection is it was a
5 broad-brush approach of the PCB situation for
6 discussion.

7 Q. Can you be any more specific than
8 that?

9 A. Well, it would be directed toward
10 their findings of PCB's, their techniques and
11 methodology and equipment, and future plans.

12 Q. Do you have a recollection of ever
13 having discussed with Mr. Wheeler the
14 communications he had with Widmark with
15 respect to future plans?

16 A. I don't recall that.

17 Q. Do you recall ever ever hearing
18 from Mr. Wheeler or from any other source
19 more about the content of Mr. Wheeler's
20 communications with either Jensen or Widmark
21 than that which you have just told me?

22 A. No.

23 Q. Did you ever see any memoranda in
24 which Mr. Wheeler reported on his
25 communications with Widmark and/or Jensen?

1 A. I have no recollection of any.

2 Q. In planning for the trip that took
3 place in 1969, was there any discussion with
4 respect to the subject of why the trip had
5 not taken place earlier than 1969?

6 A. I don't recall any such
7 discussion. My -- what I think I recall is
8 that we had our hands full trying to get
9 ourselves up to full speed with equipment and
10 resources of all kinds, undergoing
11 organizational changes superimposed on top of
12 that, and we were looking for an appropriate
13 time to do it.

14 Q. For an appropriate time to do it?

15 A. An appropriate time to make the
16 visit, and it's my best recollection it was a
17 general consensus that it was better for us,
18 we would get, make more progress going over
19 there with some experience behind us and
20 talking than to go over cold.

21 Q. Was it ever your desire to involve
22 Jensen and Widmark in the process of setting
23 up your new equipment?

24 A. No.

25 Q. Was it ever suggested or

1 recommended to you by Mr. Tucker or anyone
2 else that Widmark or Jensen could be of
3 assistance in setting up the new equipment?

4 A. Not that I recall.

5 Q. Was it ever suggested to you or
6 recommended to you by Mr. Tucker or anyone
7 else that Widmark or Jensen might be helpful
8 in the initial use of the equipment that had
9 been purchased in '67?

10 A. Not that I recall.

11 Q. In 1968, to the best of your
12 recollection, did you have any communications
13 with representatives of Industrial Bio-Test
14 for the purpose of having them run tests with
15 respect to PCB's?

16 A. Yes.

17 Q. And --

18 A. With the qualification, you said
19 1968, and I'm not clear in my mind what year,
20 but there was discussion in that general
21 period.

22 Q. The general period would be what
23 period, Dr. Keller?

24 A. Well, the late Sixties is the best
25 I could do on that one.

1 Q. All right, and who was the person
2 or who were the persons with whom you
3 communicated at Industrial Bio-Test?

4 A. You mean on a one-to-one direct,
5 or through communications with two groups
6 meeting or whatever?

7 Q. Well, why don't you tell me
8 whether you had any one-to-one direct
9 communications with representatives of
10 Industrial Bio-Test. Did you?

11 A. I don't recall any. My answer is
12 no, and I don't recall any.

13 Q. Do you recollect having been a
14 participant in group communications such as a
15 meeting?

16 A. Yes.

17 Q. And whom do you recall being the
18 participants in those group communications?

19 A. Participants were Dr. Calandra,
20 and Dr. Fancher, and I can't come up with any
21 other names.

22 Q. Are Drs. Calandra and Fancher
23 representatives of Industrial Bio-Test?

24 A. Yes.

25 Q. And whom do you recall were the

1 participants in such communications from
2 Monsanto's perspective?

3 A. That would be Dr. Kelly, Mr.
4 Wheeler, Dr. Richard.

5 Q. And yourself?

6 A. And myself. Those are the
7 principals I remember.

8 Q. Are you suggesting by your answer
9 that there were others or may have been
10 others involved?

11 A. I can't recall any others.

12 Q. Are you referring to meetings in
13 the past -- in the few answers that you have
14 given, with respect to the communications you
15 participated in with Industrial Bio-Test?

16 A. That I participated in?

17 Q. Yes.

18 A. Correct. Also, I should add to
19 the previous question and answer, of course,
20 Scott Tucker would be involved in those
21 discussions.

22 Q. Your answers respecting your
23 communications with Industrial Bio-Test, were
24 they to meetings? Is that correct?

25 A. Correct.

1 Q. Are you referring to one meeting
2 or more than one meeting?

3 A. I can't focus on one meeting for
4 you. I just don't remember.

5 Q. And in general, can you describe
6 what you understood the purpose of those
7 meetings to have been?

8 A. These were project planning-type
9 meetings for toxicity testing, for work to be
10 carried out by Industrial Bio-Test, and for
11 monitoring, as needed, appropriate materials
12 from the testing, analytical monitoring by
13 our Analytical Group, Applied Sciences.

14 Q. Do you have any recollection as
15 you sit here today of what projects
16 Industrial Bio-Test was asked to take on for
17 Monsanto?

18 A. No, I can't play back those
19 toxicity test programs for you.

20 Q. Without regard --

21 A. I know they went from 90-day tests
22 to long-term tests.

23 Q. Without regard to the specific
24 kinds of tests involved, are you able to
25 state in general the kind of work that was

1 being requested of Industrial Bio-Test?

2 A. My only comment on that, based on
3 what I can recall is, that it was for them to
4 use their standard toxicity testing to look
5 at materials of concern to us, products of
6 concern, and related materials.

7 Beyond that, this was the
8 bailiwick of the Medical Department.

9 Q. And what was your understanding of
10 the reason for your involvement in these
11 communications, given that the essential
12 project was the bailiwick of the Medical
13 Department?

14 A. It was necessary to be sure that
15 the amount of components being tested added
16 to whatever exposure method they used,
17 whether it was feeding, air, exposure,
18 whatever, would be at the appropriate level
19 that the analytical techniques could be used,
20 method-wise, and that sacrificed animals and
21 tissues would be appropriately handled with
22 the appropriate methodology, so we had to be
23 assured we had the right methods in place
24 before they took off with the study.
25 Usually, we had no problem with that

coordination.

2 Q. Did there come a time when you did
3 have a problem with that?

4 A. Not that I remember.

5 MR. TALLON: All right, we can
6 certainly take our luncheon break.

7 (Luncheon recess from 12:30
8 to 1:15.)

9 BY MR. TALLON:

10 Q. Dr. Keller, I just have a couple
11 of points I wanted to touch back on before we
12 continued. In our discussion earlier today
13 when you were referring to some of the work
14 that you did, you referred to work of your
15 department for clients?

16 A. Mm-hmm. (Nods head in affirmative
17 manner).

18 Q. Are you using the term "clients"
19 to describe other business units within
20 Monsanto, or outside customers of Monsanto
21 products, or both?

22 A. Inside Monsanto only. We had no
23 outside clients.

24 Q. In other words, your group didn't
25 do work for customers of Monsanto?

1 A. Our group did work for Monsanto
2 groups' customers but not outside Monsanto.
3 Does that answer your question?

4 Q. I think so. My understanding --
5 well, I don't know; we don't want my
6 understanding. Is it correct that the work
7 your group did was for other business units
8 in Monsanto?

9 A. Yes.

10 Q. And you did no work for
11 third-party customers who were purchasers of
12 product from Monsanto, such as General
13 Electric?

14 A. My answer is yes, with this
15 qualification: We might do work, as all
16 companies do, for a customer which would come
17 back through our, our other groups, sales or
18 whatever, as an accommodation. That's
19 standard business practice, but we didn't do
20 it for hire or anything like that.

21 Q. And could you describe just
22 briefly what kind of work you recollect
23 having done for customers as an
24 accommodation?

25 A. I can't recall any because that

1 was so seldom.

2 Q. Earlier, we had been discussing
3 the mass spectrometer, gas chromatographer --
4 no, not gas chromatographer, gas
5 chromatograph and the computer system. Is
6 there a name that you used to describe that
7 unit or those three integrated units?

8 A. Well, unfortunately, no. Probably
9 the best thing is just GC/mass system.

10 Q. Is that term, GC/mass system, a
11 term that was used at the time to talk about
12 these three interrelated units?

13 A. Yes.

14 Q. And if I use that, you'll
15 understand that I mean to refer to the
16 computer, the spectrometer, and the gas
17 chromatograph?

18 A. Yes, especially if we don't want --
19 if we know what time frame we're talking
20 about.

21 Q. After the installation of the
22 GC/mass system in 1968, was the system used
23 for testing for materials other than PCB's?

24 A. Yes.

25 Q. What other materials?

1 A. I can't give a listing of exact
2 types of materials, but it would have been
3 products of interest to the Organic Chemicals
4 Division.

5 Q. In 1968, if you are able to say,
6 what percentage of the tests run on the
7 GC/mass system were PCB-related tests?

8 A. My best estimate is 50 percent.

9 Q. And to recap on something you said
10 earlier, was it a reason for purchasing the
11 GC/mass system to attempt to duplicate the
12 results evidenced by the Widmark and Jensen
13 study?

14 A. Not to duplicate, but to establish
15 in our own house, with our own skills, our
16 own -- get our own data and information so we
17 could be absolutely sure of the results.

18 Q. Producing your own results as a
19 consequence of that study was a reason for
20 purchasing the GC/mass system?

21 A. That, and applying it to other
22 problems that we presumed we might have to
23 become involved with.

24 Q. What other problems were you
25 presuming you might have to become involved

1 with?

2 A. Toxicity studies and analyses
3 related to that, for example.

4 Q. And is the "that" used in your
5 sentence, answer just now, PCB's?

6 A. (Nods head in affirmative manner).

7 Q. You need to answer orally.

8 A. Yes.

9 Q. In preparation for your trip to
10 Europe, did you personally intend to discuss
11 with Widmark and Jensen any of the test
12 results that had emanated from your use of
13 the GC/mass system?

14 A. We didn't go with the concept of
15 showing results necessarily. It was to be
16 the other direction that they were going to
17 tell us and show us about their, what they
18 had done and their skills, so it wasn't
19 really a part of our mission for them to draw
20 judgments or provide inputs on in-house
21 findings.

22 Q. Nevertheless, did you go prepared
23 to discuss particular findings or particular
24 problems with them?

25 A. Not that I recall.

1 Q. On the European trip where you met
2 with Drs. or Professors Widmark and Jensen,
3 did you meet with others, as well?

4 A. Yes.

5 Q. Was the visit with Widmark and
6 Jensen one leg of a multi-leg trip, if you
7 will?

8 A. Yes.

9 Q. At the time of the publication of
10 the Widmark and Jensen work, were there any
11 other published studies of which you had
12 knowledge relating to PCB's being found in
13 the environment?

14 A. You said published studies?

15 Q. Yes.

16 A. None that I was aware of.

17 Q. Were there any other studies,
18 published or not, of which you were aware, in
19 existence at or about the time of the
20 publication of the Jensen-Widmark work?

21 A. No.

22 Q. Was there any in-house analyses by
23 Monsanto personnel in 1966 or earlier which
24 related to the presence of PCB's in the
25 environment?

1 A. Not to my knowledge.

2 Q. Were there other, any other -- did
3 you have any basis for having concern about
4 the presence of PCB's in the environment in
5 1966 other than the Jensen and Widmark study?

6 A. No.

7 Q. I asked you a moment ago if the
8 European trip involved visits to others than
9 Jensen and Widmark, and you indicated that it
10 did.

11 As best as you can recall, what
12 was the overall objective, if any, to be
13 accomplished by the European trip that we
14 have been discussing in 1969?

15 A. It was an information-gathering to
16 determine what we could about what was known
17 on the part of others working in some way
18 with this problem.

19 Q. Who selected the entities or
20 persons who would be visited by you in your
21 group in order to get information?

22 A. The Medical Department.

23 Q. Who within the Medical Department
24 had that responsibility, if it's one person,
25 or whom were they?

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1 A. Elmer Wheeler.

2 Q. In preparation for that trip, did
3 you suggest to Mr. Wheeler the names of any
4 entities or individuals who should be on the
5 itinerary?

6 A. Well, the obvious one was Widmark
7 and Jensen --

8 MR. ZIMMER: His question was, did
9 you suggest any names to Mr. Wheeler.

10 A. And my answer is yes, Widmark and
11 Jensen.

12 MR. ZIMMER: I just wanted to make
13 sure that was one you suggested, not that
14 they were just an obvious --

15 BY MR. TALLON:

16 Q. Any others that you recall today?

17 A. Not that I recall.

18 Q. I believe you testified earlier,
19 Dr. Keller, that Professor Widmark had
20 visited Monsanto; is that correct?

21 A. Correct.

22 Q. Do you know when Professor
23 Widmark's visit to Monsanto took place?

24 A. My best recollection is that would
25 have been very early '69, and I don't recall

1 beyond that, I guess.

2 Q. Was that Professor Widmark's first
3 in-person visit to Monsanto, so far as you
4 know?

5 MR. ZIMMER: Calls for
6 speculation.

7 A. It's the only one I'm aware of at
8 this point in time.

9 BY MR. TALLON:

10 Q. Just for the sake of clarity, is
11 that the only trip by Professor Widmark to
12 Monsanto for all eternity, for all time?

13 A. Yes.

14 Q. And during that visit, did you
15 meet with Professor Widmark?

16 A. I met with Professor Widmark
17 briefly, and I'm not sure if it was that
18 visit or another visit, if he made another
19 visit. I just don't know.

20 Q. Do you recollect anything about
21 your brief with Professor Widmark on his
22 early 1969 visit to Monsanto?

23 A. It simply involved a ten- or
24 fifteen-minute quick discussion about PCB
25 methodology, and exchanges we best had time

1 for; an extremely brief meeting.

2 Q. Did you meet with Professor
3 Widmark in your office?

4 A. Yes.

5 Q. Were others present on that
6 occasion?

7 A. Not that I recall.

8 Q. Did you introduce Professor
9 Widmark to anyone at the time that he visited
10 with you?

11 A. Not that I recall.

12 Q. Did you show Professor Widmark the
13 GC/mass system on that occasion?

14 A. It's my recollection he did get a
15 walk-by of what we had, but that's -- I'm
16 unclear in my mind just what that involved.

17 Q. Do you have an understanding as to
18 the length of time Professor Widmark spent at
19 Monsanto during his trip to St. Louis in
20 early '69?

21 A. No. I'll -- my mind would
22 indicate several days, but I'm not sure of
23 that. I don't know.

24 Q. Do you have any knowledge or
25 information as to the identities of any other

1 person or persons with whom he met during his
2 visit?

3 A. Well, he -- persons, I cannot.
4 It's in my mind that he met with the Medical
5 Department personnel, and plant,
6 analytical-type personnel at the plant, and
7 that's all, and I can't tell you who would be
8 involved.

9 Q. By "plant," what do you mean to
10 refer to?

11 A. Well, as I think I remember
12 something about that part of it, it would be
13 the Queeny Plant in St. Louis.

14 Q. Do you have any present
15 understanding as to why he visited that
16 particular plant?

17 A. I don't recall anything on that.
18 I was not involved in that part of it.

19 Q. Do you have any knowledge as to
20 whether he met with Mr. Wheeler?

21 A. No. As I say, he met with the
22 Medical Department, but I cannot -- I'll just
23 simply add, my best recollection is that Mr.
24 Wheeler brought Ed by.

25 Q. To your office?

1 A. To my office. Beyond that, I just
2 can't recall.

3 Q. Do you recollect having heard any
4 reports from others of their meetings with
5 Professor Widmark?

6 A. No.

7 Q. Do you have any understanding as
8 to whether Monsanto covered the expenses of
9 Professor Widmark's travel to St. Louis?

10 A. I have no idea on that.

11 Q. Do you have any recollection of
12 whether there was a particular agenda for
13 discussions with Professor Widmark other than
14 as you have already testified?

15 A. No.

16 Q. Do you recollect whether there was
17 any plan to discuss data concerning PCB's in
18 tissues with Professor Widmark?

19 A. No.

20 MR. TALLON: Let me show you a
21 one-page document which appears to be a
22 letter dated April 7, 1969, bearing
23 production number TRAN 059255.

24 (Plaintiff's Deposition

25 Exhibit 285 marked for

1 identification.)

2 BY MR. TALLON:

3 Q. My sole question for you, here,
4 Dr. Keller, is whether a review of that
5 exhibit enhances your recollection in any
6 respect as to the subject or subjects you
7 intended to discuss with Professor Widmark on
8 your 1969 visit.

9 (Witness peruses said
10 document.)

11 MR. ZIMMER: We're now talking
12 about Dr. Keller's visit to Europe, rather
13 than Dr. Widmark's visit to Monsanto?

14 MR. TALLON: That's right.

15 MR. ZIMMER: Okay. The only
16 reason I bring that up is that your prior
17 questions about whether there was any
18 schedule relating to Dr. Widmark's visit to
19 discuss animal tissues, and the like, were
20 related to Dr. Widmark's visit and not Dr.
21 Keller's visit.

22 MR. TALLON: I intended that last
23 question to refer to Dr. Keller's visit.

24 MR. ZIMMER: Okay. Just so we
25 have the right transition.

1 (Witness peruses said
2 document.)

3 BY MR. TALLON:

4 Q. And the question was whether
5 reviewing that exhibit enhanced your
6 recollection in any respect as to the
7 subjects discussed with Dr. Widmark on your
8 visit to Europe.

9 A. No.

10 MR. TALLON: Let me have the court
11 reporter mark as the next exhibit a one-page
12 memorandum to which is attached an itinerary,
13 bearing production numbers TRAN 058769,
14 indicates a letter, and 746 through 748,
15 indicates the itinerary.

16 (Plaintiff's Deposition
17 Exhibit 286 marked for
18 identification.)

19 (Witness peruses said
20 document.)

21 BY MR. TALLON:

22 Q. Did you get a chance to look at
23 those, Dr. Keller?

24 A. Now?

25 Q. Yes. Did you?

1 A. Mm-hmm. (Nods head in affirmative
2 manner).

3 Q. Okay. Had you seen the memorandum
4 from Elmer Wheeler in 1969? Do you recollect
5 having seen it?

6 A. No, I have no recollection of
7 that.

8 Q. What about the itinerary which I
9 have also furnished to you?

10 A. I don't recall that.

11 Q. Does the -- I understand this is
12 somewhat difficult, due to the passage of
13 time, but does the itinerary seem to
14 represent to you an accurate depiction of the
15 trip that you have been referring to as the
16 1969 visit to Europe?

17 A. In the main.

18 Q. Is it the case, Dr. Keller, that
19 the only Monsanto representatives who went on
20 the trip that you've been referring to were
21 you and Mr. Wheeler, or was there a larger
22 group, as best you recall today?

23 MR. ZIMMER: Mischaracterizes his
24 testimony.

25 MR. TALLON: I'm not

1 characterizing, I'm asking him a question.

2 MR. ZIMMER: He's already told
3 you, though, who went, and it wasn't just he
4 and Mr. Wheeler.

5 MR. TALLON: I understand that.

6 THE WITNESS: May he repeat the
7 question?

8 MR. TALLON: I'll ask another
9 question, just so we're clear.

10 BY MR. TALLON:

11 Q. The memorandum which is part of
12 this exhibit states that, "Perhaps you have
13 heard that Bob Keller from Organic Research
14 and I plan to visit a number of people," and
15 for the sake of clarity of the record, I was
16 wondering whether that indicated to you that
17 the persons making this particular trip to
18 you were only Elmer Wheeler and yourself or
19 whether it was also the other persons whose
20 names you had mentioned earlier in testimony
21 today.

22 MR. ZIMMER: Are you asking him to
23 interpret the memo, or just to tell you who
24 actually went on the visit? That's what's
25 unclear by the question.

1 MR. TALLON: I'm just asking for
2 his recollection who was on the visit.

3 MR. ZIMMER: Okay.

4 A. Well, I think I testified earlier
5 as to who went on different legs of the trip,
6 to my best recollection, and I guess that
7 would not change. I can repeat that, if that
8 will help.

9 Q. No, I remember the names that you
10 gave me. I'm just wondering if you are able
11 today to break down who was on what leg of
12 the trip, based on your last response.

13 A. Well, would you like for me to
14 repeat as I recall who was on what leg of the
15 trip?

16 Q. Yes.

17 A. Through this?

18 Q. That would be very helpful.

19 A. Looking at the Aroclor in the
20 environment attachment to this memo, the
21 scheduled Monday, April 28, trip to Holden
22 was with -- by -- correction -- Keller and
23 Hardy out of the London office.

24 The Tuesday, April 29 visit to
25 Shell was by Wheeler and Keller.

1 The Wednesday, April 30
2 Walker-Sentry Company, I have no recollection
3 of that, and I'm not sure that visit was even
4 made by anyone.

5 The Wednesday afternoon or
6 Thursday morning visit with Holmes and Tatton
7 was made by Wheeler and Keller. The
8 Wednesday afternoon visit with Sir, with Sir
9 Frederick Warner, I don't recall that
10 meeting. I'm not sure it was held.

11 Friday meeting with Dave Wood and
12 John Haggert, I do not recall.

13 The Monday meeting with Widmark
14 and Jensen was made with Widmark but not
15 Jensen by Wheeler and Keller. And the
16 meeting with Holmstedt, my best recollection,
17 that was Wheeler and Keller; as was Friday,
18 May 9, Professor Van Genderen, and the last
19 meeting, May 12, with Leverkusen, to my
20 knowledge, was not made.

21 Now, I should make one addition to
22 this. To the meeting with Widmark and
23 Jensen, Dr. Richard was along on that one,
24 and it's my best recollection that Hardy, out
25 of the London office, was also present at the

1 Shell Research meeting, and I believe that's
2 all.

3 Q. Dr. Keller, do you have a
4 recollection of being told by any person at
5 Monsanto in the late Sixties that the Organic
6 Division had considerable research effort
7 underway to develop data to protect the sales
8 and uses of Monsanto PCB's?

9 A. I have no recollection of that.

10 Q. Do you have a recollection of ever
11 having heard from Elmer Wheeler that
12 beginning in the mid summer of 1968, a
13 considerable research effort had been
14 underway in the Organic Division and in
15 consulting laboratories to develop data to
16 protect the sales and uses of Monsanto PCB's?

17 A. No, I don't recall that.

18 Q. If you look for a moment at
19 Exhibit 286, at the first sentence of the
20 third paragraph in the memorandum, it states,
21 "Beginning in mid summer of last year, a
22 considerable research effort has been
23 underway in the Organic Division and in
24 consulting laboratories to develop data to
25 protect the sales and uses of our PCB's." Do

1 you see that?

2 A. Yes.

3 Q. Does reviewing that passage in
4 this memorandum or any portion of this
5 memorandum enhance your recollection in any
6 fashion as to whether the Organic Division
7 had undertaken a considerable research effort
8 to develop data to protect the sales and uses
9 of Monsanto PCB's?

10 MR. ZIMMER: Lacks foundation,
11 assumes facts not in evidence.

12 If it changes your recollection,
13 you can tell him.

14 MR. TALLON: I'm asking him if it
15 enhances his recollection in any respect.

16 MR. ZIMMER: You read him the same
17 question twice and he told you it didn't,
18 so -- does it enhance your recollection?

19 THE WITNESS: No.

20 BY MR. TALLON:

21 Q. What was the goal of the work that
22 you were doing to gather data in 1967 and
23 '68, as you best understood it?

24 A. To provide as complete a picture
25 as possible on the presence, fate,

1 composition of PCB and PCB-type products in
2 the environment.

3 Q. And what do you refer to when you
4 say that one of the goals or part of the goal
5 was to gather data on the fate of PCB
6 products?

7 A. Yes, the fate.

8 Q. Fate.

9 A. Yes.

10 Q. What do you mean by the use of the
11 term "fate" in that sentence?

12 A. This would relate to the stability
13 of PCB-type products in the environment,
14 under environmental conditions.

15 Q. Did you have any understanding at
16 the time of the use to which the information
17 that you were to gather would be put?

18 A. No.

19 Q. Did you have an understanding then
20 as to whether the data and information you
21 were gathering would be used for any business
22 purpose as it related to PCB products?

23 MR. ZIMMER: Calls for
24 speculation.

25 THE WITNESS: Can we play that

1 back?

2 THE COURT REPORTER:

3 "Q. Did you have an understanding
4 then as to whether the data and information
5 you were gathering would be used for any
6 business purpose as it related to PCB
7 products?

8 A. Well, the broad answer to that is
9 yes, because what we were in business for was
10 to develop data for support of products and
11 processes, of commercial products and
12 processes.

13 BY MR. TALLON:

14 Q. Did you have an understanding then
15 as to whether the information and data you
16 were developing would play any role in a
17 business decision with respect to the
18 continued sales of PCB's?

19 MR. ZIMMER: Same objection. I'm
20 sorry, you can answer.

21 A. The answer is no.

22 BY MR. TALLON:

23 Q. What was your understanding --

24 A. Let me just add a comment, here.
25 Just to reemphasize, our role as a support,

1 service function to the business units, in
2 many times we would not be involved,
3 certainly, in decision making of what they
4 were doing. That was their decision. We
5 would get problems in, and in that context,
6 we, many times, really didn't know what they
7 were going to do with the information that we
8 were generating. It might be, could be
9 considerably better. That's the reason I
10 have to answer --

11 Q. Did you have any understanding at
12 all of the use to which the data and
13 information your group developed was
14 eventually put in connection with the
15 continued sale of PCB products?

16 A. At that point in time, no.

17 Q. Did you later acquire an
18 understanding of the use to which the data
19 and information you developed was put or had
20 been put?

21 A. Much later.

22 Q. How much later?

23 A. Early Seventies.

24 Q. And in the early Seventies, what
25 did you learn about the use to which the

1 information you had developed had been put?

2 A. Well, I think it was used to make
3 certain business decisions and what to do
4 about manufacture of products, continuing
5 manufacture, labeling.

6 Q. What certain business decisions do
7 you have in mind when you give that answer,
8 Dr. Keller?

9 MR. ZIMMER: The question lacks
10 foundation, calls for speculation.

11 You can respond if you know.

12 A. I can't give you a definite answer
13 on that.

14 BY MR. TALLON:

15 MR. TALLON: Can you read that
16 immediately prior answer back, please? I
17 just want to be sure I didn't mishear it.

18 THE COURT REPORTER:

19 "A. Well, I think it was used to
20 make certain business decisions and what to
21 do about manufacture of products, continuing
22 manufacture, labeling."

23 BY MR. TALLON:

24 Q. Do you have any understanding as
25 to how information or data you developed was

1 used in making business decisions with
2 respect to labeling?

3 A. That was just not my bailiwick, my
4 responsibility, and I had nothing to do with
5 that. I have no recollection of them.

6 BY MR. TALLON:

7 Q. I appreciate that, although it
8 renders your answer somewhat inexplicable.
9 Do you believe that there is a linkage
10 between the information and data you
11 developed and labeling decisions that were
12 made by Monsanto?

13 A. Now?

14 Q. Yeah.

15 A. Well, I guess I would say I
16 believe there is, yes.

17 Q. And what linkage is that, Dr.
18 Keller?

19 MR. ZIMMER: Calls for
20 speculation, again.

21 A. Well, the linkage would be that
22 information regarding PCB's was needed by
23 business units to make the right business
24 decisions.

25 BY MR. TALLON:

1 Q. I don't doubt that, Dr. Keller,
2 but I am trying to specifically focus on a
3 comment that you made that you thought that
4 the information and data you developed had an
5 impact on business decisions that went to
6 labeling, among other things, and in order to
7 give that answer, you must have had something
8 in mind.

9 MR. ZIMMER: He said he believed
10 that that occurred.

11 MR. TALLON: Shall we read the
12 answer back again?

13 MR. ZIMMER: Why don't we.

14 THE COURT REPORTER:

15 "A. Well, I think it was used to
16 make certain business decisions and what to
17 do about manufacture of products, continuing
18 manufacture, labeling."

19 BY MR. TALLON:

20 Q. What is the basis for your
21 thinking that the information and data you
22 developed was used in connection with any
23 business decisions having to do with
24 labeling?

25 A. I have no direct basis except to

1 know that the business unit would have used
2 that information to make the right decisions.

3 Q. To make -- excuse me -- what?

4 A. To make the right decisions.

5 Q. Are you thinking of any particular
6 decisions or any particular labeling?

7 A. No.

8 Q. And when you answered that you
9 thought that the information and data you
10 developed was implicated in business
11 decisions having to do with continuing
12 manufacture, what was the basis of your
13 thought?

14 MR. ZIMMER: Once again, calls for
15 speculation, lacks foundation, as has this
16 whole line of questioning.

17 MR. TALLON: Counsel, if we want
18 to read the answer back again, I will, but I
19 would appreciate your stop doing that,
20 because it suggests that you are coaching the
21 witness to render it to speculation when he
22 testified that he thought there was a
23 relationship, and I'm entitled to probe that,
24 as you know.

25 MR. ZIMMER: Fine, and I'm not

1 coaching the witness, nor do my objections
2 which I'm entitled to make suggest that, so I
3 would appreciate it if you could keep your
4 comments about my style of defending a
5 deposition to yourself.

6 MR. TALLON: Let's read the
7 answer.

8 MR. ZIMMER: An answer --

9 MR. TALLON: I'm sorry, I thought
10 you were finished.

11 MR. ZIMMER: An answer that says,
12 "I think that another department was doing
13 something or other" is, on its face,
14 speculative. That should be obvious. This
15 whole line is just, it's useless, because you
16 can ask the people involved what they did
17 with the information that Dr. Keller's
18 department generated.

19 MR. TALLON: Well, today, we have
20 Dr. Keller, and we're exploring his knowledge
21 and recollection.

22 MR. ZIMMER: Okay, why don't you
23 ask him another question.

24 BY MR. TALLON:

25 Q. Do you have the question in mind,

1 or would it be helpful to hear it again?

2 A. I'll make a comment relative to
3 the statement.

4 Q. Okay.

5 A. I made a poor choice of examples
6 in my answer. It was an example, and not a
7 fact. I had no involvement, to my knowledge,
8 with labeling, and I really don't know how
9 our results were used by any of the other
10 groups within Monsanto, and that was a poor
11 choice of examples. Now, if you think I'm,
12 I've got some information back here about,
13 hey, I know all about labeling, I don't. It
14 wasn't my area. I can't draw on anything
15 that would say, "Well, the Medical Department
16 took this information in from Keller, uh-huh,
17 now we got to do something relative to
18 labeling." I have absolutely no information
19 on that. I don't recall.

20 Q. -- excuse me. I didn't realize
21 you weren't finished.

22 When you testified that you
23 thought that some of the information and data
24 you used or developed was used in business
25 decisions relating to the continuing

1 manufacture of the product, to what were you
2 referring?

3 MR. ZIMMER: Same objections.

4 A. I was referring to the fact that
5 we support a commercial operation and we
6 aren't there just running instruments every
7 day, turning information that is of no value.
8 The business units need this information to
9 make proper judgments. On that basis, I'm
10 reasonably confident in my own mind that PCB
11 information was so used. You asked me what
12 was it. I can't tell you. I don't know.

13 BY MR. TALLON:

14 Q. Do you know whether, in 1967,
15 there was a goal to attempt to continue the
16 sales of PCB products?

17 MR. ZIMMER: Lacks foundation.

18 A. I'm not aware of it.

19 BY MR. TALLON:

20 Q. Do you know whether there came a
21 time when it was determined that PCB-based
22 products would be discontinued for sale by
23 Monsanto?

24 A. I'm aware that there was
25 consideration of that.

1 Q. And you are aware that there came
2 a time when Monsanto did discontinue the sale
3 of PCB-based products, correct?

4 A. Yes, I am.

5 Q. Okay, and do you know at any time
6 before that decision was made whether there
7 was an effort to continue the sales and uses
8 of PCB's?

9 A. Not to my best recollection.

10 Q. Did you play any role in providing
11 information, so far as you know, that went
12 into the decision to discontinue the sale and
13 use of PCB-based products?

14 A. I -- I just can't recall that.

15 Q. The itinerary which is attached as
16 part of the exhibit before you, Dr. Keller, I
17 believe that one of the things that you
18 testified to was that you and Mr. Hardy
19 visited with Mr. Holden? Is that correct?

20 A. Right, mm-hmm.

21 Q. Was that visit in Scotland?

22 A. Yes.

23 Q. Did you, during the course of that
24 visit, exchange any documents in the terms of
25 Mr. Holden giving you any documents and you

1 giving him any documents?

2 A. Not that I recall, except what
3 might have been penciled as a note or
4 something.

5 Q. Did you, by the way, Dr. Keller,
6 take notes during the course of your trip?

7 A. Yes.

8 MR. TALLON: Let me show you a
9 document which we'll mark as the next exhibit
10 in order, a multipage document which begins
11 on Page TRAN 007217 and goes all the way
12 through TRAN 007290 and is titled "notes,
13 European trip, Aroclor." And we'll take a
14 moment to look at that and see if you can
15 identify it for us.

16 (Plaintiff's Deposition
17 Exhibit 287 marked for
18 identification.)

19 (Witness peruses said
20 document.)

21 MR. ZIMMER: Did we get the TRAN
22 numbers this encompasses?

23 MR. TALLON: Mm-hmm.

24 MR. ZIMMER: Thank you.

25 BY MR. TALLON:

1 Q. Those are not your notes, are
2 they?

3 A. It looks like it could be my
4 writing as of that point in time. The last
5 page is a little disconcerting.

6 Q. You are referring to the reference
7 on Page 7290 that says "R. Keller called"?

8 A. Yeah.

9 Q. Are you able to discern by review
10 of these notes whether or not they are yours?

11 A. Yeah, it's my best opinion they
12 are mine. I have some, some of the writing
13 doesn't look like it's quite mine, but the
14 reason I qualify this, I believe it is mine
15 in that, after looking at this a little
16 closer, the front end of this does not relate
17 to the trip or the itinerary made on PCB's.
18 It relates to visits to plant laboratories,
19 plant facilities at Ruabon and Newport, so
20 this is in -- this is something totally
21 unrelated to what we're talking about over
22 here.

23 At the point where it starts on
24 7233, that, that does relate, and I believe
25 from that point on.

1 Q. Do you recollect meetings which
2 correspond with the first pages of the notes
3 7218 through 7232?

4 A. What I can't construct, I can't in
5 my mind recall, that I made the trip ahead --
6 well, let's see. This was 4/24. Was there
7 an 8 over here? Okay, it does precede April
8 28. The part that I can't recall, if these
9 are my notes, then it means that I apparently
10 went over earlier and visited these other
11 sites on the front end of this, prior to
12 picking up with this agenda over here on the
13 aroclors in the environment with Wheeler and
14 Richard, so that's my best assessment of what
15 this is, what it represents.

16 Q. Do you remember anything in
17 particular about your discussions with Mr.
18 Holden, based on your review of these notes
19 or based on your recollection, unaided by
20 review of the notes?

21 A. Well, Holden was at the Department
22 of Agriculture, fisheries at Pitlochry, and
23 the visit there was primarily to review his
24 work on PCB's in aquatic species, where his
25 work was mostly with gas chromatography.

1 That was done, and as I recall, he was guided
2 in large part by Widmark and his earlier
3 work, and felt by reviewing back -- I'm
4 talking about Holden now -- reviewing back
5 earlier chromatograms from wildlife species
6 of a few years earlier, then he decided that
7 the interferences he had been seeing and
8 couldn't explain could be PCB-type materials
9 as found by Holden and Jensen. That's the
10 nub of what I remember about what was said,
11 here.

12 Q. Do you recall, Dr. Keller, any
13 discussion with Mr. Holden as to whether DDT
14 degradation accounted for the presence of
15 PCB's when they, PCB's were found in the
16 presence of DDT?

17 A. That was DDT degradation?

18 Q. Yes.

19 A. Well, if it was discussed, I don't
20 remember it.

21 Q. Perhaps you could look at Page
22 7233 and see if anything on that page
23 refreshes your recollection in that respect.

24 A. That's of my penciled notes, here?

25 Q. Yes, of the note, the notebook.

1 A. 72 --

2 Q. 33.

3 A. -- 33. All right, your question
4 again?

5 Q. Does review of that page refresh
6 your recollection in any respect as to
7 whether DDT degradation was a subject of
8 discussion among you, Mr. Hardy, and Mr.
9 Holden?

10 A. Only to the extent that sentence
11 addresses it. "Evidence for DDT degradation
12 does not explain all chlorinated
13 by-products," and at this point in time 25
14 years later, I cannot add to it.

15 Q. Are you able today, Dr. Keller, to
16 recollect any aspect of the discussion with
17 Drs. Robinson -- or, Dr. Robinson and Mr.
18 Richardson of Shell Research, Ltd., on
19 Tuesday, April 29th, 1969?

20 A. This was addressed toward work
21 they had been doing with pesticides,
22 Richardson and Shell, and the fact that they
23 had also found interferences in their
24 chromatograms, looking at pesticides, and
25 deciding that maybe they could now better

1 explain those interferences based on Widmark
2 and Jensen's work. That was primarily what
3 was reviewed with them.

4 Q. Do you recall, either in
5 discussions with Mr. Holden or Dr. Robinson
6 and Mr. Richardson, whether particular
7 aroclors were discussed?

8 A. Well, my best recollection is
9 there was some discussion of why were higher
10 chlorinated biphenyl species found as
11 residues in aquatic species, fish, birds, and
12 asking the question what could be the source
13 of these, and relative back to Aroclor-type
14 products, not necessarily Aroclor but more
15 likely European PCB products in that area, so
16 that was in a discussion but I can't play
17 back anything beyond that except what I find
18 in my notes here which I can't even recall at
19 this point.

20 Q. Do you recall identifying with any
21 of the gentlemen with whom you met on your
22 European trip, possible sources for the
23 presence of PCB's in the environment?

24 A. Again, do I recall?

25 Q. Yes.

1 A. Could you play that back again?

2 Q. Oh, yes. Sorry. Do you recall,
3 in any of your discussions with the gentlemen
4 you visited with in Europe, discussions --

5 A. Gentlemen being --

6 Q. All the gentlemen whose names are
7 listed on the itinerary, yes. Do you recall
8 discussing with any of those gentlemen
9 possible sources for the presence of PCB's in
10 the environment?

11 A. Yes.

12 Q. What do you recall?

13 A. One I believe I've mentioned
14 already was with Widmark, where he was
15 suggesting maybe it could come, PCB-type
16 materials could come from paint on ships,
17 again addressing why were the residues being
18 found in wildlife species, aquatic wildlife
19 species. That's the only thing that comes
20 back to me immediately as to source.
21 Questions were being asked by everybody but
22 nobody had a good explanation.

23 Q. Do you have any recollection, Dr.
24 Keller, of having discussed with any of the
25 gentlemen you met, whether the presence of

1 PCB's in the environment was explainable by
2 the use of PCB-based lubricants in any of the
3 jurisdictions or locales you visited?

4 A. I have no recollection of that.

5 Q. Would you -- I've lost my page
6 now -- flip to Pages 7239 and 7240? And at
7 the bottom of 7239 and the top of 7240, tell
8 me if any portion of your review of those
9 pages refreshes your recollection as to
10 whether or not there was any discussion that
11 you recall with respect to PCB-based
12 lubricants?

13 A. I can't add anything beyond what
14 appears on these two pages. I'm trying to
15 determine in my own mind who was being talked
16 with on my part at the time these notes were
17 taken, and I'm not sure, certain about that.
18 There's a reference to the -- this journal.

19 MR. ZIMMER: Well, let's wait till
20 he asks you a question. He's not asking you
21 to interpret the note right now. He's
22 entitled to do that if he wants, but he's
23 asking if what you read at the bottom of one
24 page, top of the next refreshes your
25 recollection.

1 A. The answer is no.

2 BY MR. TALLON:

3 Q. Is there a notation or reference
4 within a reasonable number of pages from 7239
5 or 7240 which indicates to you the discussion
6 to which these notes related?

7 MR. ZIMMER: I'll have to object.
8 That calls for speculation because he's
9 already said he doesn't remember the
10 discussions.

11 (Witness peruses document.)

12 A. No. No.

13 BY MR. TALLON:

14 Q. Would you turn, please, Dr.
15 Keller, to page TRAN 007272?

16 A. 0072 --

17 Q. 72?

18 A. -- 72.

19 Q. Does anything on that page, Dr.
20 Keller, refresh your recollection as to
21 discussions that you had during your visit to
22 Europe as those discussions related to the
23 source of PCB's found in the environment?

24 A. No.

25 Q. Doctor, do you have any

1 understanding as to the reason or purpose for
2 which you believe you may have recorded these
3 notes?

4 A. Primarily to come back with the
5 best recording of our findings that we can
6 have.

7 Q. Did you take them while you were
8 in Europe?

9 A. Take them?

10 Q. Did you jot down these notes while
11 you were actually, physically in Europe?

12 A. Yes.

13 Q. Doctor, do you recollect the
14 length of the period during which you met
15 with Professor Widmark while on your 1969
16 journey to Europe?

17 A. One day.

18 Q. And do you know if others on
19 behalf of Monsanto met with Professor Widmark
20 on that occasion for more than one day?

21 A. Not to my knowledge.

22 Q. And to the best of your
23 recollection, what was discussed between you
24 and Dr. Widmark or Professor Widmark on that
25 occasion?

1 A. It involved review of his GC/mass
2 equipment, skills, and just what he might
3 have, plans for the future, if anything, plus
4 anything he could tell us about PCB findings
5 beyond what he had published.

6 Q. Did he tell you anything about PCB
7 findings beyond what he had published?

8 A. There was a playback, essentially,
9 of what he had published.

10 Q. Did Professor Widmark give you any
11 indication of what he intended to do in the
12 future with respect to similar work or
13 similar subjects?

14 A. That was up in the air, we found
15 out, because Dr. Jensen we did not meet with
16 out of town, and I think they were trying to
17 decide how they were going to continue on
18 their programs.

19 Q. Did Professor Widmark give you
20 information on that occasion that you did
21 find helpful for running your own GC/mass
22 system?

23 A. We, we felt that was a very
24 helpful visit with Professor Widmark and he
25 provided insight as to methodology which we

1 brought back, I don't recall at this point
2 whether these were anything in writing,
3 orally, or what could be gleaned out of
4 notes, but he was helpful. There was no
5 question about that.

6 Q. Do you recollect any particular
7 information furnished to you by Professor
8 Widmark which you found helpful?

9 A. Now, what was the first part of
10 that, again, please?

11 Q. Yes. Do you recall any particular
12 information --

13 A. Particular information. The -- I
14 can't give you detail on this, but it would
15 relate to how to extract, separate, extract,
16 concentrate PCB-type materials from tissue of
17 wildlife.

18 Q. Anything else?

19 A. No.

20 Q. When you returned, Dr. Keller, did
21 you make any written reports covering the
22 subjects of your trip to Europe?

23 A. Yes, but I can't recall it. I
24 don't know if it was a -- it was something
25 reduced to writing. Whether it was a

1 distribution, I just don't know at this
2 point.

3 MR. TALLON: Let me show you, Dr.
4 Keller, a multipage document which bears
5 production numbers TRAN 022096 through TRAN
6 022106.

7 (Plaintiff's Deposition
8 Exhibit 288 marked for
9 identification.)

10 BY MR. TALLON:

11 Q. Would you take a moment to review
12 Exhibit Number 288?

13 (Witness peruses said
14 document.)

15 MR. ZIMMER: You want him to read
16 the whole thing, or just skim it?

17 MR. TALLON: I want him to review
18 it. If you feel more comfortable reading the
19 entire document, please do so. I intend to
20 ask you whether you can identify the document
21 for the record.

22 (Witness peruses said
23 document.)

24 A. Yes.

25 BY MR. TALLON:

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1 Q. Can you identify the document?

2 A. Yes.

3 Q. Please, do so.

4 A. It's a document I generated.

5 Q. And what is reflected in that
6 document, Dr. Keller? What is reflected in
7 the document?

8 A. What is reflected is information
9 obtained and exchanged through our visits out
10 of the European trip.

11 Q. Do you recollect having dictated
12 the notes appearing in this exhibit, Dr.
13 Keller?

14 A. I haven't read this document word
15 for word at this point, but with that
16 qualification, I would say yes, this is what
17 I dictated.

18 Q. And do you recollect the reason
19 for which you sought to record the
20 information appearing in the document?

21 A. So I'd have the best information
22 available that we obtained; as complete a
23 record as possible.

24 Q. Do you recollect approximately
25 when you dictated the material appearing in

1 this exhibit?

2 A. Well, the document is dated
3 6-12-69. I have no other -- I can't recall
4 that. That could be the date, it could be
5 different, and that's all I can add.

6 Q. Do you recollect ever having used
7 the information reflected in this exhibit to
8 create any other document or documents?

9 A. No.

10 Q. Do you have any recollection of
11 having asked Professor Widmark for his
12 recommendation of what he would do if he were
13 a manufacturer of PCB's?

14 MR. ZIMMER: What we would do
15 about what?

16 MR. TALLON: What he would do if
17 he were -- okay, --

18 BY MR. TALLON:

19 Q. Do you have any recollection of
20 asking Professor Widmark what he would do if
21 he were in a manufacturer's position
22 involving PCB's?

23 A. I guess there would be no basis
24 for my asking that question.

25 Q. Does looking at Page TRAN 022105

1 refresh your recollection in any respect as
2 to whether or not you asked that question of
3 Professor Widmark? It's page 10. If you
4 look at the numbers at the top of the page
5 here, it'll be page 10.

6 A. All right, I don't recall that.
7 It reads, "When asked what he would do."
8 There were several there. I don't know who
9 asked this.

10 Q. Do you remember the question being
11 asked of Professor Widmark, notwithstanding
12 the source of the question?

13 A. At this point in time I do not
14 remember.

15 Q. Do you have a recollection of
16 Professor Widmark having said at any point
17 during your meeting with him that he would
18 restrict PCB's to closed systems?

19 A. Yes, I remember his answers to
20 this. That part I remember his answers.

21 Q. By "that part," are you --

22 A. I'm talking about item 1, 2 and 3.

23 Q. And can you tell me what you
24 recollect about Professor Widmark's comments
25 in that regard?

1 A. Joining he said anything -- I
2 can't recollect anything beyond what's,
3 what's down here, one, two, three.

4 Q. In other words, you don't
5 recollect today whether he elaborated on any
6 of the points made?

7 A. Not to my knowledge.

8 Q. Do you recollect that following
9 the meeting with Professor Widmark, you
10 discussed with any other employee or
11 representative of Monsanto whether PCB's
12 should be restricted to closed systems?

13 THE WITNESS: Can you read that
14 back?

15 THE COURT REPORTER:

16 "Q. Do you recollect that
17 following the meeting with Professor Widmark,
18 you discussed with any other employee or
19 representative of Monsanto whether PCB's
20 should be restricted to closed systems?"

21 A. No, I did not, to my best
22 recollection.

23 BY MR. TALLON:

24 Q. Are you familiar with the term
25 "closed system"?

1 A. I guess I'll say yes, but I guess
2 I'm not very knowledgeable.

3 Q. Well, I don't want to use a term
4 that you don't understand so I will ask you
5 what you mean when you use the term "closed
6 system."

7 A. Well, I presume it means it's a
8 system where a substance, environmentally
9 speaking, would not escape into the
10 environment.

11 Q. Did you ever do any work designed
12 to determine whether systems were open
13 systems versus closed systems?

14 A. No, not that I could recall.

15 Q. Do you recall ever being present
16 during a discussion where restricting the use
17 of PCB's to closed systems was a subject of
18 the discussion?

19 A. No.

20 Q. Do you recollect ever having been
21 part of a discussion where a subject of the
22 discussion was the desire to find a
23 substitute for PCB's?

24 A. I can't recollect any such
25 discussion.

1 Q. Did Dr. Richard ever comment to
2 you that he thought that Monsanto should
3 discontinue sales of PCB's?

4 A. I have no recollection of that,
5 hmm-mm.

6 Q. Do you recollect ever having
7 attended a meeting where Dr. Richard
8 discussed the advisability of continuing to
9 sell PCB's?

10 A. No.

11 Q. Do you recall ever having heard
12 from any source that Dr. Richard had stated
13 that Monsanto should withdraw from the sale
14 of PCB's?

15 A. No.

16 MR. ZIMMER: When you use PCB's
17 here, Counsel, you mean all PCB's?

18 MR. TALLON: Right.

19 BY MR. TALLON:

20 Q. Let me show you now, Dr. Keller, a
21 document bearing production numbers TRAN
22 005818 through 5827, and I'm going to -- the
23 question I will be asking you, at least
24 initially, is whether you've ever seen the
25 document before, so please undertake such

1 review as would be necessary to enable you to
2 answer that question.

3 (Plaintiff's Deposition
4 Exhibit 289 marked for
5 identification.)
6 (Witness peruses said
7 document.)

8 BY MR. TALLON:

9 Q. Can you identify the exhibit, Dr.
10 Keller?

11 A. I don't recall seeing it.

12 Q. Would it, therefore, follow that
13 you don't recall whether you participated in
14 drafting any portion of this document?

15 (Witness peruses said
16 document.)

17 A. I had no involvement with the
18 drafting of this document.

19 Q. Dr. Keller, do you have any
20 recollection as to whether or not the work of
21 Jensen and Widmark related in part to bird
22 feathers, presence of PCB's in bird feathers?

23 A. Bird feathers; no.

24 Q. Do you have any recollection
25 whether Jensen and Widmark found PCB's in

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1 museum specimens of seabirds?

2 A. I don't recall. I have no
3 recollection of that.

4 Q. Would you just take a moment and
5 look at Page 2 of the exhibit before you,
6 289? It's the page numbered 2. That page
7 that you have before you now. In the
8 second-to-last paragraph appearing on that
9 page, the document states, "Examination of
10 feathers from museum specimens of seabirds
11 suggested that contamination commenced in
12 1944." Do you see that?

13 A. Yes.

14 Q. Does review of that sentence
15 refresh your recollection in any fashion as
16 to your knowledge of whether or not Jensen
17 and Widmark's study concerned examination of
18 museum specimens of seabirds?

19 A. I cannot recall any comment being
20 made in my presence of that type.

21 Q. Okay.

22 MR. TALLON: Okay, why don't we
23 take a two-minute break.

24 (Recess)

25 BY MR. TALLON:

1 Q. Dr. Keller, other than the meeting
2 with Professor Widmark that you described in
3 your testimony of a few moments ago, did you
4 ever meet with Professor Widmark again?

5 A. Yes.

6 Q. Did you meet with him again on one
7 occasion or more than one occasion?

8 A. I only recall one, one occasion.

9 Q. And when did that take place?

10 A. That would have been in 1970, when
11 we made a return trip to Europe.

12 MR. ZIMMER: I'm sorry to
13 interrupt but are we including the visit that
14 Professor Widmark made to Monsanto? I just
15 didn't know whether that was prefaced in your
16 question or not.

17 BY MR. TALLON:

18 Q. Other than the meeting that you
19 described with Dr. Widmark or Professor
20 Widmark in your office and the meeting that
21 you described with him in Europe, do you
22 recollect having had any other meeting?

23 A. One more; the 1970 follow-up,
24 European trip.

25 Q. To your knowledge, did other

1 representatives of Monsanto -- and by
2 "other," I mean other than yourself -- meet
3 with Professor Widmark on any other occasion
4 than the three that you have now identified
5 for us?

6 A. Not to my knowledge.

7 Q. When you met with Professor
8 Widmark in 1970, whether you accompanied by
9 anyone else working for Monsanto or
10 representing Monsanto?

11 A. Yes.

12 Q. By whom?

13 A. Elmer Wheeler.

14 Q. Was anyone else representing
15 Monsanto or present at the meeting to which
16 you have referred?

17 A. Bill Papageorge was on that trip.
18 I can't recall whether he visited with, also
19 with us, with Widmark, or not. I'm not clear
20 on that point. I just don't recall that.

21 Q. Was the 1970 trip to Europe for
22 the purpose of holding a Jnumber of meetings
23 of which the meeting with Professor Widmark
24 was one?

25 A. Correct.

1 Q. In addition to Mr. Wheeler and Mr.
2 Papageorge, were other representatives of
3 Monsanto present at any of the meetings,
4 other meetings which took place during that
5 trip?

6 A. Not that I recall.

7 Q. Do you recall the month or months
8 in which the 1970 trip to Europe took place?

9 A. To my best recollection, it was
10 May.

11 Q. When for the first time do you
12 recollect being informed that or asked to go
13 on a trip to Europe for the purpose of
14 meeting with Professor Widmark or others?

15 A. For the second trip?

16 Q. For the second time.

17 A. I have no recollection of when
18 that evolved.

19 Q. Do you have a present
20 understanding as to the reason why you went
21 on that trip?

22 A. Yes.

23 Q. What is that understanding?

24 A. To provide knowledge and expertise
25 relative to analytical-type problems,

1 questions, concerns.

2 Q. Were the analytical problems,
3 questions and concerns which you were
4 available to resolve, problems, questions and
5 concerns in relationship to PCB's?

6 A. Yes.

7 Q. Were you invited to attend or
8 directed to attend?

9 MR. ZIMMER: Or none of the above?

10 A. I would say I'll answer it this
11 way: It evolved, in my mind, the same way
12 the first one did, through the Medical
13 Department and the Business Group, by their
14 taking lead role on deciding this should be
15 done.

16 Q. Was it fair to say, then, that you
17 were informed that your presence was desired?

18 A. A fair statement.

19 Q. And with whom in the Medical
20 Department did you communicate about the
21 trip?

22 A. Elmer Wheeler.

23 Q. Anyone else?

24 A. Dr. Kelly.

25 Q. Anyone else?

1 A. Not that I recall.

2 Q. And with whom representing the
3 Business Group did you communicate about the
4 trip before you actually made it?

5 A. Dr. Richard. That's all.

6 Q. Did you communicate about the trip
7 before actually making it with Mr.
8 Papageorge?

9 A. Not that I can recall.

10 Q. Do know what Mr. Papageorge's
11 title was at the time that he made the trip
12 with you, or made legs of the trip with you?

13 A. My best recollection is that he
14 would have been, in 1970, he would have been
15 the product acceptability manager.

16 Q. Do you know if Mr. Papageorge at
17 that time had any particular responsibility
18 related to PCB's?

19 A. Yes.

20 Q. Do you know that he did have such
21 responsibility?

22 A. Yes.

23 Q. And what is your understanding of
24 the responsibility that he had?

25 A. To work closely with the Business

1 Group, Research and Development Department,
2 Medical Department, with outside interested
3 parties on assuring the the quality, the
4 acceptability of products.

5 BY MR. TALLON:

6 Q. What was your understanding, Dr.
7 Keller, the purpose for the 1970 trip to
8 Europe, or purposes, if there was more than
9 one?

10 A. Well, the purpose or purposes was
11 to develop a current, clear picture of what
12 had been further developed and accomplished
13 in Europe on PCB -- on the PCB question. It
14 was to be directed toward analytical, with
15 some emphasis with trying to discuss and work
16 with if that was, would be appropriate, other
17 manufacturers of PCB-type products.

18 Q. When you used the term to gain a
19 current clear picture of what had been
20 further developed, had something been further
21 developed in Europe with relationship to
22 PCB's?

23 A. Nothing that we had in mind
24 specifically. It was just to see what
25 further information was available.

1 Q. Was there a particular catalyst or
2 a series of catalysts, as you recall it, for
3 taking this trip?

4 A. To justify it, you mean?

5 Q. Right.

6 A. No, there was nothing -- the
7 catalyst was the Medical Department.

8 Q. In what respect, Dr. Keller?

9 A. Well, they were taking, certainly,
10 a lead role and wanting to get to the
11 forefront on what is this situation with
12 PCB's in the environment, and it comes back
13 again, as I've stated, to Mr. Wheeler.

14 Q. Was there any newly-published
15 information or series of new publications,
16 which factored into the decision to take this
17 trip, so far as you know?

18 A. Not that I recall in this point in
19 time. I don't remember when publications
20 suddenly started to come. I can't refer you
21 back to anything specific. I don't remember
22 anything.

23 Q. Was there any building concern or
24 sense of urgency which contributed to the
25 decision to take this trip, so far as you

1 know?

2 A. No.

3 Q. Were you ever a participant in
4 discussing the plans for the trip before it
5 actually took place?

6 A. On this trip, I had little input
7 on where the trip would go. They knew our
8 interests would be Widmark, other stops were
9 primarily out of Papageorge, Wheeler,
10 possibly the R & D Business Group.

11 Q. Do you recollect the approximate
12 length of time that you were in Europe on
13 this 1970 trip?

14 A. On business.

15 Q. Okay, on business.

16 A. My best recollection is
17 approximately ten days, two weeks.

18 Q. Do you know whether Mr. Wheeler,
19 Mr. Papageorge or others made stops during
20 the trip where you did not accompany them?

21 A. No. I don't recall any.

22 Q. Do you recollect the approximate
23 length of your 1970 visit with Professor
24 Widmark?

25 A. Approximately one day.

1 Q. And was anyone other than
2 Professor Widmark present not representing
3 Monsanto?

4 A. No.

5 Q. For example, Jensen?

6 A. He was not there.

7 Q. Have you ever met Jensen?

8 A. Never met Jensen.

9 Q. And I may have cut off your last
10 answer. Was Professor Widmark accompanied by
11 anyone?

12 A. No.

13 Q. To the best of your recollection,
14 where did that meeting take place?

15 A. In Professor Widmark's office and
16 laboratories.

17 Q. And to the best you recall today,
18 what was discussed during the course of that
19 meeting?

20 A. The PCB situation again was
21 addressed. There was less to come to us from
22 Widmark regarding techniques, equipment,
23 methods, and actually, Widmark had reached
24 the point where he apparently was dropping
25 his involvement with PCB work and heading

1 into other things.

2 Q. Was there anything that you had
3 hoped to accomplish in the course of that
4 meeting with Professor Widmark?

5 A. Nothing except to have the benefit
6 of what he knew, what he could help us, no
7 other objective that I recall.

8 Q. Do you recollect today that he
9 provided you with any information which at
10 the time he found useful?

11 A. No, I don't.

12 Q. Do you recollect having shared any
13 information with Professor Widmark about
14 studies or analyses that had been completed
15 by Monsanto by that time?

16 A. I can't remember if there was any
17 exchange of results we might have had on PCB
18 findings with him or not. When we found that
19 he was at the point where he really wasn't
20 that actively involved with it, it changed a
21 picture a little bit. So I just don't recall
22 anything.

23 Q. Had you been aware that change of
24 direction on Professor Widmark's part before
25 you arrived in stock home?

1 A. No. I was not. I was not aware
2 of it.

3 Q. Do you mean to suggest by your
4 answer that Mr. Wheeler was?

5 A. Pardon?

6 Q. Do you mean to suggest by that
7 answer that Mr. Wheeler was or that someone
8 else was?

9 A. No. To my knowledge, no one was
10 aware of this.

11 Q. Do you know who arranged for the
12 meeting with Professor Widmark in May of
13 1970?

14 A. That would have been Mr. Wheeler.

15 Q. Was there any discussion at the
16 meeting with Professor Widmark whether or not
17 Monsanto would continue to sell PCB-based
18 products?

19 A. Well, I -- that may have been
20 discussed but I can't recall it for you and
21 someone like Bill Papageorge would have to
22 answer that because that's out of my
23 responsibility.

24 Q. Do you recollect anything else
25 about the meeting with Professor Widmark

1 other than what you've just told me?

2 A. No.

3 Q. Did you take notes of the meeting?

4 A. I'm sure I did, but I can't
5 picture what they were.

6 Q. Did you attend other meetings
7 while on that 1970 trip to Europe?

8 A. Yes, there were several other
9 stops.

10 Q. And which stops do you remember
11 today?

12 A. Well, there were visits to a
13 Beyer, manufacturer of PCB-type products, for
14 one --

15 Q. You are referring to Beyer the
16 company, B-e-y-e-r?

17 A. Mm-hmm, right.

18 Q. Any other visits that you recall
19 today?

20 A. Prodelec, France.
21 Those are the main ones that come
22 immediately to mind.

23 Q. Tell me if you would, Dr. Keller,
24 what you recollect with respect to the
25 meeting with Beyer or about Beyer.

1 A. BUY-er, BAY-er. My best
2 recollection is they're a very capable
3 technical company, well equipped in their
4 analytical and support-type services, without
5 any great effort going on the PCB problem,
6 compared to what we were doing at Monsanto.
7 They didn't seem to be as generally
8 interested or, perhaps, concerned as we
9 thought we were and wanted to be. I would
10 estimate they were perhaps maybe a year
11 behind us in skill to be able to do some of
12 the things that we were doing. That is just
13 my overall impression. That's about all I
14 came away with.

15 Q. Did Mr. Wheeler and Mr. Papageorge
16 also attend a meeting with Beyer?

17 A. Yes.

18 Q. Where did that take place, the
19 meeting?

20 A. It took place at their office and
21 plant location outside of Frankfurt, Germany.

22 Q. From Monsanto's point of view, or
23 rather, excuse me, do you have an
24 understanding of what the purpose of that
25 meeting was, from Monsanto's point of view?

1 A. It was part of the same picture,
2 to find out everything we could about what
3 others who were involved with this type
4 product were doing, and try to get all the
5 information we could. We were willing to
6 provide them with information, too.

7 Q. Did you?

8 A. So it wasn't strictly, we weren't
9 going as a one-way street, but that was the
10 mission.

11 Q. Did representatives of Beyer
12 furnish any information to you or Mr.
13 Papageorge or Mr. Wheeler which you recollect
14 today?

15 A. Very little. I felt we came away
16 with not too much.

17 Q. Do you recollect whether any of
18 the representatives of Beyer discussed with
19 you or the other two representatives of
20 Monsanto whether they had found lower
21 chlorinated biphenyls present in the
22 environment?

23 A. I have no recollection of that.

24 Q. Do you have any recollection if,
25 in your 1970 meeting with Professor Widmark,

1 he discussed with you the presence of lower
2 chlorinated biphenyls in the environment?

3 MR. ZIMMER: Assumes facts not in
4 evidence.

5 A. You are talking about during the
6 visit on the 1970 trip, here?

7 BY MR. TALLON:

8 Q. Right.

9 A. No, I don't remember that.

10 Q. Do you remember providing
11 information to representatives of Beyer?

12 A. Yes, and in general, what type of
13 information do you recollect having furnished
14 to them?

15 A. Well, information, certainly,
16 about skills, information that wouldn't be
17 proprietary that we felt we could exchange or
18 provide, so in this area of skills, and I'm
19 talking analytical skills, that type of
20 information, we gave them a fairly clear
21 picture of how we were progressing and what
22 we were attempting to do. Now, I should
23 preface this, and I can't expand any further
24 than that, because it's that fuzzy in my
25 mind. At some point, I think there was a

1 little bit of a splitting off between
2 Papageorge, Wheeler and myself, based on what
3 each of us could best cover with them.
4 Papageorge maybe like processing, Wheeler
5 like maybe the toxicology-medical, so it
6 wasn't always -- and I can't reconstruct
7 it, -- all three of us sitting in on every
8 discussion at the same time. Mostly, but not
9 always.

10 Q. Do you recollect anything, Dr.
11 Keller, about the meeting with
12 representatives of Prodelec?

13 A. Yes.

14 Q. And what is it that you recall?

15 A. Well, they were even further
16 behind, in my opinion and, I believe, our
17 opinion as a group -- on the trip on concerns
18 and actions directed toward the PCB
19 situation. They had not done anything that I
20 can recall, at least, at this point in time,
21 directed toward methodology which would put
22 them in a position to determine PCB's. That
23 was not a very fruitful visit, in the main.
24 It did -- we did come back with the idea that
25 Monsanto was doing a lot more than most of

1 the other manufacturers of the product.

2 Q. A lot more in terms of what?

3 A. Of exploring and trying to get
4 information and get in a position to get more
5 information about PCB materials in the
6 environment and knowledge in general.

7 Q. Did you believe, then, that
8 Monsanto was doing a lot more than the
9 representatives of the companies with whom
10 you had met, in terms of anything other than
11 getting the kind of information you just
12 described?

13 MR. ZIMMER: Could we have that
14 read back?

15 THE COURT REPORTER:

16 "Q. Did you believe, then, that
17 Monsanto was doing a lot more than the
18 representatives of the companies with whom
19 you had met, in terms of anything other than
20 getting the kind of information you just
21 described?"

22 A. No.

23 BY MR. TALLON:

24 Q. Dr. Keller, are you familiar with
25 a Dr. Risebrough of the University of

1 California?

2 A. Yes.

3 Q. And can you state the basis for
4 that familiarity?

5 A. Dr. Risebrough, at this period of
6 time that we're talking about, was active on
7 looking at certain aquatic species on the
8 West Coast for PCB-type materials, as well as
9 pesticides. He carried out enough work that
10 he was interested in publishing this, and
11 it's my best recollection there was some
12 contact made with Monsanto on his part
13 regarding this publication, potential
14 publication, I guess, on the PCB materials
15 that he was working with.

16 Q. And how, personally, did you
17 become familiar with Mr. Risebrough or his
18 work?

19 A. Very remote, except I had a
20 one-time contact with Dr. Risebrough and that
21 was when Elmer Wheeler and myself went out
22 and visited him at his location for purpose
23 of a general discussion of PCB findings on
24 his part. And I'm not clear in my own mind
25 when his publication, when that part of it in

1 this time frame occurred.

2 MR. TALLON: Let me show you a
3 document, Dr. Keller, which we'll mark as the
4 next exhibit in order. It's a one-page
5 document titled "Public Relations Department"
6 and bearing production number TRAN 058656.

7 (Plaintiff's Deposition
8 Exhibit 290 marked for
9 identification.)

10 BY MR. TALLON:

11 Q. Take a moment, please, and review
12 that.

13 (Witness peruses said
14 document.)

15 BY MR. TALLON:

16 Q. Doctor, does a review of that
17 exhibit refresh your recollection in any
18 respect as to the timing of any publication
19 of any work by Dr. Risebrough?

20 A. Well, it says here it appeared in
21 "Nature," a UK publication, but I don't think
22 this says when, does it?

23 MR. ZIMMER: No, and he's not
24 asking you to read the document, he's asking
25 if it refreshes your recollection as to when

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1 it appeared.

2 A. No, it does not.

3 BY MR. TALLON:

4 Q. Doctor, while you have that
5 document before you, do you recollect ever
6 having -- not ever, but having given the
7 public relations department of Monsanto
8 information to be used in a proposed press
9 response relating to PCB's or PCB testing?

10 A. Not that I recall.

11 Q. Do you know whether gas
12 chromatography alone will give a valid
13 identification for the presence of PCB's?

14 A. Yes, I know that.

15 Q. And what's the answer?

16 A. It will not.

17 Q. Does gas chromatography together
18 with the use of a mass spectrometer, give a
19 positive identification?

20 A. Yes.

21 Q. It does?

22 A. It does.

23 Q. Do you have an understanding as to
24 the degree of reliability of identification
25 when a gas chromatography -- when gas

1 chromatography is used alone?

2 MR. ZIMMER: Objection; vague.

3 A. Degree of reliability for --

4 BY MR. TALLON:

5 Q. Identification of PCB's.

6 A. Not reliable.

7 Q. At all?

8 A. At all.

9 Q. Other than the trip you mentioned
10 that you took to California to meet with Dr.
11 Risebrough, do you recollect having had any
12 other communication with him, by phone or
13 otherwise?

14 A. I never had any direct
15 communication with him aside that one visit
16 that I mentioned that I can recall.

17 Q. And do you recall the reason or
18 reasons why it was determined by you or
19 others that you should take a trip to
20 California to meet with Dr. Risebrough?

21 A. That was -- yes.

22 Q. What do you recall?

23 A. That was set up primarily by Elmer
24 Wheeler, Medical Department.

25 Q. And do you have an understanding

1 of the reason or reasons why it was
2 determined that a trip to California to meet
3 with Dr. Risebrough was appropriate at that
4 time?

5 A. I can't answer as to why the
6 timing. I don't know.

7 Q. Can you answer as to the reasons
8 why the trip was taken?

9 MR. ZIMMER: Calls for
10 speculation.

11 A. No.

12 BY MR. TALLON:

13 Q. You have no understanding of the
14 reason why the trip was taken?

15 MR. ZIMMER: Argumentative.

16 A. You are asking me to assume why
17 Mr. Wheeler arranged for this visit, and I'm
18 not sure in my own mind. I would be guessing
19 if I answered.

20 BY MR. TALLON:

21 Q. I certainly don't want you to
22 guess, but I was questioning whether, apart
23 from a guess, you had any understanding as to
24 the reason why the trip was taken.

25 MR. ZIMMER: Asked and answered.

1 A. Any understanding, I thought I had
2 some understanding why the trip was being
3 taken. Whether it was the real reason, I
4 don't know.

5 Q. Well, could you relate, please,
6 the understanding that you had?

7 A. It was to, again, guess what
8 information existed straight from the party
9 that produced it; in this case, PCB residues
10 findings, directly from Dr. Risebrough.

11 Q. Did Dr. Risebrough furnish you
12 with any information during the course of
13 your visit with him?

14 A. He reviewed findings of PCB and
15 aquatic species that he had worked with, and
16 I don't recall what those findings were at
17 this point in time.

18 MR. TALLON: Let me show you a
19 document, Dr. Keller, that we'll ask the
20 court reporter to mark as the next exhibit in
21 order. It's a two-page document bearing
22 production numbers TRAN 007918 and 7919.

23 (Plaintiff's Deposition
24 Exhibit 291 marked for
25 identification.)

1 (Witness peruses said
2 document.)

3 BY MR. TALLON:

4 Q. Have you reviewed this, Dr.
5 Keller?

6 A. Yes.

7 Q. Does review of that exhibit
8 refresh your recollection in any respect as
9 to the nature of Dr. Risebrough's findings?

10 A. No.

11 Q. Can you identify that document for
12 the record?

13 A. It has my name on it. I don't
14 remember generating it.

15 Q. Did you know an M. Stanley working
16 for Monsanto in February 1969?

17 A. My best recollection would be that
18 would be Dr. Richard's secretary, Stanley.

19 Q. Do you recollect whether your trip
20 to California to meet with Dr. Risebrough
21 predated or postdated your 1970 trip to
22 Europe?

23 A. Well, I believe it predated.

24 Q. And do you know whether your trip
25 to California to meet with Dr. Risebrough

1 took place in February 1969?

2 A. No.

3 Q. Do you have any recollection of
4 having dictated your thoughts to an
5 M. Stanley following your visit with Dr.
6 Risebrough?

7 A. No.

8 Q. Did you or rather do you recollect
9 having furnished Dr. Risebrough any
10 information at the meeting that you do
11 recollect in California?

12 A. No.

13 Q. Do you recollect following the
14 meeting with Dr. Risebrough whether you had
15 reached any conclusions about the validity of
16 his work?

17 A. No, I don't recall that.

18 Q. Do you recollect, Dr. Keller, ever
19 having reviewed any papers prepared by Dr.
20 Risebrough in draft form?

21 A. I have no recollection of that.

22 Q. Do you remember being a
23 participant, Dr. Keller, in any discussions
24 at Monsanto with respect to the conclusions
25 reached by Dr. Risebrough in his work?

1 A. No.

2 Q. Do you recollect having received
3 any documentation circulated within Monsanto
4 which commented on Dr. Risebrough's work?

5 A. No.

6 MR. TALLON: Let me show you a
7 document that, among other numbers, has the
8 production numbers T 091772 through 774, and
9 ask you to take a moment and review that.

10 (Plaintiff's Deposition
11 Exhibit 292 marked for
12 identification.)

13 (Witness peruses said
14 document.)

15 BY MR. TALLON:

16 Q. Have you reviewed that, Dr.
17 Keller?

18 A. Yes.

19 Q. Do you recollect having received
20 that memorandum?

21 A. I just don't recall receiving
22 this.

23 Q. Does reviewing this memorandum
24 refresh your recollection as to whether or
25 not you were ever a participant in any

1 discussions within Monsanto about the
2 conclusions of Dr. Risebrough's work?

3 A. No.

4 Q. Do you recollect ever having been
5 a participant in any discussions of -- at
6 Monsanto with respect to the possible effects
7 of Dr. Risebrough's work on the sale of PCB
8 about products?

9 A. No.

10 Q. Do you recollect ever having been
11 a participant in discussions at Monsanto with
12 respect to the possible effects of the work
13 of Widmark and Jensen on the sale of PCB
14 products?

15 A. No.

16 Q. Doctor are you familiar with the
17 term the Yusho incident?

18 A. Can you spell that?

19 Q. Y-u-s-h-o.

20 A. No.

21 Q. Are you, or do you recollect ever
22 learning whether PCB-based oils were believed
23 to have contaminated cooking oil in Japan?

24 A. Yes, that, I do recall.

25 Q. And what do you recollect in

connection with the possible contamination to
which I just referred?

MR. ZIMMER: You said PCB-based
oils?

MR. TALLON: Yes.

A. All I recall is, there was an
incident, there, involving cooking oil, I
believe it was -- I don't know what it was,
the type of oil, and -- I guess rice, and I
guess a contamination problem where quite a
number of people were affected, but beyond
that, I can't -- I never got involved with
that. I don't even, at this point, have no
idea of what was involved.

BY MR. TALLON:

Q. Let me show a document bearing
production numbers TRAN 058726 and 727 and
ask if you can identify it.

(Plaintiff's Deposition
Exhibit 293 marked for
identification.)

A. Can I identify it?

BY MR. TALLON:

Q. Yes.

A. No.

1 Q. Do you recognize the handwriting?

2 A. It isn't mine.

3 Q. It is not yours.

4 A. It is not mine.

5 Q. Do you recognize whose it is?

6 A. No, I don't.

7 Q. Do you know, Dr. Keller, whether
8 the PCB-based product involved in the cooking
9 oil incident that you do recall was
10 Therminol?

11 A. I don't recall it.

12 MR. ZIMMER: I'll object
13 belatedly, that it assumes facts not in
14 evidence.

15 BY MR. TALLON:

16 Q. I take it from your answer, Dr.
17 Keller, that you don't recollect ever having
18 personally been involved in any investigation
19 of the cooking oil incident that we've
20 referred to?

21 A. I have no recollection of that.

22 Q. Doctor, do you know whether it's
23 fair to state that each Aroclor consisted of
24 a mixture of biphenyls?

25 THE WITNESS: May I have the

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1 question come back to me again?

2 THE COURT REPORTER:

3 "Q. Doctor, do you know whether
4 it's fair to state that each Aroclor
5 consisted of a mixture of biphenyls?"

6 MR. ZIMMER: You mean Aroclor in a
7 particular series, or any Aroclor at all?

8 MR. TALLON: Right, any.

9 THE WITNESS: And you mean, I
10 think, in your statement, chlorinated
11 biphenyls.

12 MR. TALLON: Right, I do.

13 THE WITNESS: Please read back in
14 the --

15 THE COURT REPORTER:

16 "Q. Doctor, do you know whether
17 it's fair to state that each Aroclor
18 consisted of a mixture of biphenyls?"

19 A. I think that's a fair statement;
20 chlorinated biphenyls.

21 BY MR. TALLON:

22 Q. Now let me be sure I understood
23 your answer. Is it fair to say that each
24 Aroclor consisted of a mixture of different
25 chlorinated biphenyls?

1 A. Yes.

2 Q. Is it correct to say that Araclor
3 was a trade name used by Monsanto?

4 A. Yes.

5 Q. Doctor, do you recollect ever
6 learning whether tests were conducted for the
7 presence of Aroclor 1242 in the environment?

8 MR. ZIMMER: By whom?

9 MR. TALLON: By any Monsanto
10 personnel.

11 A. I think that was done by Monsanto
12 personnel at some point in time, perhaps
13 around plant sites or such, but I can't give
14 you a recollection of anymore than that.

15 BY MR. TALLON:

16 Q. Is it your present belief that
17 Aroclor 1242 does persist in the environment?

18 A. Present belief?

19 Q. Right now, today.

20 A. I don't think it does.

21 Q. Do you think that the more highly
22 chlorinated components of Aroclor 1242
23 persist in the environment?

24 MR. ZIMMER: Wait. What are the
25 more highly chlorinated components of Aroclor

1 1242, Counsel?

2 BY MR. TALLON:

3 Q. Can you answer the question?

4 MR. ZIMMER: No, he's not going to
5 answer it until we get that straightened out.

6 MR. TALLON: Reread the question.

7 THE COURT REPORTER:

8 "Q. Do you think that the more
9 highly chlorinated components of Aroclor 1242
10 persist in the environment?"

11 MR. ZIMMER: The question assumes
12 facts not in evidence, lacks foundation,
13 because we haven't talked about that at all,
14 so I'm asking you to define what you mean by
15 the more highly chlorinated components of
16 Aroclor 1242.

17 BY MR. TALLON:

18 Q. Can you answer the question, Dr.
19 Keller?

20 MR. ZIMMER: He's not going to do
21 that until you do.

22 MR. TALLON: I just want to be
23 clear for the record that you are instructing
24 him not to answer. Is that what you are
25 doing, Mr. Zimmer?

1 MR. ZIMMER: That's what I'm
2 doing, until you adequately lay the
3 foundation through his testimony for it.

4 MR. TALLON: We'll go back through
5 it.

6 BY MR. TALLON:

7 Q. Is it your testimony, Dr. Keller,
8 that each Aroclor consists of differently
9 chlorinated biphenyls?

10 A. Please read that back.

11 THE COURT REPORTER:

12 "Q. Is it your testimony, Dr.
13 Keller, that each Aroclor consists of
14 differently chlorinated biphenyls?"

15 A. Yes.

16 BY MR. TALLON:

17 Q. And are some of the biphenyls
18 found in, for example, Aroclor 1242 more
19 highly chlorinated than others?

20 A. Yes.

21 Q. And is it your understanding that
22 the more highly chlorinated components of
23 Aroclor 1242 persist in the environment?

24 A. If Aroclor 1242 contains five and
25 six and higher chlorinated biphenyls, yes.

1 Q. Let me show you a document, Dr.
2 Keller. Do you lack understanding as to
3 whether Aroclor 1242 contains more highly
4 chlorinated biphenyls or do you not
5 recollect?

6 A. Well, I really don't -- I guess I
7 don't follow your question, "lack the
8 understanding of." Can you expand on that?

9 Q. Do you know?

10 MR. TALLON: Hang on for a second.

11 (Discussion off the record.)

12 MR. TALLON: Excuse us.

13 (Recess)

14 THE WITNESS: May I comment out of
15 the last discussion on --

16 BY MR. TALLON:

17 Q. Yes, sure.

18 A. -- and, perhaps, clarify?

19 Q. Yes, please.

20 A. This is out of me, not out of my
21 counsel, now.

22 MR. ZIMMER: Do you want to wait
23 and let him ask you a question? Or do you
24 feel a need to explain your answer.

25 THE WITNESS: Well, I'd like to

1 explain the answer, because I think we're
2 getting into some semantics and things where
3 we're each saying something a little
4 different and not quite --

5 BY MR. TALLON:

6 Q. That needs to be avoided, so if
7 you can help.

8 A. All right, we're talking about
9 Aroclor 1242 and you are talking about
10 chlorinated biphenyl isomers at different
11 levels in that product.

12 Q. Mm-hmm.

13 A. And the earlier query that you
14 made of me on this this morning, I believe,
15 was are there higher chlorinated biphenyls in
16 Aroclor 1242, and we were talking a very
17 narrow time frame at that point, if you
18 recall, that was '67-'68 and I believe my
19 answer back to you was no. I think that was
20 the answer, but I'm not sure, and if I
21 answered no -- and I think that's the way I
22 answered -- I was answering in the context
23 that at that point in time, that was, that
24 was the right answer. We weren't aware of
25 it.

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1 Q. I see.

2 A. Now, as time went on, however, and
3 we got this methodology we're talking about
4 and we moved into more sophisticated studies
5 for a product, this would be like early
6 Seventies, then we could really take apart
7 the isomer, the mix of Aroclor 1242, then you
8 could show that there would be a trace amount
9 of higher chlorinated, say five and six
10 chlorinated impurities or whatever you want
11 to call it, in 1242. So if you say, well, is
12 Aroclor 1242 -- I forget how you put it --
13 stable in the environment or in the
14 environment, would you find it in the
15 environment, you would -- the main principal
16 part of Aroclor 1242 you would not likely
17 find it, because it's quite biodegradable.
18 If there's a trace amount of impurity, you
19 perhaps would, could find some.

20 Now, the problem is, with that
21 trace amount of five and six chlorinated
22 biphenyls, finding it in the environment
23 doesn't mean it came from Aroclor 1242 or any
24 other product. You can't be sure which of
25 this 1200 series it might have come from.

1 The only way you could know that is to know
2 that the full blend of isomers were still
3 intact in whatever you are looking at. Now,
4 I don't know if I've confused or --

5 Q. No, I don't think so.

6 Is it possible, using the GC/mass
7 system, to test a sample and determine which
8 Aroclor is present in that sample, if any one
9 is?

10 MR. ZIMMER: What sort of sample?

11 MR. TALLON: I just want to use
12 the word "sample," because --

13 A. You mean like a river sample out
14 here?

15 BY MR. TALLON:

16 Q. Sure, river mud.

17 A. Or water, whatever.

18 Q. Certainly.

19 A. I think you are hung up now --
20 excuse me, I'm not trying to lecture you; we
21 are hung up. You referred "Is it
22 possible" -- could we play back your
23 question, if you will, please?

24 THE COURT REPORTER:

25 "Is it possible, using the GC/mass

1 system, to test a sample and determine which
2 Aroclor is present in that sample, if any one
3 is?"

4 A. It's possible to determine which
5 Aroclor if there has been no degradation of
6 all the components of that product, because
7 you would get a typical envelope relative to
8 the mixture that's in there. If it's
9 decomposed out in the environment, some, no
10 longer have a characteristic envelope because
11 some of the products have disappeared here.
12 Now, it might have been shifted over to look
13 like a higher chlorinated species, of Aroclor
14 product. I'm just trying to point out the
15 complexity of this that you can't go by what
16 the residue is unless there's been no
17 degradation of the full mix of ingredients,
18 and say that was the product involved.

19 BY MR. TALLON:

20 Q. If the components have not
21 degraded, would a test such as the one you
22 just described yield an identifiable
23 signature --

24 A. Yes.

25 Q. -- of a particular Aroclor?

1 A. Yes. Most cases it would, yes.

2 Q. If some but not all of the
3 components have degraded, is it possible to
4 determine with a reasonable degree of
5 scientific certainty what Aroclor is being
6 depicted by the test results?

7 A. It could be possible if you
8 absolutely knew the degradation conditions so
9 that you knew that you had the product held
10 at a certain temperature, whatever, and you
11 had, you had studied this and had a profile
12 of what happens to that as a typical profile
13 to compare the next one to. But if you don't
14 know what conditions there are, whereby
15 degradation might speed up one time, go down
16 another, chemical around that would change
17 it, then you couldn't be sure.

18 Q. Are there factors other than
19 temperature which have an influence on
20 degradation?

21 A. Well, I'm not a good one to answer
22 that to you, because I -- temperature would
23 be a factor if there were bacteria,
24 microorganisms, of course, that could be a
25 factor, perhaps light, ultraviolet light, and

1 all combinations of all these. That's why it
2 could vary quite a bit.

3 Q. Is time a factor?

4 A. Time is a factor.

5 Q. Are you familiar with the term
6 dichlorobiphenyl?

7 A. Well, I know the term but I'm not
8 really familiar --

9 Q. What about trichlorobiphenyl?

10 A. Mm-hmm. (Nods head in affirmative
11 manner).

12 Q. Are you familiar with that term?

13 A. Yes. Yes.

14 Q. What about tetrachlorobiphenyl?

15 A. Yes.

16 Q. And pentachlorobiphenyl?

17 A. Yes.

18 Q. As a chemist, what is the
19 significance -- or, not the significance, but
20 what is the distinction to you among the six
21 phenyls I have just identified, or excuse me,
22 the four phenyls I have just identified?

23 A. As a chemist, one, it means the
24 higher chlorinated species are going to be
25 more, probably more insoluble, like in water.

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1 As you go up in chlorination level.

2 Q. Does -- is pentachlorobiphenyl
3 more highly chlorinated than
4 dichlorobiphenyl?

5 A. More chlorinated than --

6 Q. Di.

7 A. Oh, yes. Penta would be five.

8 Q. And di would be two.

9 A. Right.

10 Q. And trichlorobiphenyl?

11 A. Three.

12 Q. Tetra would be four.

13 A. Right.

14 Q. And so forth.

15 A. Mm-hmm.

16 Q. Are there any higher than eight?

17 A. No. Well --

18 Q. That would be hexachlorobiphenyl;
19 correct?

20 A. Could be ten, theoretically.

21 Q. Now, to your knowledge, did
22 Aroclor 1242 include components of
23 pentachlorobiphenyl?

24 A. Today's knowledge, or back in the
25 period we're talking about?

1 Q. Does it make a difference to you
2 when?

3 A. Yes, it does.

4 Q. Are you aware, today, whether
5 Aroclor 1242 includes pentachlorobiphenyl?

6 A. I am aware of when I was last
7 involved with this work, which started to
8 phase out in the early Seventies, that there
9 was a trace amount of penta in 1242.

10 Q. And when for the first time did
11 you become aware that there was a trace
12 amount of pentachlorobiphenyl present in the
13 composition of Aroclor 1242?

14 A. When, did you say?

15 Q. Yes, when?

16 A. This would be early Seventies. I
17 can't do better than that.

18 Q. Is -- when you used the term
19 "trace amount," to what do you -- what
20 quantity do you intend to refer?

21 A. A few percent. Could be maybe as
22 high as a few percent.

23 Q. Are you using the term "a few" to
24 mean two or three?

25 A. Two or three.

1 Q. Do you know whether Aroclor 1242
2 is five to ten pentachlorobiphenyl?

3 A. Well, that sounds higher than I
4 think I remember it, but I guess it's
5 possible. I don't -- I really can't recall
6 that information.

7 Q. Well, let me show you a document;
8 actually, this appears to be two copies of
9 the same document, bearing production number
10 TRAN 044212, dated -- which appears to be a
11 memorandum from Cumming Paton to W. R.
12 Richard dated September 27th, 1971.

13 MR. TALLON: And for the record,
14 I'll note that in the upper right-hand
15 corner, there's a notation appearing to read,
16 "cc: R. Keller, Scott Tucker."

17 A. It's penciled in; a handwritten
18 notation.

19 MR. TALLON: Dr. Keller, the court
20 reporter correctly notes that we should mark
21 this exhibit.

22 (Plaintiff's Deposition
23 Exhibit 294 marked for
24 identification.)

25 BY MR. TALLON:

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Q. Now that the court reporter has
2 marked it, please take a moment and review
3 that.

4 We'll note for the record, Dr.
5 Keller, that you have before you a one-page
6 document, TRAN 044212 which has been marked
7 as Exhibit 294, and I'll ask you whether you
8 recollect having seen that before.

9 (Witness peruses said
10 document.)

11 A. I have not seen this, to my
12 recollection.

13 Q. Does review of that document
14 refresh your recollection in any respect as
15 to the constituent chlorinated biphenyls of
16 Aroclor 1242?

17 A. Yes, I think this bears on the
18 point I was making earlier.

19 Q. Is it correct to say, Dr. Keller,
20 that Aroclor 1242 has between five and ten
21 percent -- is between five and ten percent
22 composed of pentachlorobiphenyl?

23 A. I presume that's the intent of
24 this memo, but that's a presumption because
25 beyond that, I can't -- I don't know.

1 MR. ZIMMER: He's not asking you
2 to presume the intent of the memo, he's
3 asking you whether that refreshes your
4 recollection.

5 BY MR. TALLON:

6 Q. Do you know whether or not Aroclor
7 1242 contains between five to ten percent
8 pentachlorobiphenyl?

9 A. I don't know; personally.

10 Q. If you were able to look within
11 the records of Monsanto, where would you look
12 to determine the precise constituents,
13 constituency of Aroclor 1242?

14 A. Where would I look?

15 Q. Yes. Is there a manual that you
16 would look at or testing results?

17 A. Today, or anytime?

18 Q. Well, if -- at the time that you
19 were working.

20 A. I wouldn't know where to go.

21 Q. You wouldn't know where to go
22 today?

23 A. No.

24 Q. But if you were still working at
25 Monsanto in the mid Seventies, where would

you have gone to look for such information?

2 A. I would, I would think the
3 Business Group would be a repository of that
4 kind of information. Responsible for the
5 product because after all, it is composition
6 of the product.

7 Q. Let me -- do you recollect, Dr.
8 Keller, whether at any time in the late
9 1960's, Scott Tucker determined that Aroclor
10 1242 had been found in tests of sediment or
11 water?

12 A. I don't recall that.

13 Q. Let me show you, then, a document
14 that we'll mark as the next exhibit in order.
15 It's a one-page document bearing production
16 number TRAN 009858, and after it's marked,
17 I'd ask you to just take a moment and review
18 it.

19 (Pleading's Deposition
20 Exhibit 295 marked for
21 identification.)

22 BY MR. TALLON:

23 Q. Doctor, do you have any
24 recollection of having received this
25 memorandum or a copy of this memorandum in

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1 1969?

2 A. No.

3 Q. Do you recollect whether Mr.
4 Tucker performed any tests on sediment and
5 water from Snow Creek and ascertained the
6 presence of Aroclor 1242, whether or not
7 you've seen this memo before?

8 MR. ZIMMER: Calls for
9 speculation.

10 A. I know he was doing work of this
11 type at that time, but that's all.

12 BY MR. TALLON:

13 Q. Does Monsanto have a plant at a
14 location known as Snow Creek?

15 A. I don't know what Snow Creek is.

16 Q. Okay, that answers that.

17 Doctor, we need to refer back for
18 just a moment to an exhibit that we looked at
19 a little earlier, and specifically, I refer
20 you now to Exhibit 291.

21 Understanding that you do not
22 recollect this particular document, I simply
23 want to ascertain whether you have any
24 understanding of the phrase in that memo that
25 states, "Work in our labs shows at least 13

1 components in Aroclor 1242."

2 MR. ZIMMER: Calls for
3 speculation.

4 THE WITNESS: May I have the
5 question back, please, sir?

6 THE COURT REPORTER:

7 "Understanding that you do not
8 recollect this particular document, I simply
9 want to ascertain whether you have any
10 understanding of the phrase in that memo that
11 states, 'Work in our labs shows at least 13
12 components in Aroclor 1242.'"

13 A. Some understanding.

14 BY MR. TALLON:

15 Q. What is your understanding?

16 A. It says that chromatogram obtained
17 by Monsanto differs from that one, or those
18 obtained by Risebrough.

19 Q. Are you aware of any work done by
20 your labs or to put it another way, Monsanto
21 labs, determining that there were at least 13
22 components of Aroclor 1242?

23 A. No.

24 MR. TALLON: Let me show you a
25 multipage exhibit, Doctor, which begins with

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1 the production number TRAN 005799 and
2 proceeds through production number TRAN
3 007563.

4 (Plaintiff's Deposition
5 Exhibit 296 marked for
6 identification.)

7 (Witness peruses said
8 document.)

9 BY MR. TALLON:

10 Q. Did you review that?

11 A. Yes.

12 Q. Can you identify the document
13 beginning with the first page, TRAN 005799?

14 A. This page (Indicating)?

15 Q. Yes.

16 A. Yes.

17 Q. And therefore, please identify it.

18 A. This is a plan document out of the
19 Analytical Chemistry Group of Applied
20 Sciences for support of toxicity testing,
21 primarily.

22 Q. Did you play any role in the
23 preparation of the first page, numbered 5799?

24 A. I'm hesitating because I'm not
25 certain. If Scott Tucker was a group leader

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1 on that date in '69 -- and that's somewhere
2 in that period -- he would have taken the
3 lead in preparing this. If he was not, I
4 could have taken the lead. But it was
5 between the two of us.

6 Q. By "that date in 1969," you are
7 referring to January 14th, 1969, the date
8 which appears in the upper right-hand corner?

9 A. Yes.

10 Q. Do you have a present
11 understanding as to the purpose for which
12 this chart was prepared?

13 A. It was to assure us that we had
14 resources adequate to take care of what was
15 being generated in coming back out of
16 toxicity studies.

17 Q. And what exactly does the chart
18 show?

19 A. Well, it shows when materials are
20 going to be available for analyses. That's
21 my best recollection and interpretation of
22 this.

23 Q. For example, does the chart
24 indicate that Aroclor loaded chicken
25 materials would be available in the end of

1 March 1969?

2 A. That's my best recollection.

3 Q. Did you have responsibility for
4 overseeing the project or projects depicted
5 on the first page of this exhibit?

6 A. Scott Tucker would have had that.

7 Q. And did he report to you in that
8 connection?

9 A. Yes.

10 Q. Do you have a present
11 understanding of the -- whether there was a
12 request to your group which initiated the
13 project or projects depicted on this chart?

14 A. Yes.

15 Q. Was there a request?

16 A. To my best recollection, yes.

17 Q. What was the request?

18 A. From the Medical Department to
19 provide support for their toxicity studies.

20 Q. And in general terms, Dr. Keller,
21 what support to the Medical Department is
22 depicted on this chart?

23 A. It shows that the Analytical Group
24 will provide analyses needed for the
25 materials shown, as schedules.

1 Q. Just by way of example, then, does
2 the notation "Aroclor loaded chicken" mean
3 that your group was doing tests on loaded
4 chickens?

5 MR. ZIMMER: What's a loaded
6 chicken, Counsel?

7 MR. TALLON: I wish I could say.

8 A. I don't recall now. I really
9 can't recall well enough to help interpret
10 that.

11 BY MR. TALLON:

12 Q. And does that mean you are not
13 sure of the meaning of "loaded chicken"?

14 A. Correct.

15 Q. Does looking at the following
16 pages, the typed pages, assist you in any way
17 in interpreting the information on the first
18 page of the exhibit?

19 A. Well, it simply points out, it's a
20 work plan showing resources, manpower, target
21 dates, job, and some indication of why it has
22 to be done.

23 MR. ZIMMER: Try and answer his
24 question, though, which is, does reading the
25 typewritten pages assist you in interpreting

1 the first page which you've indicated you
2 could not do?

3 A. No.

4 BY MR. TALLON:

5 Q. Do you recall, Dr. Keller, whether
6 in 1969 it was one of the projects undertaken
7 by your group to develop a technique for
8 identification and measurement of combustion
9 products, simulating the burning of NCR
10 paper?

11 A. Yes.

12 Q. And do you recall whether such a
13 technique was developed?

14 A. Yes.

15 Q. Was one?

16 A. It's my best recollection one was
17 developed, yes.

18 Q. And what technique was that?

19 A. I can't give you details. It was
20 a burning combustion technique of laboratory
21 scale with collection of combustion products
22 and subsequent analyses.

23 Q. Was part of the testing to burn
24 NCR carbonless carbon paper?

25 A. It's my recollection that was a

1 strong justification for doing it, yes.

2 Q. Were you able to determine or to
3 ascertain whether incineration was a source
4 of environmental contamination in
5 relationship to the studies you've just
6 described or the technique you've just
7 described?

8 THE WITNESS: Please read that
9 back.

10 THE COURT REPORTER:

11 "Q. Were you able to determine or
12 to ascertain whether incineration was a
13 source of environmental contamination in
14 relationship to the studies you've just
15 described or the technique you've just
16 described?"

17 A. It's my best recollection that the
18 results of those laboratory studies indicated
19 incineration could be a problem under certain
20 conditions.

21 Q. By "could be a problem," do you
22 mean was a source or potential source of
23 environmental contamination?

24 A. Yes.

25 Q. And under what circumstances was

1 that a concern?

2 A. Under certain conditions of
3 incineration or burning. I can't give you
4 anymore than that. I don't know.

5 Q. Do you recollect whether the
6 conditions that caused the concern were
7 uncontrolled incineration?

8 A. No, I don't recall that.

9 Q. Do you recall whether the
10 conditions that caused the concern were
11 uncontrolled disposal of the residue of the
12 incineration?

13 A. No. I don't recall that.

14 Q. Doctor, do you have knowledge as
15 to who drafted the typewritten pages which
16 constitute the plans annexed to the chart
17 that forms part of Exhibit 296?

18 A. These plans?

19 Q. Yes.

20 A. Well, as I commented earlier, it
21 was a joint effort between Scott Tucker and
22 myself, and I don't know who took the lead in
23 that. I just don't remember.

24 Q. Were these plans typed up as part
25 of the regular business of your department?

1 MR. ZIMMER: Calls for
2 speculation.

3 A. The regular business of our
4 department would be handled on a variety of
5 plans of this type, so it's consistent with
6 our standard operating procedure, but it may
7 not be the exact format used on all projects.

8 BY MR. TALLON:

9 Q. Is it fair to say, then, that it
10 was part of the regular business of your
11 department to commit plans with respect to
12 any projects to paper?

13 A. Yes; large projects.

14 Q. And were the projects depicted in
15 these plans which you have before you
16 considered by you to be large products --
17 projects?

18 A. Yes.

19 Q. Doctor, if you would look at Page
20 TRAN 005800, it's the first page immediately
21 following the handwritten chart. There's a
22 ranking of priority 1 through 4 on that page
23 and then continuing on the next page. Do you
24 have any recollection of, to the reason why
25 the information listed after item 1 has

1 greater priority than the information listed
2 after item 3? Or let me strike that.

3 Let me ask you another question.
4 Was the project, or job identified following
5 item 1, of a greater priority than that
6 following item 3, or any subsequent item?

7 MR. ZIMMER: Lacks foundation,
8 calls for speculation.

9 MR. ZIMMER: And remember, he's
10 not asking you to interpret the document,
11 he's asking if you recall that.

12 A. No, I don't recall that.

13 BY MR. TALLON:

14 Q. Just checking for a moment, item
15 4, the product -- products, actually --
16 identified there are Aroclor 1242, 1254 and
17 1260. Do you see that?

18 A. Yes.

19 Q. And it states that a job or
20 project was to develop sensitive (ppb) GC/EC,
21 GC/microcoulometer and GC/mass methods for
22 Aroclor products in environmental manifests:
23 One, water; two, soil; three, wildlife? Do
24 you see that?

25 A. Yes.

1 Q. Do you recollect that such a
2 project was undertaken?

3 A. No.

4 Q. Do you know what a microcoulometer
5 is?

6 A. It's a detector used with gas
7 chromatography to measure components being
8 separated. I'm not familiar with the
9 technical explanation of it.

10 Q. I'm sorry, you are not familiar
11 with what?

12 A. I'm not familiar with the
13 technical explanation of it.

14 Q. Oh. Do you recall whether it was
15 the justification for any job or project
16 ongoing in your group in 1969 to determine
17 the environmental contamination to protect a
18 product position with the customer?

19 A. No.

20 Q. Referring specifically to the
21 justification found under Item 4 on that same
22 page, do you have any information who the
23 author of the words appearing there is?

24 A. No.

25 Q. Do you know whether Mr. Tucker had

1 anyone working for him whose job it was at
2 that time to prepare plans such as the one
3 we're looking at here?

4 A. No.

5 Q. Do you know whether that was part
6 of Mr. Tucker's job?

7 A. To prepare plans?

8 Q. Yes, such as this.

9 A. Yes. It could have been.

10 Q. Was it someone's job other than
11 Mr. Tucker?

12 A. No.

13 Q. Did there come a time, Dr. Keller,
14 when, in the course of your work at Monsanto,
15 you were asked to do testing with respect to
16 substitute products for aroclors?

17 A. Yes.

18 Q. And approximately when do you
19 recall being asked to do such work for the
20 first time?

21 A. Well, best recollection, it would
22 late '69 or 1970.

23 Q. And what is it that you recall
24 that you were requested or asked to do?

25 A. To monitor work directed toward

1 was ever proposed to take the place of other
2 aroclors in reformulated products?

3 A. No.

4 Q. Do you have any present
5 recollection of having discussed with Mr.
6 Tucker replacement formulations for Pydraul
7 AC or Pydraul 625?

8 A. No.

9 Q. Do you have any present
10 recollection of Mr. Tucker having recommended
11 to you against using Aroclor 1242 in
12 replacement formulations?

13 A. No.

14 MR. TALLON: Let me show you a
15 document, Doctor, which we'll ask the court
16 reporter to mark as the next exhibit in order
17 and it bears production numbers TRAN 022055
18 and 56.

19 (Plaintiff's Deposition
20 Exhibit 297 marked for
21 identification.)

22 (Witness peruses said
23 document.)

24 BY MR. TALLON:

25 Q. Doctor, does reviewing any portion

1 of that exhibit, including page 2, refresh
2 your recollection in any way as to
3 communications between you and Mr. Tucker
4 about the use of Aroclor 1242 in replacement
5 formulations?

6 A. No.

7 Q. Doctor, do you know the meaning of
8 the term "refractory" as it relates to
9 biodegradability or the rate of
10 biodegradation?

11 A. I think I do.

12 Q. Would you tell me what your
13 definition of that term is?

14 A. It means it's hard to biodegrade.

15 Q. Okay, do you know if that term was
16 ever in use at Monsanto in the early
17 Seventies? That is to say, "refractory."

18 MR. ZIMMER: By anyone?

19 BY MR. TALLON:

20 Q. Did you ever use it?

21 A. Not to my recollection. I
22 can't -- I can never recall using it.

23 MR. TALLON: Okay. We can break
24 here.

25 MR. ZIMMER: Okay.

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(Whereupon, at 4:55 p.m., the
deposition was recessed.)

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