

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

JOAN MAERTIN, Executrix of)
the Estate of Lothar Maertin,)
JOAN MAERTIN, individually)
and in her own right, et al.,)

v.)

ARMSTRONG WORLD)
INDUSTRIES, INC.,)

v.)

MONSANTO COMPANY and)
AMERICAN MINERAL)
SPIRITS COMPANY.)

Civil Action L-95-cv
02849 (JBS)

Simandle, U.S.D.J.

Rosen, U.S.M.J.

DEPOSITION OF ROBERT KELLER

TAKEN ON BEHALF OF THE DEFENDANT/
ARMSTRONG WORLD INDUSTRIES, INC.

JUNE 23, 1998

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1 INDEX 2 QUESTIONS BY: PAGE NO. 3 Mr. Turet 4 4 INDEX OF EXHIBITS 5 KELLER NO. DESCRIPTION PAGE MKD. 6 1 Dr. Keller's CV 7 7 2 Bates STR 017390 or S000195 32 8 3 Bates MAE 053933-35 39 9 4 Bates MAE 053636 41 10 5 Bates MAE 053518 42 11 6 Bates MAE 053515 43 12 7 Bates PRR 050542 or SCM 051020 46 13 8 Bates MAE 05364 48 14 9 3/3/69 Document from E. Wheeler 49 15 10 Bates MAE 053006-008 55 16 11 Bates PRR 021890-892 57 17 12 Bates MAE 023422-31 65 18 13 Bates PRR 025243-247 71 19 14 Bates MONS 036720-732 74 20 15 Bates MAE 023703-742 77 21 16 Bates PRR 022199-208 80 22 17 Bates MAE 053978-984 82 23 18 Bates MAE 054039 85 24 (Exhibits to be attached to original transcript only.) 25	1 APPEARANCES Page 3 2 3 By Telephone For the Plaintiffs: 4 Mr. Brian O'Connor, Esq. Law Offices of Gary Ginsberg Atrium II, Suite 101 3000 Atrium Way Mt. Laurel, New Jersey 08054 5 6 7 By Telephone For the Defendant/American Mineral Spirits: 8 9 Ms. Susan Karlovich, Esq. Wilson, Elser, Moskowitz, Edelman & Dicker Two Gateway Center Newark, New Jersey 07102-5311 10 11 12 For the Defendant/Monsanto: 13 Mr. Christopher DiMuro, Esq. Latham & Watkins One Newark Center Newark, New Jersey 07101-3474 14 15 Mr. Richard A. Coughlin, Esq. Smith, Helms, Mulliss & Moore, L.L.P. 300 North Greene Street Suite 1400 Greensboro, North Carolina 27401 16 17 18 19 For the Defendant/Armstrong World Industries, Inc.: 20 Mr. Craig Turet, Esq. Duane, Morris & Heckscher, LLP One Liberty Place Philadelphia, Pennsylvania 19103-7396 21 22 23 24 25
1 UNITED STATES DISTRICT COURT Page 2 2 FOR THE DISTRICT OF NEW JERSEY 3 JOAN MAERTIN, Executrix of) 4 the Estate of Lothar Maertin,) 5 JOAN MAERTIN, individually) 6 and in her own right, et al.,) 7 v.) Civil Action L-95-cv 8) 02849 (JBS) 9 ARMSTRONG WORLD) 10 INDUSTRIES, INC.,) Simandle, U.S.D.J. 11) 12 v.) Rosen, U.S.M.J. 13) 14 MONSANTO COMPANY and) 15 AMERICAN MINERAL) 16 SPIRITS COMPANY.) 17 18 DEPOSITION OF ROBERT KELLER, produced, sworn and 19 examined on the 23rd day of June, 1998, between the hours 20 of eight o'clock in the forenoon and six o'clock in the 21 afternoon of that day, at the offices of Taylor*Schroeder 22 Reporting & Video, 7494 Ethel Avenue, St. Louis, Missouri, 23 before TAMMIE A. ST. ARBOR, Certified Shorthand Reporter 24 and Notary Public within and for the States of Missouri 25 and Illinois, in a certain cause now pending in the United States District Court for the District of New Jersey, wherein JOAN MAERTIN, Executrix of the Estate of Lothar Maertin, JOAN MAERTIN, individually and in her own right, et al. are Plaintiffs and Armstrong World Industries, Inc., Monsanto Company and American Mineral Spirits Company are Defendants.	1 IT IS HEREBY STIPULATED AND AGREED by and between Page 4 2 counsel for the Plaintiffs and counsel for the Defendants 3 that this deposition may be taken in shorthand by 4 Tammie A. St. Arbor, CSR and notary public, and afterwards 5 transcribed into printing, and signature by the witness 6 expressly reserved. 7 * * * * * 8 ROBERT KELLER, 9 of lawful age, produced, sworn, and examined on behalf of 10 Defendant/Armstrong World Industries, Inc., deposes and 11 says: 12 EXAMINATION 13 QUESTIONS BY MR. TURET: 14 Q. Good morning, Dr. Keller, my name is Craig 15 Turet. We met a moment ago. I'm here representing 16 Armstrong World Industries which as you may know is a 17 defendant in this case. Have you ever been deposed before 18 today? 19 A. Yes. 20 Q. How many times approximately? 21 A. Several times. 22 Q. Okay. So I'm sure you're well familiar with 23 what you'll see and hear today. I'm going to ask you a 24 series of questions. You'll be expected to answer them as 25 accurately as you can. I'm not asking you to speculate or

Page 5

Page 7

1 guess, but rather just to give me your best recollection
2 of the information I'm asking for. If you don't hear any
3 question or you don't understand it, just let me know.
4 I'll be happy to repeat it or rephrase it. But if you do
5 answer a question, that would both indicate you heard it
6 and understood it. Is that acceptable?

7 A. Very good.

8 Q. Also, you understand that your testimony is
9 being taken down in writing by the court reporter. There
10 will be a written transcript created and if for any
11 reason, you're not available at the time of trial, your
12 testimony in writing could be introduced just as if you
13 were testifying at trial.

14 A. I understand.

15 Q. Also if you need to take a break at any time,
16 just let me know. We'll be happy to accommodate you as
17 long as there isn't a question outstanding. Can you just
18 state your full name for the record first?

19 A. First name is Robert, last name is Keller,
20 K-E-L-L-E-R.

21 Q. Okay. And, Dr. Keller, can you give us a
22 thumbnail sketch of your educational background?

23 A. Well, I have a very brief resume, a hand-out
24 here that maybe will help the cause.

25 Q. Okay. Why don't we have this attached as

1 development work and research of that type.

2 In 1952, I joined Monsanto in St. Louis, the
3 organic chemicals division as a research, senior research
4 chemist. This was in the analytical area of the physical
5 chemistry group in the organic chemicals division R&D
6 department.

7 After two years doing work on method
8 development, 1954, I was made project leader. This was
9 simply an expanded version of what I had already been
10 doing, analytical investigations and method development.

11 In '56, I was made a research group leader with,
12 and these are all now Monsanto, organic chemicals
13 division. A research group leader responsible for an
14 analytical group which had just been formed.

15 Q. Sir, let me stop you for just a moment. Sir,
16 let me take you back since I'm going to take you back
17 through these anyway and ask some questions.

18 A. Okay.

19 Q. Why don't we go back to the time when you
20 started with Monsanto in 1952 as a senior research
21 chemist. You said that would have been the organic
22 chemicals group?

23 A. It was within the organic chemicals division,
24 research and development department. And was in the
25 physical chemistry group of that department.

Page 6

Page 8

1 Exhibit Keller 1.

2 (Exhibit Keller 1 was marked for identification
3 by the reporter.)

4 Q. (By Mr. Turet) Okay. And, Dr. Keller, is the
5 document that has just been marked as Keller 1 a copy of
6 your updated CV?

7 A. Would you like for me to review this?

8 Q. No. I'm just asking if that is the curriculum
9 vitae you just give us and we marked as Keller 1?

10 A. That's right.

11 Q. Can you walk us through it briefly?

12 A. Yes. Education as indicated, BS, MS, PhD
13 degrees in chemistry. All from the University of Iowa.
14 PhD, 1950. Actually, you could put a 1 there, 1951.
15 Actually, I got my degree in '51 in February because I
16 went back for graduation. I took a job mid-50, so it's a
17 question of when did I graduate I guess.

18 Employment. Out of the University of Iowa, I
19 was one year, in '49 an instructor at the University of
20 Iowa because they lost one of their instructors and I was
21 available, working for my PhD.

22 In '51, '50 and '51, out of school, took a job
23 as a senior research chemist at Smith, Kline, and French
24 Laboratories located in Philadelphia. This was in the
25 research department and analytical group doing method

1 Q. And what did the physical chemistry group of
2 that department do?

3 A. Well, they're involved with all types of
4 physical measurements. This could be anything from vapor
5 pressures, surface tension, thermal stabilities, special
6 studies of that type.

7 Q. So are these physical constants of a particular
8 chemical?

9 A. Yes.

10 Q. And what specifically were your responsibilities
11 as a senior research chemist?

12 A. I was, my responsibility was to develop
13 methodology and handle special analytical projects. This
14 would be by both chemical and instrumental techniques.

15 Q. And are these techniques that would end up
16 determining vapor pressure or --

17 A. No. These were techniques directed toward
18 identifying and measuring a variety of organic and
19 inorganic components in products, process materials, etc.

20 Q. Why would, why would there be a need for that
21 type of testing? Can you give me an example?

22 A. It's necessary to support the research going on
23 in the R&D department directed toward new products and
24 process development. This was a support function,
25 technology support function.

Page 9	Page 11
1 Q. I see. And how did those types of job 2 responsibilities change as you became a project leader? 3 A. It would be primarily an expansion of the job. 4 Same thing, a little larger scale. And I'd have a person 5 or two that would work with me. 6 Q. Did you mostly work by yourself when you were a 7 senior research chemist? 8 A. Pardon? 9 Q. Did you work primarily by yourself when you were 10 a senior research chemist? 11 A. Yes. 12 Q. With whom did you work as a project leader? 13 A. Who did I work with? 14 Q. Yes. 15 A. That was, Dr. Munch was my supervisor. He was 16 head of the physical chemistry group. 17 Q. Now, is it the physical chemistry group as of 18 the mid 1950's that would perform testing to determine the 19 physical constants that you described before? 20 A. They certainly would be involved, yes. The R&D 21 groups of the business groups could do some of that 22 themselves, but normally, they would come back to a 23 support group. In this case, the physical chemistry 24 group. 25 Q. Was Paul Benignus also part of the same group	1 could be chemical and instrumental techniques. 2 Q. Now the techniques that were being developed, 3 were they techniques that were then sold to others outside 4 of Monsanto? 5 A. No, this was all internal. 6 Q. So if instruments were developed to be able to 7 perform these tests, they would be done internally at 8 Monsanto? 9 A. It would be internal. 10 Q. Now you made research group leader between 1956 11 and 1962? 12 A. Yes. 13 Q. How large was this -- let me withdraw that. 14 During that time period, how many people worked 15 under you? 16 A. Six to eight. 17 Q. And who was your immediate supervisor? 18 A. My immediate supervisor was, let's see, that's 19 '56 to '62. Again, that would be Dr. Munch. 20 Q. Now how was responsibility apportioned among 21 those who worked in this research group? 22 A. I don't understand. 23 Q. Okay. Were there specific subspecialties 24 assigned to each person who worked under you? 25 A. Each person within the group had an expertise
Page 10	Page 12
1 that you described? 2 A. Paul Benignus was in marketing sales which was 3 in the organic chemicals division but part of the 4 marketing arm, sales arm. 5 Q. Even back in the 1950's? 6 A. I'm not sure back that far. At one point he, he 7 would have moved into sales. I can't comment on that. 8 Q. Okay. Now you're main project leader for a 9 couple of years. Did your responsibilities change at all 10 during those two years? 11 A. Just larger in scope and assignment and assisted 12 more than before. 13 Q. Now during your time as a senior research 14 chemist and project leader up until 1955, did you have any 15 specific assignments that related to PCB products? 16 A. No. 17 Q. Now, you then went on to become research group 18 leader. And I believe that's when I started cutting you 19 off before. Can you tell me a little bit about what you 20 did as a research group leader? 21 A. All right. This group was a new group that was 22 just formed out of the physical chemistry group. And this 23 was to work with members of the group on developing, again 24 analytical methods needed to support product development, 25 process development, special studies by R&D groups. They	1 and it was primarily, each would work that way. Some had 2 more expertise than others in different types of methods. 3 It was a combination. 4 Q. Okay. During your time as a research group 5 leader, did you have occasion to work on any projects that 6 involved PCBs? 7 A. Not that I can recall. 8 Q. Were you called upon in your time as a research 9 group leader to perform tests on specimens taken outside 10 of the company to determine its composition? 11 A. None that I can recall. But we did have from 12 time to time perhaps through the sales department a 13 special request. But I can't recall any for you. It was 14 very minor. 15 Q. Okay. You then went on between 1963 and 1966 to 16 become senior research group leader. Can you tell me how 17 your job responsibilities differed in that position? 18 A. It was primarily an expansion of that group. A 19 little larger; a little more responsibility. It was at 20 this point going through a growth period. And as we get 21 into the next positions, it will be perhaps more apparent, 22 but it was an expansion of my earlier research group 23 leader duties for the senior research group leader. 24 Q. Okay. When you became senior research group 25 leader, were there more research group leaders that

1 responded that were under you?
 2 A. No.
 3 Q. Okay. Were there more --
 4 A. People --
 5 Q. -- people underneath you?
 6 A. Yes. Several at least.
 7 Q. So the group rose from six to eight up to eleven
 8 or twelve?
 9 A. I'd say six to nine or ten.
 10 Q. Nine or ten. And did Dr. Munch continue to be
 11 your supervisor during your time as senior research group
 12 leader?
 13 A. Yes, he did.
 14 Q. Did Dr. Munch have a particular area of
 15 expertise?
 16 A. Physical chemistry.
 17 Q. And did you have a particular expertise?
 18 A. Analytical chemistry with expertise in both
 19 chemistry, chemical and instrumental techniques.
 20 Q. All right. Then you became section manager 1967
 21 to 1969?
 22 A. Yes.
 23 Q. How did your responsibilities differ in that
 24 position?
 25 A. Well, this was at the point where, by design, we

1 were building several groups which were analytical
 2 chemistry, physical chemistry, and what we call instrument
 3 development which was a group which developed instruments
 4 for process applications. So there were three groups
 5 primarily initially when, when the section was formed with
 6 those three groups. And I was section manager of those
 7 groups.
 8 Q. So each of those groups functioned independently
 9 but under your supervision?
 10 A. Uh-huh.
 11 Q. Can you tell me briefly what the analytical
 12 chemistry group would have been responsible for as
 13 distinguished from the physical chemistry?
 14 A. Well, again, it would be development of new
 15 methods and special studies, analytical studies to support
 16 the R&D groups of the division.
 17 Physical chemistry would be the same as
 18 described earlier.
 19 And the instrument development group, as I
 20 commented, would be on development of instruments to
 21 monitor processes, that type of thing.
 22 And the other group that was formed at this time
 23 was a spectroscopy group which involved sophisticated
 24 instrumentation such as infrared, mass spectrometry, etc.
 25 Q. And who headed the spectroscopy group?

1 A. Martin Dietrich.
 2 Q. Okay. That takes you through 1969. In 1970,
 3 you became manager of applied sciences?
 4 A. Yes.
 5 Q. And what were your responsibilities in that
 6 position?
 7 A. This was a further expansion of what we've
 8 already described. This applied sciences was formed
 9 consistent with the corporation forming the Monsanto
 10 Industrial Chemicals Company out of or by joining the
 11 former organic chemicals division with the organic
 12 chemicals division. Two divisions became Monsanto
 13 Industrial Chemicals Company. And because with that,
 14 there were more in-house clients or R&D groups to be
 15 supported, the support technology area, which we called
 16 applied sciences, was formed to take care of that.
 17 Q. Okay. And within that position, or perhaps I
 18 should say under the supervision of that position, did
 19 there remain an analytical chemistry group, a physical
 20 chemistry group, an instrument development group and
 21 spectroscopy group?
 22 A. Yes.
 23 Q. Were there any groups added?
 24 A. Yes. Well, through that period, there was
 25 computer activities, statistics, audio chemistry, with a

1 broad ADC license, later in this period, an environmental
 2 testing group.
 3 Q. When did the environmental testing group come
 4 into effect?
 5 A. That would be toward mid '70's.
 6 Q. Who initially headed that group?
 7 A. Dr. Miure, M-I-U-E-R-E.
 8 Q. By the way, when you were a section manager
 9 initially, I thought you said there were three groups and
 10 then you added the forth one which was this spectroscopy
 11 group. Was the spectroscopy group also under your
 12 supervision?
 13 A. The spectroscopy group spun out of the
 14 analytical group along the way. Started three then became
 15 four.
 16 Q. You were made manager of applied sciences
 17 through 1981?
 18 A. Yes.
 19 Q. And then you became manager of applied
 20 technology?
 21 A. Yes.
 22 Q. And what did your position involve as a manager
 23 of applied technology?
 24 A. Essentially, the same as applied sciences.
 25 Applied technology was used because at that point,

Page 17

Page 19

1 Monsanto Industrial Chemicals Company chose to call their
2 R&D efforts part of a technology rather than research. So
3 consistent with that, we were called applied technology.
4 Same groups, same efforts, just a name change.

5 Q. Okay. And did you retire from Monsanto in 1985?

6 A. Yes, I did.

7 Q. Okay. Now, you're listed as a consultant in
8 1986 to '89. What kind of consulting work did you do?

9 A. Well I worked with certain others who also had
10 retired from Monsanto. And, for example, working with
11 small laboratories on making evaluations for them on how
12 to best operate analytically and within the areas I had
13 expertise in.

14 Q. And who were the other retirees from Monsanto
15 that you worked with?

16 A. This would be Ned Kleine, K-L-E-I-N-E. He would
17 be the principal one.

18 Q. Did you do any work for Monsanto as a consultant
19 between '86 and '89?

20 A. No, I did not.

21 Q. Did you do any work in connection with legal
22 cases that involved PCBs?

23 A. What do you mean? Any legal cases and PCBs?

24 Q. Did you have, let me rephrase it.

25 Apart from any testimony about your own personal

1 did he work with you?

2 A. Well, Scott Tucker, going back perhaps, the best
3 way to focus on that would be to go back to the senior,
4 the section manager. Scott was hired in '67 to '69
5 approximately, approximately '67 into the spectroscopy and
6 or analytical group. And he then became the principal
7 analytical researcher starting with that.

8 And he was made group leader of the analytical
9 group. My best recollection on that would be either '70
10 or '71. And while Scott was developing and being groomed
11 to be a group leader, the analytical group at that point
12 reported to me.

13 Q. So if I was to go back into that 1967 to roughly
14 1970 time frame, he would have reported to you and you
15 would have reported to Dr. Munch?

16 A. That's correct. Well, correction, not Dr. Munch
17 at that point. I don't think we discussed that. I
18 stopped reporting to Dr. Munch at the point I became
19 section manager.

20 And I reported at that point to a Harold
21 Hubbard, H-U-B-B-A-R-D, followed by an Oliver DeGarmel.
22 Followed by, in '70 and '71 a Tracy Patrick.

23 Q. Going back into the 1967 to 1970 time frame,
24 sir, who was William Richard and what position did he hold
25 with Monsanto?

Page 18

Page 20

1 experiences while you worked at Monsanto, did you do any
2 consulting work that related to PCBs?

3 A. No.

4 Q. And that would be for Monsanto or anybody else?

5 A. That is correct. Except for a deposition.

6 Q. Okay. And lastly, it shows you as an
7 independent contractor from 1990 to 1991 for the St. Louis
8 Science Center. What was the nature of your
9 responsibilities there?

10 A. This was a two-year project to develop new
11 exhibits for the science center which was going to be
12 built and ready to open come '91.

13 Q. Okay.

14 A. And this was, my pay came jointly from the
15 St. Louis Science Center and the National Science
16 Foundation. They funded part of the Science Center work.

17 Q. Now, this CV leaves off in 1991. Other than
18 retirement, have you, have you been employed since then?

19 A. No. No.

20 Q. Are you still doing consulting work?

21 A. No.

22 Q. Dr. Keller, going back for a moment. I've seen
23 the name Dr. Tucker, Scott Tucker is it?

24 A. Yes.

25 Q. Referred to in the documents. Who is he and how

1 A. He was director of research, or manager of
2 research, I don't recall the exact title, for the
3 functional fluids business group. And it was his
4 responsibility to develop new functional fluid products,
5 etc.

6 Q. And was his counterpart in the Plasticizer group
7 Martin Ferrar?

8 A. Correct.

9 Q. Now, I believe I asked you up through the
10 research group leader position whether you had done any
11 work on PCBs. I'm not sure if I asked you whether as a
12 senior research group leader you did any work on PCBs.
13 Did you?

14 A. Not that I recall. I'll have to qualify that.
15 When you say work, let's make sure we're both saying the
16 same thing. Let's say any involvement with PCBs would
17 come late 1966 and from then on.

18 Q. And was that point at which the Swedish studies
19 were first publicized?

20 A. Correct.

21 Q. Before we get to that, if we were to go back in
22 time to the early 1960's and wanted to determine whether
23 there were chemicals present in water, what methods would
24 you use to do identify that?

25 MR. DIMURO: Object to the form. You can answer

Page 21

Page 23

1 it if you can.

2 Q. (By Mr. Turet) Do you understand the question?

3 MR. DIMURO: You can answer it if you can.

4 A. Can you repeat the question?

5 Q. (By Mr. Turet) Okay. I'll just make it more

6 precise. If one was trying to determine back in 1960

7 whether PCBs were present in water, what instruments or

8 techniques would one have used to identify them?

9 MR. DIMURO: I'll object to the form. Again,

10 you can answer, Dr. Keller.

11 A. To do the absolute identification measurement,

12 we would have to do what was done in the period of '67

13 through '69 with a GC/mass spectrometer system.

14 Q. I'm going to take you through the time frames.

15 I take it in 1960, there was no GC/mass spectrometer

16 system?

17 A. There was a mass spectrometer system but it was

18 not hooked up to a gas chromatograph.

19 Q. Well let me just break these two pieces apart

20 for a moment. Can you tell me what a mass spectrometer

21 system is and what it does?

22 A. Well, it's, let me tell you that and preface it

23 so maybe it's better focused with GC.

24 Q. Okay.

25 A. Do you understand what the GC instrument does?

Page 22

1 Q. Well, I'd rather have you explain it all so that

2 I understand it.

3 MR. DIMURO: Actually, you can't ask him any

4 questions, Dr. Keller, so you need to answer his

5 questions.

6 THE WITNESS: All right. Sorry.

7 MR. TURET: That's fine.

8 A. The gas chromatography that's been discussed

9 throughout can separate components of a picture based on

10 distillation and so forth as column elution,

11 E-L-U-T-I-O-N, elution through a column.

12 PCBs when put through a gas chromatograph column

13 will give a trace on a piece of paper with peaks. And

14 those peaks will resemble or represent isomeric components

15 within the PCBs. However, that alone will not identify

16 what you're looking at as PCBs because any number of

17 materials put through the same system could give you the

18 same peaks.

19 Now, to absolutely identify what you're getting

20 out on these peaks, then you need the mass spectroscopy

21 and that instrument then bombards the sample in question

22 into different chemical components so that you can

23 identify what that material is.

24 That's the reason the two together are needed to

25 positively identify PCBs and an unknown. And it wasn't

1 until these two systems had been put together that this

2 was, had been done.

3 Q. (By Mr. Turet) Now going back into the early

4 '60's, going back into the early '60's, was there such a

5 thing as a gas chromatograph?

6 A. Oh, yes.

7 Q. And was there such a thing as a mass

8 spectrometer system?

9 A. This was a mass spectrometer system which was

10 used as needed but not to the extent of gas

11 chromatography.

12 Q. So the gas chromatography was the one that was

13 most commonly used at the time?

14 A. Yes. Uh-huh.

15 Q. What were some situations back in the early

16 '60's that you can remember where the mass spectrograph

17 system was called upon?

18 MR. DIMURO: Object to the form. You can

19 answer, Dr. Keller.

20 Q. (By Mr. Turet) Do you understand my question?

21 A. No.

22 Q. Well you mentioned that the mass spectrograph

23 system existed in the early '60's and just wasn't used as

24 frequently as the gas chromatograph system. Why would a

25 mass spectrograph system have been used back in the

Page 24

1 1960's?

2 A. Well, the mass spectrograph was used at those

3 stages largely by the oil industry. That type of material

4 lend itself very well to analysis by mass spectroscopy.

5 The chemical business that we were in did not deal with

6 oil type, gas type products.

7 And to further clarify this, in our immediate

8 labs, we really didn't have an operating mass spectroscopy

9 function before 1966. Other laboratories such as refinery

10 labs would have been spectroscopy. But we did not use it

11 as an analytical tool in those early stages.

12 Q. What prompted Monsanto to obtain a mass

13 spectrograph system in 1966 if you know?

14 MR. DIMURO: Object to the form. You can answer

15 it, Dr. Keller.

16 A. Pardon?

17 MR. DIMURO: You can answer it.

18 A. The work of Widmark and Jensen in Sweden.

19 Q. (By Mr. Turet) And did you participate in the

20 decision to obtain a mass spectrograph system?

21 A. Yes.

22 Q. When in 1966 as best you can recall did that

23 system get purchased by Monsanto?

24 A. 1967.

25 Q. I'm sorry, I thought I understood you to say it

Page 25

Page 27

1 was purchased in 1966. Did I misunderstand?

2 A. I think you must have misunderstood.

3 Q. So Monsanto --

4 A. I was referring to Jensen and Widmark's work in
5 1966.

6 Q. When in 1967 did Monsanto purchase the mass
7 spectroscopy system?

8 A. It was early in the year and we were operational
9 by year end 1967.

10 Q. Pardon my ignorance, I've never seen a mass
11 spectroscopy system. Does it take a year to set up?

12 A. It's a complex system, requires expertise where
13 someone has to study and work with it at least six months
14 to become competent.

15 And perhaps I could clarify this further for
16 you. The system we bought was a German system, mass
17 spectrometer system that came from Germany. The reason
18 being, there really wasn't a U.S. system available to us
19 at that point. And when I say system, I'm talking about
20 where the gas chromatograph was connected to the mass
21 spectrometer. That had to be a total package.

22 Q. But the intention with the mass spectroscopy
23 system was to hook it up to the gas chromatograph?

24 A. Yes. It was used as a full operated GC/mass
25 system.

Page 26

1 Q. The GC system, was that what Monsanto already
2 possessed?

3 A. Well, we bought additional GC systems at that
4 point so we'd have new systems to go with the new mass
5 spectrometer.

6 Q. So by the year end 1967, you had, Monsanto had
7 up and running a gas spectroscopy, I'm sorry, gas
8 chromatograph slash spectroscopy system?

9 A. We had reached the point that we were getting to
10 be able to use it perfectly at the end of '67.

11 Q. Would you understand what I meant if I used the
12 initials MS GC, the initials?

13 A. That's the same thing.

14 Q. I think the court reporter would appreciate it.

15 A. Usually it's GC MS with a slash in between them.

16 Q. Okay. Now, when the MS system was first
17 purchased, did Monsanto already have a researcher on staff
18 who was trained to use it?

19 A. No. We had to train on the job.

20 Q. Was Dr. Tucker the first one to be brought in to
21 be trained on the job?

22 A. Dr. Tucker was the focal point on that, uh-huh.

23 Q. And he was under your supervision at the time?

24 A. Yes.

25 Q. Did you learn how to use the GC/MS system?

1 A. No.

2 Q. Did you know how to interpret the results that
3 came out of the GC/MS system?

4 A. No.

5 Q. Did the GC/MS system that Monsanto had as of the
6 end of '67 change in any way in 1968?

7 MR. DIMURO: Object to the form. You can answer
8 it, Dr. Keller.

9 A. No.

10 Q. (By Mr. Turet) Did the same system continue to
11 be used throughout 1968?

12 A. Yes.

13 Q. Did it continue to be used by Monsanto through
14 the 1969 as well?

15 A. Yes.

16 Q. How about 1970?

17 A. Continued to be used.

18 Q. Was that --

19 A. Now, I will add one point to your yes. We
20 computerized this system a year or two later which made it
21 possible to do more than without the computer. So at that
22 point, it was called computerized GC/MS system. And as I
23 best recall it, that computer would have been put in one
24 to two years later.

25 Q. So that's probably sometime in '68 to '69?

Page 28

1 A. In that area somewhere.

2 Q. Okay. Did the computerization do anything more
3 than speed up the process?

4 A. Of the primary benefit.

5 Q. Okay. Did it improve the actual ability of the
6 computerized system to interpret the samples that it was
7 given?

8 A. It made it possible to handle larger numbers of
9 GC fractions more accurately, but it was, that was about
10 it.

11 Q. Did it -- withdraw that question.

12 Okay. But other than adding the computer to it
13 to improve the speed and officialcy of the system, the
14 system remained the same from 1967 through until 1970 at
15 least?

16 A. Yes.

17 Q. Did it, did it continue to be the -- let me
18 withdraw the question.

19 Was it essentially a state-of-the-art system as
20 of 1967?

21 MR. DIMURO: I'll object to the form. You can
22 answer it, Dr. Keller.

23 A. Yes, it was a state-of-the-art system.

24 Q. (By Mr. Turet) Did it remain a state-of-the-art
25 system in 1968 and '69?

Page 29

Page 31

1 MR. DIMURO: Same objection. You can answer,
2 Dr. Keller.
3 A. For what we were doing, yes. Others might have
4 been further advanced in such a system.
5 Q. (By Mr. Turet) Okay. Specifically for the
6 purpose of analyzing the presence of PCBs in water or
7 other materials, was it a state-of-the-art system from
8 1967 to 1970?
9 MR. DIMURO: Object to the form. You can
10 answer, Dr. Keller.
11 A. Could I have that back?
12 MR. TURET: Could you re-read that question?
13 (The preceding question was read back.)
14 MR. DIMURO: Same objection.
15 A. Yes.
16 Q. (By Mr. Turet) Does the same system identify
17 the presence of PCBs in air?
18 MR. DIMURO: Object to the form. You can answer
19 it, Dr. Keller.
20 A. It was capable of doing that.
21 Q. (By Mr. Turet) Was it used for that purpose
22 during the 1967 to 1970 time frame?
23 A. Yes.
24 Q. Did the same system have the capability of
25 identifying the presence of PCBs in soil?

Page 30

1 A. Yes.
2 Q. And was it used for that purpose by Monsanto
3 during the 1967 to 1970 period?
4 A. I can't recall the period. At some point it was
5 used for soil.
6 Q. Just to clarify, I'm not sure if I phrased the
7 question properly before, was the system used by Monsanto
8 to identify PCBs in the air during the 1967 to 1970 time
9 frame?
10 A. I don't recall specifically air projects at
11 work. It could have been done and I just don't remember
12 it.
13 Q. But to the best of your knowledge, it was used
14 in that way by others?
15 A. Yes.
16 Q. And was it used by Monsanto to identify PCBs in
17 water during the 1967 to 1970 time frame?
18 A. Yes.
19 Q. Now, before there was the MS part of the
20 equation and we just had a GC system, what other
21 materials, if any, would have appeared to be like PCBs in
22 the printout?
23 A. Well, you have interference from pesticides,
24 that type of thing.
25 Q. When you say interference, does that mean that

1 the peaks appear to be the same from the other materials?
2 A. You would have interfering peaks to the peaks of
3 the PCBs at various points.
4 Q. And when you say pesticides, does that include
5 DDT?
6 A. Yes.
7 Q. Anything other than DDT that interfered with the
8 peaks from PCBs?
9 MR. DIMURO: Object to the form. You can answer
10 it, Dr. Keller.
11 A. I'm not able to tell you beyond this what
12 others.
13 Q. (By Mr. Turet) Just out of curiosity, did the
14 MS, pardon me, the GC/MS system change in 1971?
15 A. No.
16 Q. Okay. When do you remember the system that
17 Monsanto had being changed either through purchasing a new
18 unit or through getting rid of entirely the old unit?
19 A. Well, I think we said earlier, I think I said it
20 was '67.
21 Q. No. No, I'm sorry. Once Monsanto had the GC/MS
22 system, I think you testified before that it was still in
23 place as of 1970. How long did it remain in place?
24 A. Continuous from then on.
25 Q. So to the best of your knowledge, it was still

Page 32

1 in place in 1985 when you retired?
2 A. To the best of my knowledge.
3 Q. Okay. Now, Dr. Keller, let's go back to 1966.
4 When do you remember first hearing about the work of
5 Professors Widmark and Jensen?
6 A. Well, that was an internal report from, from I
7 believe a Mr. Wood out of our Monsanto London office.
8 Q. And what --
9 A. Indicating that this work was being done by
10 Widmark and Jensen.
11 Q. Now, why don't we mark this as Exhibit Keller
12 2.
13 (Exhibit Keller 2 was marked for identification
14 by the reporter.)
15 Q. (By Mr. Turet) Dr. Keller, I'm going to show
16 you a document that's been marked as Keller 2. For the
17 record, it's a document that is Bates Stamped twice, one
18 is STR 017390, or S000195. It's a December 1st, 1966
19 letter from D. Wood to G. Buchanan.
20 MR. DIMURO: And are you going to represent this
21 document was not produced in this litigation?
22 MR. TURET: I'm not going to represent it, I
23 couldn't find it, but I'm not going to represent that it
24 wasn't produced in this case.
25 MR. DIMURO: I notice it doesn't have Bates

Page 33	Page 35
1 numbers anywhere on these documents for this litigation. 2 MR. TURET: That's correct. This may be a 3 document that was produced in this litigation. This was a 4 document that was attached to a deposition transcript, but 5 I'm not prepared to represent that it was not produced in 6 this litigation. 7 MR. DIMURO: Are you prepared, are you saying 8 this document was attached to a deposition transcript that 9 was produced by Monsanto in this litigation? 10 MR. TURET: I believe that's correct. 11 MR. DIMURO: Do you know which transcript? 12 MR. TURET: I would be guessing, but I could get 13 you the answer to that. 14 MR. DIMURO: You can guess for me now if you 15 have an idea. 16 MR. TURET: I'm guessing it was probably Scott 17 because I think the first letter usually correlates -- 18 MR. DIMURO: What do you mean? Is there an S? 19 Okay. 20 MR. TURET: But I can get you an answer on 21 that. 22 MR. DIMURO: Okay. 23 Q. (By Mr. Turet) Okay. Dr. Keller, have you seen 24 this document before today? 25 A. No.	1 A. No, I have not. 2 Q. Can you describe for me the internal 3 correspondence from Mr. Wood that you do remember that 4 remitted to the findings of Professor Jensen and Professor 5 Widmark? 6 A. My best recollection is that Mr. Wood contacted 7 the medical department, Dr. Kelly, Elmer Wheeler in 8 St. Louis, as well as the functional fluids business 9 group, research director, manager, and passed the 10 information on to them. 11 Q. Did you say functional fluids research manager? 12 A. Uh-huh. 13 Q. Was that Mr. Richard or Dr. Richard? 14 A. Yes. Uh-huh. 15 Q. Now do you recall after that what was the 16 substance of what Mr. Wood communicated, if you remember? 17 A. Well, that would have been oral and I don't know 18 exactly what he communicated. 19 Q. So he told Dr. Kelly, Dr. Wheeler, Dr. Richard 20 that Professor Widmark and Professor Jensen had identified 21 PCBs in Sweden? 22 A. Yes. 23 Q. And to the best of your recollection, where had 24 the PCBs been found in Sweden? 25 A. In Sweden, it was fish, aquatic life, certain
Page 34	Page 36
1 Q. Do you know who G.R. Buchanan in St. Louis was 2 or is? 3 A. I believe he was in marketing for fluids. I'm 4 not positive. The name I recognize. I'm having a problem 5 trying to place him. 6 Q. All right. And who is R.A. Steenrod, if you 7 know, in St. Louis? 8 A. I don't know him. 9 Q. How about D.V.N. Hardy, London? 10 A. Yes. He was a retired Monsanto person who 11 worked out of Monsanto's London office on special 12 assignments. And if you were visiting someone in the 13 United Kingdom involved with PCBs, he many times would 14 accommodate whoever made the visit. 15 Q. Now he was a previous, he was an employee of 16 Monsanto previously? 17 A. That was my understanding. 18 Q. Do you know what his position had been? 19 A. No, I do not. 20 Q. And who was A. Arpino Brussels if you know? 21 A. I don't know who that is. 22 Q. Okay. That cover letter that appears to be 23 under the signature D. Wood, has attached the, it's a 24 letter on the letterhead of Rising & Strand from November 25 28, 1966. Have you ever seen that letter before?	1 aquatic life, some birds. 2 Q. Do you remember whether Professors Widmark and 3 Jensen found PCBs in infants' hair? 4 A. I don't recall that. 5 Q. Okay. Were there any meetings or discussions 6 that you participated in once Dr. Kelly, Dr. Richard and 7 Dr. Wheeler found out about these reports from Sweden? 8 A. I can't recall any specific meetings. It 9 certainly was discussed. Whether there was a meeting 10 called to discuss it, whatever, I can't recall. 11 Q. Do you remember any documents being generated 12 that were circulated to you about the findings in Sweden? 13 A. No. 14 Q. Did you, to your knowledge, did anybody travel 15 to Sweden to meet with, from Monsanto to meet with 16 Professors Widmark and Jensen? 17 A. Yes. 18 Q. Okay. Who went to Sweden? 19 A. I went along with Elmer Wheeler. 20 Q. Just the two of you? 21 A. Uh-huh. Except for one call on Professor 22 Widmark and Jensen where Dr. Richard made that visit, that 23 one visit with us. 24 Q. So he visited on the part of the, the trip that 25 involved Dr. Jensen, did you say, or Dr. Widmark?

Page 37

Page 39

1 A. Widmark. When we visited Widmark, Jensen was
2 not available.
3 Q. Okay. Let me take it back a step. What was the
4 full itinerary of your trip, your trip and Dr. Wheeler's
5 trip together to Sweden? Was there something more than
6 meeting with Dr. Widmark?
7 A. Well, we were interested in getting up to speed
8 more on what Professors Widmark and Jensen had done from
9 an analytical standpoint. And to get other information
10 that might be of value to us in better assessing the part
11 of the business unit, what the magnitude of the PCB
12 problem might be.
13 Q. Dr. Wheeler didn't have any, or Mr. Wheeler
14 didn't have any background in analytical chemistry, did
15 he?
16 A. No.
17 Q. What was his purpose in making the trip?
18 A. He didn't make the trip. Dr., you're talking
19 about Wood?
20 Q. Dr. Wheeler.
21 A. Oh, I'm sorry. I thought you said Wood.
22 Wheeler, his role was primarily from a toxicology role.
23 Q. So you, is it Mr. Wheeler or Dr. Wheeler?
24 A. Mr. Wheeler.
25 Q. Mr. Wheeler and Dr. Richard traveled together

1 recall detail.
2 MR. TURET: Let me mark Keller 3.
3 (Exhibit Keller 3 was marked for identification
4 by the reporter.)
5 Q. (By Mr. Turet) Dr. Keller, I'm going to show
6 you a document that's been marked Keller 3. It's Bates
7 Stamped MAE 053933 dash 35. It's a January 26th, 1967
8 letter from D. Wood to G. Buchanan. Have you ever seen
9 this document before, Dr. Keller?
10 A. No.
11 Q. Okay. Were you aware back in 1967 that Mr. Wood
12 had communicated to Mr. Benignus and to others in
13 St. Louis and elsewhere that there was no doubt that the
14 chemical which was the subject of the investigation news
15 release in Sweden was chlorinated biphenyls Aroclor?
16 MR. DIMURO: I'll object to the form.
17 A. I'm not aware of that.
18 Q. (By Mr. Turet) Do you recall any discussion
19 within Monsanto back that 1967 about a press release that
20 had been acquired by the company that supplied the mass
21 spectrometer used by Jensen and Widmark?
22 MR. DIMURO: Object to the form. Again, you can
23 answer it if you can.
24 A. What was your reference to the press release?
25 Q. (By Mr. Turet) A press release issued by the

Page 38

Page 40

1 and Dr. Richard participated only in that part of the trip
2 that involved Professor Widmark?
3 A. Yes.
4 Q. And when was the trip?
5 A. Spring of '69.
6 Q. The trip was in spring of 1969?
7 A. Uh-huh.
8 Q. Okay. Were there any trips closer in time to
9 when the results of the tests in 1966 and '67 were
10 published?
11 MR. DIMURO: I object to the form. What tests?
12 Q. (By Mr. Turet) We talked earlier about the
13 studies of Professor Widmark and Professor Jensen,
14 correct?
15 A. Right.
16 Q. And those were the studies that identified the
17 PCBs in the environment in Sweden?
18 A. Well, this first study was actually the
19 publication they made in the New Scientist in 1966 telling
20 what they had found and describing the methodology used.
21 That was a point of departure.
22 Q. Okay. To the best of your knowledge, did
23 anybody from Monsanto contact Professors Widmark or Jensen
24 following the publication in the New Scientist in 1966?
25 A. I can't recall anybody. If it was done, I can't

1 manufacturer of the mass spectrometer that had been used
2 by Jensen and Widmark.
3 A. And what is your question?
4 Q. Do you recall any discussions about a press
5 release having been issued in 1967 relating to the
6 findings of the PCBs in Sweden?
7 A. I can't recall a discussion.
8 Q. Do you remember anything, any discussions back
9 in 1967 about meetings that Mr. Wood and Monsanto may have
10 had from capacitor manufactures in Sweden and the findings
11 of PCBs in the environment?
12 A. No.
13 Q. Do you recall any discussions back in 1967 about
14 comments made by Professor Jensen that he had been
15 approached by workers associated with chlorinated
16 biphenyls for nonelectric uses who were worried about
17 possible effects on their health?
18 MR. DIMURO: Object to the form. You can answer
19 it, Dr. Keller, if you can.
20 A. No.
21 Q. (By Mr. Turet) Do you know one way or the other
22 whether Professor Widmark or Jensen asked Monsanto for
23 samples of PCB products to further their research back in
24 1967?
25 A. Not that I recall.

Page 41

Page 43

1 (Exhibit Keller 4 was marked for identification
2 by the reporter.)
3 Q. (By Mr. Turet) Dr. Keller, I'm going to show
4 you a document that's been marked as Keller 4 which is a
5 February 27, 1967 communication from R. Emmet Kelly, M.D.
6 to Dr. Dave Wood, Brussels. Have you ever seen this
7 before?
8 A. No, I have not.
9 Q. Okay. The last sentence in this particular
10 communication says, I think we should fight the battle of
11 the analytical method first before we get too involved
12 with toxicology. Did you, do you have any understanding
13 of what that means?
14 MR. DIMURO: I'll object to the form. You can
15 answer it if you know what Mr. Kelly was writing.
16 MR. TURET: Dr. Kelly.
17 MR. DIMURO: Dr. Kelly.
18 A. Well, I'm sure that Dr. Kelly was referring to
19 getting our GC/mass spectrometer system up and running.
20 This was in early '67. And we had it running at the end
21 of '67.
22 Q. (By Mr. Turet) All right. And in the first
23 sentence of the communication, it says thank you for the
24 information you sent me. I'm having your analytical
25 people as well as NCR here in the States evaluate it.

Page 42

1 Were you one of the analytical people that Dr. Kelly was
2 referring to there?
3 A. I can't answer that. It could have been Scott
4 Tucker.
5 Q. Okay. And why, if you know, would Dr. Kelly
6 have referred specifically to NCR in connection with
7 evaluating the data supplied by Dave Wood?
8 A. Repeat your question, please.
9 Q. Why did Dr. Kelly specifically refer to NCR, if
10 you know, as someone who here in the States would evaluate
11 the data supplied by Dave wood?
12 A. I don't have an answer for that.
13 MR. TURET: Let's mark that as Keller 5.
14 (Exhibit Keller 5 was marked for identification
15 by the reporter.)
16 Q. (By Mr. Turet) Dr. Keller, I'm going to show
17 you a document that's been marked as Keller 5 which is
18 Bates Stamped MAE 053518, a July 31, 1968 memo from
19 Cumming Paton. Have you seen this document before today,
20 Dr. Keller?
21 A. It has my name on it, but I don't recall it.
22 Q. You're listed as a recipient of the memo?
23 A. Yes.
24 Q. Who was Cumming Paton, the author of this?
25 Perhaps I should ask, what was Cumming's Paton's position

1 back in July of 1968?
2 A. He was in the development department or
3 marketing department of the business group involved with
4 this.
5 Q. When you say the business group, what does that
6 mean?
7 A. Well, this would be the fluids.
8 Q. Oh. Now, is this article from the New Scientist
9 the one you referred to before as the Widmark and Jensen
10 publication?
11 A. Yes.
12 Q. And where --
13 A. Hold one moment, please. Yes. My yes stands on
14 that.
15 Q. Okay. And down below the document from
16 Mr. Paton says their theory on how PCB finds its way into
17 fish and later humans is an all-embracing one. That
18 theory is correct, isn't it.
19 MR. DIMURO: Objection. Form. If you can
20 answer that question, Dr. Keller, go ahead.
21 A. I can't add anything to that. I don't know.
22 MR. TURET: Mark this as Keller 6.
23 (Exhibit Keller 6 was marked for identification
24 by the reporter.)
25 Q. (By Mr. Turet) Dr. Keller, I'm going to show

Page 44

1 you a document that's been marked Keller 6, Bates No.
2 MAE 053515. I recognize there are essentially two
3 handwritten notes on the same page, but this is the way it
4 was produced.
5 A. Yes.
6 Q. Have you seen this document before today?
7 A. Well, I'd have to say yes. That's my
8 handwriting.
9 Q. Yours is at the bottom?
10 A. Uh-huh.
11 Q. The top memo is dated 12/2/68 from WER, William
12 Richard to Bob Keller. It says, if I'm reading it
13 correctly, Kanagafucha in Japan has apparently poisoned
14 people and chickens with edible oil slash Aroclor from a
15 leaking heat transfer system. Is that a reference to
16 Yusho if you know?
17 A. I would assume so.
18 Q. In the memo that's signed Bob, who is L. Fowler?
19 A. He was the group leader responsible for the
20 instrument development group in applied sciences.
21 Q. And why was your handwritten memo addressed to
22 him?
23 A. The only thing I can believe on this, the way I
24 wrote it was that Dr. Fowler was a good PhD physical
25 chemist and was using him simply as the sound board on

Page 41 - Page 44

Page 45

Page 47

1 this. There would be no direct involvement that I'm aware
2 of on this from Dr. Fowler's standpoint.

3 Q. And who was M. Grogan?

4 A. He was a PhD physical chemist in either the
5 analytical or physical chemistry group of applied
6 sciences.

7 Q. And --

8 A. He is deceased.

9 Q. Okay. And why did you address the memo to him
10 as well?

11 A. I don't remember what the thrust at that point
12 was going to be on this.

13 Q. Just back at the top very quickly under the, on
14 the William Richard part, he appears to propose to you two
15 different actions. One, our testing for Aroclor in edible
16 oils; and two, going after the better customer test
17 apparatus. Is that how you read this as well?

18 A. Are you looking at this?

19 Q. Yes. In Parentheses A and in Parentheses B.

20 A. Point. Okay.

21 MR. DIMURO: Actually --

22 Q. (By Mr. Turet) Here it says our testing for
23 Aroclor in edible oils and here, going after, I think it
24 says the better customer test something.

25 A. Let me read this.

Page 46

1 MR. DIMURO: Take your time and read the whole
2 note.

3 (Mr. Coughlin exited the deposition room.)

4 A. I can't interpret what Bill Richard was really
5 pointing to on those As and Bs.

6 MR. TURET: Okay. Let's mark this as Keller 7
7 (Exhibit Keller 7 was marked for identification
8 by the reporter.)

9 Q. (By Mr. Turet) Dr. Keller, I'm showing you a
10 document that's been marked as Keller 7 which is an
11 October 21, 1968 letter from Elmer Wheeler to W.R. Richard
12 with an enclosure. It's Bates Numbers, actually, it's two
13 sets of Bates Nos. PRR 050542 and SCM 051029.

14 MR. DIMURO: And this document, do you know
15 where this document came from?

16 MR. TURET: Yes. It was obtained as part of a
17 deposition transcript.

18 MR. DIMURO: Of Dr. Kelly?

19 MR. TURET: Yes.

20 MR. DIMURO: Okay.

21 Q. (By Mr. Turet) Dr. Keller, your name appears up
22 at the top.

23 MR. DIMURO: Actually, he's not Kelly.

24 MR. TURET: I think I said Dr. Keller. I meant
25 to say that.

1 Q. (By Mr. Turet) The second name, it's slightly
2 smudged. But were you R. Keller as those addresses are
3 read?

4 A. I would assume so.

5 Q. Have you ever seen this document before today.
6 (Mr. Coughlin re-entered the deposition room.)

7 MR. DIMURO: Take your time reading through it,
8 Doctor. There's a lengthy attachment.

9 Q. (By Mr. Turet) For whatever it's worth, I'm not
10 going to quiz you on the attachment except to the extent
11 of something I specifically point to.

12 (Mr. Dimuro exited the deposition room.)

13 A. Well, what's in this memo, I was aware of at the
14 time. I don't recall that this is the way I learned about
15 it, out of this memo. I just don't recall this memo.

16 Q. Fair enough. Why don't we use this as an
17 opportunity to break then.

18 (A short break was taken.)

19 (Mr. Dimuro re-entered the deposition room.)

20 MR. DIMURO: Did you finish with this document?

21 MR. TURET: No.

22 Q. (By Mr. Turet) Do you remember one way or the
23 other, Dr. Keller, whether you learned about the results
24 of Dr. Risebrough's study before it was published?

25 A. Yes. I'm quite confident that I did learn

Page 48

1 before it was published.

2 Q. From whom?

3 A. I best recall this was from Elmer Wheeler.

4 Q. And were, were you given any specific
5 assignments as to do anything in particular as a result of
6 the Risebrough work?

7 A. I don't recall that.

8 MR. TURET: Let's mark this as Keller 8.

9 (Exhibit Keller 8 was marked for identification
10 by the reporter.)

11 Q. (By Mr. Turet) Dr. Keller, you're being shown a
12 document marked Keller 8, Bates Stamped No. MAE 053634.
13 It's a February 18, 1969 communication from R. Emmet Kelly
14 to J.R. Durland. I'm not going to ask you about the whole
15 document if it's helpful. I can refer to a sentence or
16 two.

17 MR. DIMURO: Did you ask him whether he's seen
18 it before yet?

19 MR. TURET: No, that's going to be my first
20 question.

21 Q. (By Mr. Turet) Have you seen it before today?

22 A. No.

23 Q. In this document, there's a statement that the
24 unidentified hydrocarbon was later shown to be Aroclor,
25 which one I am not sure and I even get varying

Page 49

Page 51

1 statements.
 2 A. What paragraph is that.
 3 Q. The second paragraph down, begins with this
 4 unidentified hydrocarbon.
 5 A. All right.
 6 Q. And it says I even get varying statements from
 7 our organic analytical people as to whether the
 8 scientist's statement is correct or not. Do you recall
 9 whether there was a debate within Monsanto as to whether
 10 the work of Dr. Risebrough was accurate or not?
 11 A. I don't recall that. Perhaps Scott Tucker who
 12 would be more close to the actual work and this work
 13 referred to could comment. I have no comment.
 14 Q. Did you have any opinion at the time as to
 15 whether the work of Dr. Risebrough was accurate in
 16 identifying PCBs?
 17 A. I really can't answer that. I don't know if it
 18 was accurate or not.
 19 Q. Okay.
 20 MR. TURET: Why don't you mark this as Keller
 21 9.
 22 (Exhibit Keller 9 was marked for identification
 23 by the reporter.)
 24 Q. (By Mr. Turet) Dr. Keller, I'm going to show
 25 you a document that's been marked as Keller 9. It's a

1 My question, Dr. Keller, is as of March of '69,
 2 was there a difference of opinion to your knowledge within
 3 Monsanto as to whether the substance identified in the
 4 Swedish work was or was not PCB?
 5 A. Well, it's my impression that most researchers
 6 were giving Jensen and Widmark the benefit of the doubt on
 7 their findings come, say, late 1968, '69. Others that
 8 were coming in and doing this type of work seemed to be
 9 supportive of their findings.
 10 Q. And Monsanto had the GC/MS system in place since
 11 the end of 1967 which would conclusively determine whether
 12 it was PCB or not, right?
 13 MR. DIMURO: I'll object to the form.
 14 A. We had the system in operation.
 15 Q. (By Mr. Turet) To your knowledge, did other
 16 scientists elsewhere in the world also have a GC/MS system
 17 in place?
 18 A. Yes.
 19 Q. Was there still controversy as of March 1969 --
 20 let me withdraw that question.
 21 Was there still a difference of opinion as of
 22 March of 1969 within Monsanto as to whether the substance
 23 identified by Dr. Risebrough in California was PCB?
 24 A. Well, where I'm hung up in trying to answer your
 25 question is, I don't recall whether this work of

Page 50

Page 52

1 March 3, 1969 document that says Elmer P. Wheeler at the
 2 bottom.
 3 MR. DIMURO: This also a deposition exhibit?
 4 MR. TURET: Yes.
 5 MR. DIMURO: And do you know whose deposition it
 6 is?
 7 MR. TURET: This one, I don't. The other one
 8 had designations that help.
 9 MR. DIMURO: There's an L.R. No. 6. L.R., do
 10 you know who L.R. is?
 11 MR. TURET: No.
 12 MR. DIMURO: Okay.
 13 A. All right. I have scanned this.
 14 Q. (By Mr. Turet) Okay. Have you seen the letter
 15 before today that's been marked as Keller 9?
 16 A. No.
 17 Q. There's a statement in this document on the
 18 third page, top paragraph that says it is therefore not
 19 only puzzling but extremely difficult to conceive how
 20 commercially-produced PCB can show up in wildlife as DDT
 21 and other pesticides appear to be. This raises the
 22 question whether the substance identified in the Swedish
 23 work and now in California is actually PCB or whether they
 24 are materials which due to the metabolism of other
 25 materials in the marine environment appears to be PCB.

1 Risebrough was based on just GC work or GC/MS work. And
 2 not knowing the answer to that, I can't give you a black
 3 and white answer. I thought he was working with GC
 4 methods alone which would mean he doesn't have a way to
 5 prove what the materials are that he's getting out.
 6 Q. But if his study had been done with the GC/MS
 7 system, that would have satisfied you at the time that it
 8 was, in fact, PCB?
 9 MR. DIMURO: I'll object to the form of the
 10 question. You can answer.
 11 MR. TURET: Did you get the question down before
 12 an objection was raised?
 13 MR. DIMURO: You can answer it. If you need the
 14 question read back, we'll have it read back.
 15 THE WITNESS: Read the question back.
 16 (The preceding question was read back.)
 17 A. Not necessarily. Probably wouldn't have
 18 satisfied us until we had done it ourselves.
 19 Q. (By Mr. Turet) So that's the last step that's
 20 required to, required to know if PCBs are there by running
 21 it through the GC/MS system?
 22 A. That's where we were the most comfortable taking
 23 a stand.
 24 Q. And a couple of paragraphs down, it says
 25 Monsanto has a research program to confirm the identify of

Page 49 - Page 52

HARTOLDMON0007711

Page 53

Page 55

1 the compounds reported to be PCB by the Swedish and
2 California scientists. Is that essentially running
3 substances through the GC/MS system that Monsanto had?

4 MR. DIMURO: Object to the form.

5 A. My interpretation of what Mr. Wheeler is saying
6 is that he's simply saying Monsanto's going to have the
7 GC/MS system operating. We'll have the capability to
8 confirm what the Swedish people have found.

9 Q. (By Mr. Turet) Okay. This is March of '69.

10 A. Okay.

11 Q. So the system is already up and running back at
12 Monsanto for over a year?

13 A. Okay.

14 Q. So let me see if I understood you correctly.

15 You're saying that it would use the system to run the
16 substances through the Monsanto GC/MS system to confirm
17 that they contained PCB?

18 MR. DIMURO: I'll object to the form.

19 Q. (By Mr. Turet) Let me withdraw the question.
20 Can you just explain what it was that you said a moment
21 ago because I'm not sure I understood it.

22 MR. DIMURO: Why don't we have it read back.

23 Can you read his answer and the last question back.

24 (The following answer was read back: My
25 interpretation of what Mr. Wheeler is saying is that he's

1 Q. Okay.

2 MR. TURET: Let's mark this as Exhibit 10.

3 (Exhibit Keller 10 was marked for identification
4 by the reporter.)

5 Q. (By Mr. Turet) Dr. Keller, I'm going to show
6 you a document that's been marked as Keller 10. It's
7 Bates Stamped No. MAE 053006 through 008 and ask you if
8 you've seen it before today.

9 MR. DIMURO: Take your time, Dr. Keller. This
10 was previously marked at Bill Papagorge's deposition on
11 11/12/97 as Exhibit No. 2.

12 A. Well, my name is on the distribution, but I
13 don't remember the memo.

14 Q. (By Mr. Turet) Okay. On the list of recipients
15 up at the upper right-hand corner, who is P. Park, if you
16 know?

17 A. I think he was in the, in the Plasticizer either
18 development or sales area.

19 Q. Let's flip ahead to the second page of the
20 document which is a memo from W.R. Richard, it says where
21 does this leave us. Under identification and control of
22 the exposure, we will be able to identify and analyze
23 residues as well or better than anyone in the world. As
24 of March of 1969, was it already the case that Monsanto
25 was as well or better able than anyone in the world to

Page 54

Page 56

1 simply saying Monsanto's going to have the GC/MS system
2 operating. We'll have the capability to confirm what the
3 Swedish people have found.)

4 MR. DIMURO: Is there, you don't understand that
5 answer. Is there a problem?

6 Q. (By Mr. Turet) The answer doesn't seem to match
7 the question that I had asked and I think there may be
8 some confusion.

9 A. Your challenge to this --

10 Q. Why don't I just ask it a different way. I
11 mean, the letter suggests that there is a certain program
12 underway in March of 1969 to confirm the identity of the
13 compounds that had been found in Sweden and in
14 California. The question is: Is it your understanding
15 that that research program in March of '69 consisted of
16 using the Monsanto GC/MS system to evaluate samples from
17 Sweden and California scientists?

18 A. Well, my position is that this was an on-going
19 program where they were learning with the methodology day
20 by day GC/mass. And it wasn't a black and white thing.
21 Come the end of '67 or end of '68 now, I've got the
22 method, it's in the book, just use it. That wasn't the
23 case. And I think Wheeler's probably taking a little
24 poetic license and saying we're grappling with the full
25 program continuing with this total methodology.

1 identify and analyze PCBs?

2 MR. DIMURO: Objection. Form. You can answer
3 it, Dr. Keller, if you can.

4 A. We felt we had the same capability as anybody
5 else at that point.

6 Q. (By Mr. Turet) Was that true as of the time, at
7 the end of '67 when you had a GC/MS system?

8 A. No. I think you said '69.

9 Q. I understand your answer as of March of '69.
10 Was that also the case back in the end of 1967?

11 A. No, we were still learning.

12 Q. Okay. At what point do you think Monsanto was
13 at least well equipped if not better equipped than anyone
14 else in the world to identify PCBs?

15 A. I can't answer that because I don't know how the
16 rest of the world was equipped.

17 Q. Sometime at least by March of 1969?

18 MR. DIMURO: I'll object to the form, but you
19 can answer it, Dr. Keller.

20 A. Uh-huh.

21 Q. (By Mr. Turet) You have to say yes or no
22 because head nods don't show up on the transcript.

23 A. Repeat it please.

24 Q. Sometime by March of 1969?

25 A. True.

Page 57

Page 59

1 Q. There's a reference in the middle of that same
 2 page that we can take steps to minimize pollution from our
 3 own chlorinated biphenyl plants, we can work with our
 4 larger customers to minimize pollution. And the sentence
 5 continues, we can continue to set up disposal and reclaim
 6 operations. Do you know why the memo would have referred
 7 to working with the larger customers to minimize pollution
 8 rather than all customers?

9 A. No, I have no idea.

10 Q. Do you recall, the memo ends with an invitation
 11 to provide comments to Dr. Richard. Do you remember
 12 providing any comments to Dr. Richard on the substance of
 13 this memo?

14 A. No.

15 Q. Okay.

16 MR. TURET: I would like to mark this as Keller
 17 11.
 18 (Exhibit Keller 11 was marked for identification
 19 by the reporter.)

20 Q. (By Mr. Turet) Dr. Keller, I'm showing you a
 21 document that's been marked as Keller 11. It looks like
 22 the original sticker must have covered up the Bates number
 23 there are some on the other pages. PRR 021890 through
 24 892. It says at the top chlorinated biphenyls
 25 chronological events.

Page 58

1 MR. DIMURO: Do we have any representation as to
 2 where this document came from? I notice it doesn't have
 3 Bates numbers from this litigation.

4 MR. TURET: I do not believe it was produced in
 5 this litigation. I believe it was attached as an exhibit
 6 to a prior deposition. If you like at the very --

7 MR. DIMURO: Do you know from whose deposition
 8 which it came from?

9 MR. TURET: No, not offhand.

10 Q. (By Mr. Turet) If you flip to the last page,
 11 Dr. Keller, is that your signature down at the bottom?

12 A. Yes.

13 Q. Okay. Is this a document that you recognize?

14 A. Yes.

15 Q. What is it?

16 A. It's what existed at the time 3/5/69 as to
 17 correspondence, etc. related to chlorinated biphenyls.

18 Q. And are the documents referred to in this
 19 chronological events list ones which you had seen at that
 20 time?

21 A. Not necessarily. These could be picked up and
 22 the document as a reference, so I would not say that I had
 23 all these documents. I'm sure I didn't.

24 Q. Well, who gave you the information with which to
 25 compile the chronological events if you didn't have the

1 documents themselves?

2 A. I'm sure that Mr. Wheeler had an input.

3 Q. Now, up at the top, the first references that
 4 are listed back in November of 1966, the Jensen lecture
 5 and then the report of New Chemical Hazard in the New
 6 Scientist in December 1966. There's a reference to a
 7 Widmark letter to blank Monsanto. Do you recall seeing a
 8 letter from Professor Widmark addressed to Monsanto
 9 specifically relating to his findings?

10 A. I think there was a letter transmitted but I
 11 can't recall it for you. And I can't recall seeing it.

12 Q. Do you remember its substance, Professor Widmark
 13 asking Monsanto to work with him, that he wanted to work
 14 with Monsanto toxicologists on PCBs?

15 A. I think that was the thrust of the letter, but I
 16 can't, I just don't remember detail. I don't remember. I
 17 assume Mr. Wheeler got this, it was directed to him.

18 Q. And I take it the dates that are listed here are
 19 accurate based on the information that you put together at
 20 the time?

21 A. To the best of my knowledge.

22 Q. Now, there's a reference in January of 1967 to
 23 the press release, LKB Instrm. Company. What is LKB
 24 Instrm. company to the best of your knowledge?

25 A. That's a Swedish company that made the

Page 60

1 instrument system that Jensen and Widmark used.

2 Q. Has that reference helped you in any way
 3 remember whether you had seen a press release issued by
 4 the company back in January of '67?

5 A. No.

6 Q. Who is the --

7 A. See, this press release could have come from
 8 Jensen's reports reporting out whatever, but I don't ever
 9 recall seeing or having the LKB Instrm. Company press
 10 release.

11 Q. Okay. So these dates would be some documents
 12 that you obtained and some that are references to
 13 documents which you did not have?

14 A. Yes.

15 Q. Now there's also a reference in January of 1967
 16 to a D. Wood letter to Buchanan. It says visited Sweden,
 17 confirmed chlorinated biphenyl report of Jensen. Does
 18 that, is that consistent with your understanding of the D.
 19 Wood letter that you described earlier today? Let me
 20 withdraw that question.

21 Is that consistent with your recollection that
 22 D. Wood communicated to Monsanto the findings of Jensen
 23 and Widmark PCBs had been found in Sweden?

24 MR. DIMURO: I object to the form. You can
 25 answer it, Dr. Keller.

Page 61

Page 63

1 A. Well, I'll stand just on what it says. And I
2 myself did not receive this, a copy of this letter, Wood
3 to Buchanan I don't believe. And I can't make a comment
4 beyond that.

5 Q. (By Mr. Turet) Okay. Who is the Wilde,
6 W-I-L-D-E, that's referred to, for example, on the
7 February 13th, '67 date?

8 A. I can't help you, I don't know.

9 Q. Do you recall in substance --

10 A. No.

11 Q. I haven't finished the question. Do you recall
12 in substance a letter from Dr. Kelly to whoever Wilde or
13 Wilde back in February of 1967 where the substance of the
14 letter was that Kelly said no need to contact Swedish
15 people?

16 MR. DIMURO: I'll object to the form.

17 A. I have no comment to make on that.

18 Q. (By Mr. Turet) Okay. Does that mean you don't
19 have any recollection?

20 A. I have no recollection.

21 Q. There's an October 21, '67 reference to Holmes,
22 Simmons, Tatton. Something in Nature 1967. Nature
23 Magazine says confirms work of Jensen. What is that if
24 you know?

25 A. Well, Tatton was the Department of Government

Page 62

Page 64

1 Chemistry or something to that effect in London. And they
2 did work similar to what Widmark and Jensen did. And this
3 is their publication in '67 which I believe somewhat
4 confirms what Jensen found. Well, states it right there,
5 confirms it.

6 Q. Okay. And then down at the bottom, there's a
7 November 2nd, 1967 Richardson letter to Hardy. Who is
8 Richardson?

9 A. Richardson would be at the Shell Research
10 Laboratories located in Kent in the U.K. I assume that's
11 the same Richardson because there's no first name.

12 Q. Okay. And Hardy is the D.V.N. Hardy who we
13 referred to earlier?

14 A. The Hardy operating out of the London office for
15 Monsanto.

16 Q. Okay. And this was a PCB identification that
17 was confirmed by GC/MS?

18 MR. DIMURO: Object to the form.

19 A. I can't, I know nothing about that.

20 Q. (By Mr. Turet) Flipping ahead, there's a series
21 of communications in February of 1968 that involve
22 Baxter. Do you know who Baxter was?

23 A. Down on 2/13/68?

24 Q. Yes, 2/13/68.

25 A. Baxter was a research manager located at Ruabon,

1 Whales which was a plant, is a plant site for Monsanto.

2 Q. Was that a plant site back in 1968 that
3 manufactured PCBs?

4 A. Yes.

5 Q. Do you have any recollection as you sit here
6 today of what the substance of the letters exchanged
7 between Baxter and Richard were back in February of '68?

8 A. No.

9 Q. There's a reference in May of 1968 to a Newell
10 letter to Hunt. Who were Newell or Hunt if you know?

11 A. I don't know. Did you ask who Hunt is too?

12 Q. Yes.

13 A. Hunt was a member of the medical department.

14 I'm quite sure on that. Deceased long ago.

15 Q. Is that William Hunt?

16 A. What?

17 Q. Is that William Hunt?

18 A. I don't know.

19 Q. Do you recall in substance any communication
20 back in May of 1968 where the medical department
21 recommended no action?

22 MR. DIMURO: Objection to the form.

23 A. No.

24 Q. (By Mr. Turet) On the third page, there's a
25 reference to October 9, 1968, Riscbrough, confidential

1 pre-publication. This is a, well, I'll withdraw that
2 question.

3 There's a reference down below December 30, '68
4 Richard to Kuhn. Who's Kuhn if you know?

5 A. I don't know.

6 Q. Do you have any recollection of what legal
7 problems were referred to in whatever the communication
8 was?

9 A. No.

10 Q. I skipped over one other question. November 27,
11 '68 Paton to Richard and the reference says include
12 Aroclor 5460.

13 A. Which one again?

14 Q. Sorry. November 27, '68 which was farther up on
15 that page. I skipped over it before. It says include
16 Aroclor 5460. What's your understanding of what that
17 reference meant?

18 A. I have no idea.

19 Q. Was 5460 a polychlorinated terphenyl?

20 A. To the best of my knowledge.

21 Q. Back in 1968, was there any discussion within
22 Monsanto about polychlorinated terphenyls as an
23 environmental pollutant?

24 A. Not that I recall.

25 Q. Do you remember discussions subsequently about

Page 65

Page 67

1 polychlorinated terphenyls as environmental pollutants
 2 within Monsanto?
 3 A. No.
 4 MR. TURET: Would you mark this as Keller 12?
 5 (Exhibit Keller 12 was marked for identification
 6 by the reporter.)
 7 MR. TURET: For the record this is Bates Nos.
 8 MAE 023422 through 31. It's a Monsanto Chemicals Limited
 9 Product Toxicology dash Aroclors document.
 10 THE WITNESS: What's the date on this? '69, I
 11 guess.
 12 MR. TURET: It has a handwritten date at the top
 13 of June 5th, 1969 and appears, states that it related to
 14 the period April 28th to May 1st, 1969.
 15 MR. DIMURO: Is there a question pending?
 16 MR. TURET: No, I'm waiting, I'm going to ask
 17 him has he seen it before. First, actually, for the
 18 record, there is a date all the way at the end. I didn't
 19 see it before.
 20 MR. DIMURO: Okay. Where's the date?
 21 Q. (By Mr. Turet) Dr. Keller, have you seen --
 22 MR. DIMURO: What's the date?
 23 MR. TURET: It's 6/5/69. I should add this
 24 appears to be from Monsanto Chemicals Limited and I don't
 25 know if that means the month and the day are transposed.

Page 66

Page 68

1 MR. DIMURO: Oh.
 2 A. Well, this is Doctor --
 3 MR. DIMURO: Why don't you wait for him to ask a
 4 question.
 5 Q. (By Mr. Turet) First, have you seen it before
 6 today?
 7 A. Yes, back at the period it was written.
 8 Q. Okay. And what is this document?
 9 A. It's, as I recall, Mr. Hardy's trip report in
 10 effect of these visits that were made.
 11 Q. And there's a circulation list on the first page
 12 and your name is listed on there as are several other
 13 individuals. Are all the individuals on the first page
 14 ones who participated in the trip or trips that are
 15 described?
 16 A. The individuals under circulation?
 17 Q. Yes.
 18 A. No. Well, to qualify this, I have not looked at
 19 all the places he's covering on the trips. But certainly
 20 these people did not all attend the trips that I was on.
 21 Q. Okay. Just to clarify, there's a J.W. Barrett,
 22 London. Who was that, if you know?
 23 A. I can't give you that. I don't remember.
 24 Q. Okay. How about H.A. Vodden?
 25 A. Vodden was a group leader researcher at the

1 Ruabon, Whales plant. And he was involved with fluid type
 2 products.
 3 (A short break was taken.)
 4 Q. (By Mr. Turet) I believe when we broke, you had
 5 indicated who H.A. Vodden was. Had you completed your
 6 answer?
 7 A. Vodden was a group leader at the research
 8 laboratories located in Ruabon, Whales, Monsanto's
 9 laboratories.
 10 Q. And to your knowledge, he was somebody who was
 11 involved in PCBs research out there?
 12 A. They worked on fluid products which could
 13 involve PCBs.
 14 Q. Okay. How about H.R. Newman, Newport?
 15 A. I don't, I don't know him.
 16 Q. What was Newport?
 17 A. Newport is another of Monsanto's sites in the
 18 U.K.
 19 Q. And to your knowledge, were PCB products
 20 manufactured at the Newport facility at Monsanto?
 21 A. As I best recall they were.
 22 Q. Okay. Now, in this document from D.V.N. Hardy
 23 back in May or June of 1969, there's a statement on the
 24 second page that using a combined gas chromatograph mass
 25 spectrometer it was shown that the peaks are due to PCBs.

1 Is this specifically with reference to Jensen's work?
 2 A. Which paragraph, please?
 3 Q. Third paragraph down. Specifically referring to
 4 Jensen's work at the end of 1965.
 5 MR. DIMURO: Is there a question?
 6 Q. (By Mr. Turet) Was it your understanding that
 7 the Jensen work had been based on GC/MS back in the end of
 8 '65?
 9 A. Well, I can't speak definitely on that, but I
 10 assume they were working in '65 to be able to report out
 11 their work in '66.
 12 Q. Okay. But was it your understanding at the time
 13 that the Jensen work was based on GC/MS?
 14 MR. DIMURO: Can I just get a clarification?
 15 Are you talking about at the time of this memo?
 16 MR. TURET: Yeah. Yes, he said he saw it at the
 17 time it was written.
 18 A. That would be my understanding.
 19 Q. (By Mr. Turet) Okay. Was it your understanding
 20 as well that the evidence and reasoning were available and
 21 the conclusions could hardly be in doubt that it was
 22 PCBs?
 23 MR. DIMURO: Object to the form. You can answer
 24 it, Dr. Keller.
 25 A. I don't know on that.

Page 69

Page 71

1 Q. (By Mr. Turet) Down at the bottom of the page,
2 Mr. Hardy says that the original work of Jensen and
3 Widmark has been extended and generally confirmed, notably
4 by workers in the following establishments. And much of
5 the detail has been published. Page 3 includes a list of
6 four different sites in Great Britain, one in Holland, and
7 three in the U.S. First off, which of those eight sites
8 at which Mr. Hardy says that work had been done to confirm
9 the Jensen work are you familiar with?

10 A. The first three.

11 Q. Okay. That's the one in London and Scotland and
12 in Kent?

13 A. Yes.

14 Q. Okay. And is your understanding the same as
15 what Mr. Hardy wrote, that each of those confirmed the
16 findings of Professor Jensen?

17 A. I would not agree it was confirmed because I
18 don't think the laboratory, the government chemists had
19 that skill based on what I recall.

20 Q. Okay.

21 A. The Shell Research, yes, they had the skill.
22 Freshwater Fisheries Laboratory, no, they didn't even have
23 a mass spectrometer.

24 Q. Okay.

25 A. No, again, it comes back to the GC curves. And

1 be found in wildlife, fish and certain items of human
2 diet. Was that your understanding as well at the time
3 this memo was written?

4 A. What paragraph please?

5 Q. The first summary item.

6 MR. DIMURO: Do you want the question read back,
7 Dr. Keller?

8 A. No. I would agree with that.

9 Q. (By Mr. Turet) Okay.

10 MR. TURET: Mark this as Keller 13, please.

11 (Exhibit Keller 13 was marked for identification
12 by the reporter.)

13 Q. (By Mr. Turet) Dr. Keller, I'm showing you a
14 document that's been marked as Keller 13. It's a
15 quarterly report July, August, September of 1969 of the
16 medical department of Monsanto. Bates Nos. PRR 025243
17 dash 247. The last page appears to have different print
18 and does not appear to have a Bates number on it. And
19 I'll represent this too as obtained as an attachment to a
20 deposition transcript. I don't know whose offhand.

21 A. Did you address a question to me?

22 Q. (By Mr. Turet) I was going to give you a chance
23 to skim it first.

24 A. I was reading, I didn't know if you did.

25 Q. Have you seen the document before today,

Page 70

Page 72

1 again, you can't identify by GC.

2 Q. Okay. How about the University of Utrecht in
3 Holland, do you have any familiarity with the study that
4 was done there?

5 A. We visited the University of Utrecht.

6 Q. Do you have a recollection of whether the work
7 there confirmed the findings of Professor Jensen in
8 Sweden?

9 A. Yes. I believe it did.

10 Q. And down lower, there are three reported studies
11 in the United States, one of Dr. Risebrough's and
12 University of California which we talked about already
13 today, but also studies at Cornell and at San Diego
14 Natural History Museum. Do you have any understanding of
15 whether those studies confirmed the findings of Professor
16 Jensen?

17 A. No, I can't answer that. I don't know.

18 Q. Now, in the, on Page 4, the summary section,
19 Mr. Hardy states that there can be no doubt that traces of
20 PCBs --

21 MR. DIMURO: Can you wait one second until he
22 gets there?

23 MR. TURET: I'm sorry, Page 4.

24 Q. (By Mr. Turet) Mr. Hardy states there can be no
25 doubt that traces of PCBs in parentheses, Aroclors, are to

1 Dr. Keller?

2 A. No.

3 Q. Do you remember, Dr. Keller, a point in time at
4 which there were reports of the PCBs found in the Escambia
5 River?

6 A. Well the Escambia River rings a bell. But I
7 can't recall detail or what was involved.

8 Q. Do you remember reports of findings of PCBs in
9 the vicinity of Monsanto's Pensacola plant in Florida?

10 A. No.

11 Q. Do you remember hearing or reading anything
12 within Monsanto about the loss of one to three gallons of
13 Aroclor 1254 a day being capable of contaminating a river
14 with PCBs?

15 A. No.

16 Q. If you could flip ahead to the third page of
17 this document.

18 MR. DIMURO: Page No. 3?

19 Q. (By Mr. Turet) Page No. 3 at the top of the
20 document. The last, the second to last paragraph on the
21 page that begins the organic division, states the organic
22 division which produces this series of very profitable
23 products has a concerted effort underway to protect
24 continued sales and uses. Do you have any understanding
25 of what concerted effort was underway as of September of

Page 73

Page 75

1 1969 to protect continued sales and uses of PCBs products?
 2 A. No.
 3 Q. Back in September of '69, did you agree with the
 4 statement that it is likely however that it will be found
 5 impossible to prevent losses to the environment of
 6 Aroclors 1254 and 1260 in some customer applications and
 7 that public and governmental pressures will lead to
 8 restrictions that cannot be met without discontinuing
 9 production and sales?

10 A. I had no involvement there, no.

11 Q. Dr. Keller, did you have any formal
 12 participation in the ad hoc committee of Monsanto that
 13 studied PCBs in 1969?

14 MR. DIMURO: I'll object to the form. You can
 15 answer it, Doctor.

16 A. I don't recall any committee being called ad hoc
 17 committee.

18 Q. (By Mr. Turet) Do you recall a committee
 19 comprised of Martin Ferrar, Paul Hodges, Edward John,
 20 William Richard, and Elmer Wheeler whose function was to
 21 study PCBs?

22 A. No, I do not know anything about that. Was not
 23 involved.

24 Q. Okay. Do you remember, Dr. Keller, a letter
 25 going out to certain functional fluids customers in March

1 came from.

2 MR. DIMURO: Right. But it's your statement
 3 that to the best of your knowledge these documents which
 4 do not have Bates numbers from this case were exhibits
 5 attached to those depositions which were produced to you
 6 by Monsanto.

7 MR. TURET: Produced by Monsanto or obtained
 8 from other sources, but attached to deposition
 9 transcripts.

10 MR. DIMURO: And, again, you mean obtained them
 11 from other sources. There were other depositions by
 12 Monsanto and you went to court reporters and obtained
 13 these?

14 MR. TURET: I believe that's correct.

15 MR. DIMURO: It's not from other sources other
 16 than those depositions that were identified by Monsanto?

17 MR. TURET: I don't believe so.

18 MR. DIMURO: Okay. To the extent they are, I
 19 would note that we have a document request that asks for
 20 documents which were obtained by you from other cases or
 21 from other depositions not cited on Monsanto to be
 22 produced to us. And I notice that you answered that
 23 interrogatory and our document request that there were no
 24 such documents.

25 MR. TURET: I want to see what the response was

Page 74

Page 76

1 of 1969 addressing the fact that PCBs had been identified
 2 in the environment?

3 A. No.

4 Q. Do you remember any written communications to
 5 customers about PCBs having been found in the environment?

6 A. No. We were a support function and we just
 7 simply didn't get involved with the business transactions.

8 MR. TURET: Let's mark this as Exhibit Keller
 9 14.

10 (Exhibit Keller 14 was marked for identification
 11 by the reporter.)

12 Q. (By Mr. Turet) Dr. Keller, I'm showing to you a
 13 document that's dated October 2nd, 1969 that's says,
 14 subject, report of Aroclor ad hoc committee. It's has
 15 Bates Nos. MONS 036720 to 732. Dr. Keller, have you ever
 16 seen this document before?

17 A. Repeat the last part of your sentence.

18 Q. Have you ever seen this document before?

19 MR. DIMURO: Are you going to represent this was
 20 also a deposition exhibit?

21 MR. TURET: I'll represent this as, with all of
 22 the others, I believe they all were, that are not Bates
 23 numbered with Bates numbers in this case, but I would need
 24 to go back and actually confirm where I got them from back
 25 at the office. I don't have an indication of where they

1 to be sure about that. But again, to the best of my
 2 knowledge, the answer is, yes, they all have come as
 3 attachments to deposition transcripts produced by
 4 Monsanto.

5 MR. DIMURO: Okay.

6 A. I have never seen this.

7 Q. (By Mr. Turet) Just very quickly, there are
 8 references, all the way towards the end, there is a
 9 statement that says up to this time, the coordination of
 10 the division effort has been principally the
 11 responsibility of W.R. Richard and E.P. Wheeler with
 12 support from R.E. Keller and Cumming Paton. Would you
 13 have agreed with that statement as it pertained to the
 14 study of PCB internally to Monsanto back in October of
 15 '69?

16 MR. DIMURO: Object to the form of the
 17 question.

18 A. I agree in that we were applied scientists with
 19 a support unit and to that extent, yes.

20 Q. (By Mr. Turet) Was there anyone other than
 21 William Richard, Elmer Wheeler, you, and Cumming Paton
 22 that you recall being involved in the investigation of PCB
 23 products and their discovery in the environment back in
 24 October?

25 MR. DIMURO: Object to the form of that

Page 77

Page 79

1 question.

2 Q. (By Mr. Turet) Back in October of '69?

3 A. Well, I think there was work being done at
4 Ruabon on biodegradability at that location. The name
5 would be Main Prize.

6 Q. That's the name of the individual?

7 A. Yes.

8 Q. Can you spell that?

9 A. M-A-I-N P-R-I-Z-E I guess

10 (Exhibit Keller 15 was marked for identification
11 by the reporter.)

12 Q. (By Mr. Turet) Okay. Dr. Keller, I'm going to
13 show you a document that's been marked as Keller 15. It's
14 bearing Bates Nos. MAE 023703 through 742. And it's
15 entitled outline PCB Environmental Pollution Abatement
16 Plan. Rough draft November 10, 1969.

17 (Mr. Coughlin exited the deposition room.)

18 Q. (By Mr. Turet) And the first question would
19 be: Have you seen this document before today? By the
20 way, I will represent to you, the second half of this
21 document consists of handwritten notes and attachments
22 which were stapled to the rest of it when the documents
23 were produced to us, but I'm not representing that this is
24 one entire document.

25 A. I haven't seen this.

Page 78

1 Q. Do you recall any discussion within Monsanto
2 back in November of 1969 at the possibility that direct
3 lawsuits could be filed against Monsanto as a result of
4 the PCB issue?

5 A. No.

6 Q. Do you recall any discussion within Monsanto
7 back in November of 1969 about the fact that all customers
8 using these products have not been officially notified
9 about known effects nor do the product labels carry this
10 information?

11 A. No.

12 MR. DIMURO: Are you reading from a certain
13 page, Craig?

14 MR. TURET: Yes, Page 5 at the top. Too late,
15 I'm on something else.

16 Q. (By Mr. Turet) Did you recall any discussion
17 within Monsanto about the global decision of whether to
18 cease manufacturing PCBs entirely versus taking some other
19 course of action back in November of 1969?

20 MR. DIMURO: I'll object to the form. You can
21 answer, Dr. Keller.

22 A. Answer is no.

23 Q. (By Mr. Turet) You don't remember any documents
24 that addressed that issue back in late 1969?

25 A. I don't recall any.

1 Q. And you don't recall any discussions with

2 Mr. Richard or anybody else within Monsanto about whether
3 PCBs should be continued to be manufactured by Monsanto?

4 MR. DIMURO: I'll object to the form. You can
5 answer.

6 A. I don't recall any.

7 Q. (By Mr. Turet) Do you recall any discussions
8 late 1969 in connection with this whole PCB environmental
9 pollution issue about the development of products to
10 replace the Aroclor products?

11 MR. DIMURO: Object to the form. Again, you can
12 answer, Dr. Keller.

13 A. Yes.

14 Q. (By Mr. Turet) Okay. What do you remember
15 about those discussions?

16 A. Well, I guess the one I remember is the
17 replacement product designated 1016, I believe, as an
18 Aroclor.

19 Q. Was that an Aroclor that was hoped to be
20 biodegradable?

21 A. More biodegradable, yes.

22 Q. Dr. Keller, back in November of 1969, did you
23 have occasion to attend any meetings of the corporate
24 development committee?

25 A. No.

Page 80

1 Q. What was the corporate development committee
2 back then to the best of your recollection?

3 A. I don't think I can tell you that. I don't
4 know.

5 MR. TURET: Let's mark this one as Keller 16

6 (Exhibit Keller 16 was marked for identification
7 by the reporter.)

8 Q. (By Mr. Turet) Dr. Keller, I'm going to show
9 you a document that has been marked Keller 16. It's
10 entitled the PCB Pollution Problem January 21 and 22,
11 1970, St. Louis Meeting with General Electric Company.

12 This is a document this has been Bates numbered in another
13 litigation PRR 022199 through 208. Dr. Keller, have you
14 seen this document before today?

15 A. Yes.

16 Q. And what is it?

17 A. It's a report on the meeting with General
18 Electric representatives relative to the Aroclor product
19 overall picture I guess.

20 Q. And this was a meeting that took place on
21 January 21st and 22nd of 1970?

22 A. That's what the report says, yes.

23 Q. Do you remember a meeting with the GE
24 representatives at the very beginning of 1970?

25 A. Do I remember what?

Page 81

Page 83

1 Q. Do you remember a meeting taking place with the
 2 GE representatives at the beginning of 1970?
 3 A. Frankly, that's vague in my mind.
 4 Q. Okay. Do you remember meetings with any
 5 customers that involved Mr. Papagorge, Mr. Bergen,
 6 Dr. Munch, you, and Scott Tucker, Mr. Wheeler, and others?
 7 MR. DIMURO: Objection to form.
 8 A. I don't recall any of those meetings.
 9 Q. (By Mr. Turet) Did you ever have occasion to
 10 meet with Edward Raab, R-A-A-B, of GE at any time that you
 11 can recall specifically?
 12 A. Not that I recall.
 13 Q. If you would flip ahead to the page, I guess
 14 it's Page No. 8 at the top, Paragraph 12, I'm going to ask
 15 you if you agree or disagree with the statement as of
 16 January of 1970 that quotes there is no evidence of
 17 natural sources of PCBs nor any source other than
 18 industrially-produced and used. Did you understand my
 19 question?
 20 A. Yes. I guess I would agree with that.
 21 Q. As of January of 1970?
 22 A. Uh-huh.
 23 Q. And how about Paragraph 21?
 24 MR. DIMURO: Was that a question? You asked,
 25 you said as of January and he didn't respond.

1 recognize, sir?
 2 A. Yes.
 3 Q. And is it one that you authored back on April
 4 28th of 1970?
 5 A. Yes.
 6 Q. What is it exactly?
 7 A. This is a program by the analytical group
 8 directed toward research on various aspects of the PCB
 9 problem and development of a further study of Aroclor
 10 products.
 11 Q. Okay. There is a listing of teams, Roman
 12 Numeral I, II, and III. Does that have anything to do
 13 with the breakdown that you described earlier today of an
 14 analytical chemistry group, a physical chemistry group,
 15 instrument development group, and so forth?
 16 A. Yes, that would fit.
 17 Q. Okay. Which team is Team No. I?
 18 A. That's the analytical with Tucker.
 19 Q. So Tucker, Litschgi and Westenberger?
 20 A. Yes.
 21 Q. And is that the analytical chemistry?
 22 A. Uh-huh.
 23 Q. Team II, headed by Emery?
 24 A. Emery.
 25 Q. Which team is that?

Page 82

Page 84

1 MR. TURET: He said uh-huh. Was that a yes?
 2 THE WITNESS: Yes.
 3 Q. (By Mr. Turet) Paragraph 21 says Monsanto
 4 Company is convinced that analytical techniques and data
 5 from some laboratories investigating PCBs are reliable and
 6 that conclusions being formulated are valid. Did you
 7 agree with that as of January of 1970?
 8 MR. DIMURO: Object to the form.
 9 A. Some laboratories, yes.
 10 Q. (By Mr. Turet) And are there any laboratories
 11 other than the ones that you've already pointed out in
 12 documents previously as of January 1970 that were reliable
 13 and had reached these conclusions that PCBs were present
 14 in the environment?
 15 MR. DIMURO: Object to the form.
 16 A. Not that I recall.
 17 Q. (By Mr. Turet) Okay.
 18 MR. DIMURO: I'm going to take a quick break.
 19 (Exhibit Keller 17 was marked for identification
 20 by the reporter.)
 21 (A short break was taken.)
 22 Q. (By Mr. Turet) Dr. Keller, I'm showing you a
 23 document that's been marked as Keller 17. It has Bates
 24 Nos. MAE 053978 dash 984, dated April 28, 1970. Aroclor
 25 Analytical Program. Is this a document that you

1 A. At that point, this would be the physical
 2 chemistry group.
 3 Q. And how about Team III headed by Dietrich?
 4 A. That would be the spectroscopy group.
 5 (Mr. Coughlin re-entered the deposition room.)
 6 Q. (By Mr. Turet) Now, under that Team III,
 7 there's a reference to regulatory agency work in
 8 parentheses dioxin. What did that refer to?
 9 A. I can't provide any specifics on just what was
 10 to be covered with that regulatory agency work.
 11 Q. Do you remember any work done by those who were
 12 under you back in 1970 that related to dioxins?
 13 A. Well, there was one point where Aroclor products
 14 were examined for dioxin type products. And to my best
 15 knowledge, none was ever found.
 16 Q. Was that work that, an examination that was
 17 taking place within Monsanto or by someone outside of
 18 Monsanto?
 19 A. In Monsanto.
 20 Q. Do you know if subsequent studies were done by
 21 others outside of Monsanto to determine whether dioxins
 22 were present in the Aroclor products?
 23 MR. DIMURO: I'll object to the form.
 24 A. I don't know of any, no.
 25 Q. (By Mr. Turet) Now, in this, in the attachments

Page 85

Page 87

1 to this document that's been marked as Keller 17, there
2 appear to be handwritten assignments of actions to
3 particular teams. But on the first page, there's an
4 objective listed of informing customers of the PCB problem
5 and the importance of preventing environmental pollution
6 both at their plants or by their products. That one
7 doesn't seem to have a team assigned to it. Do you know
8 why?

9 A. Well, it's my best recollection that these
10 objectives are objectives developed by and out of the
11 business group. And we are trying to relate to those
12 objectives with an action plan for the analytical work
13 needed for the business group to accomplish their own
14 objectives. So these would not be objectives by our own
15 groups. These would be by the business unit.

16 Q. So in other words, some of the objectives are to
17 be met by other groups outside --

18 A. Of the business group, yeah. Whatever the
19 business group wanted to do to assign it out. We were
20 attempting to identify what we would be doing relative to
21 their objectives. And that's the reason for actions on
22 our part.

23 (Exhibit Keller 18 was marked for identification
24 by the reporter.)

25 Q. (By Mr. Turet) Okay. Okay. Dr. Keller, I'm

1 Q. Or conversations?

2 A. No conversations.

3 Q. And to the best of your recollection, you've
4 never been out to Armstrong's facilities in Lancaster,
5 Pennsylvania?

6 A. Never been there.

7 Q. Have you ever talked to anybody within Monsanto
8 about communications with Armstrong?

9 A. No.

10 MR. TURET: Okay. I have no further questions
11 at this time.

12 MR. DIMURO: Susan?

13 MS. KARLOVICH: No questions for me, thank you.

14 MR. DIMURO: Brian?

15 MR. O'CONNOR: No questions.

16 MR. TURET: Okay.

17 MR. DIMURO: I want to take a short break. I
18 might have some questions.

19 (A short break was taken.)

20 MR. DIMURO: I don't have any questions.
21
22
23
24
25

Page 86

Page 88

1 going to show you a document that's been marked as Keller
2 18. It's Bates Nos. MAE 054039, it's an October 13, 1970
3 memo from Elmer Wheeler to William Richard with you and
4 others as a recipient. Have you seen that document before
5 today, Dr. Keller?

6 A. I'm sure I did. My name is on it. I guess
7 that's a yes.

8 Q. Do you remember the publication concerning the
9 findings of PCBs in human fat?

10 A. I do not remember the publication that Elmer
11 Wheeler is referring to in this memo.

12 Q. Do you remember a publication back in the mid to
13 late 1970 time frame that reflected the findings of PCBs
14 in human fat?

15 A. No.

16 Q. Do you remember being asked by Mr. Wheeler or
17 Mr. Papageorge to review the analytical techniques and
18 chromatograms as they related to the findings of PCBs in
19 human fat?

20 A. No.

21 MR. DIMURO: Objection. Form.

22 Q. (By Mr. Turet) Dr. Keller, have you ever had
23 any meetings or conversations with representatives of
24 Armstrong World Industries, Inc.?

25 A. I can't recall any meeting, no.

NOTARIAL CERTIFICATE

2 STATE OF MISSOURI)
3 CITY OF ST. LOUIS)
4

5 I, Tammie A. St. Arbor, Certified Shorthand Reporter
6 and a duly commissioned Notary Public within and for the
7 States of Missouri and Illinois, do hereby certify that
8 there came before me at the offices of Taylor*Schroeder
9 Reporting & Video, 7494 Ethel Avenue, St. Louis, Missouri,

10 ROBERT KELLER,

11 who was by me first duly sworn to tell the truth and
12 nothing but the truth of all the knowledge touching and
13 concerning the matters in controversy in this cause, that
14 the witness was thereupon carefully examined under oath
15 and said examination was reduced to writing by me; and
16 that this deposition is a true and correct record of the
17 testimony given by the witness.

18 I further certify that I am neither attorney nor
19 counsel for nor related nor employed by any of the parties
20 to the action in which this deposition is taken; further
21 that I am not a relative or employee of any attorney or
22 counsel employed by the parties hereto or financially
23 interested in this action.

24 IN WITNESS WHEREOF, I have hereunto set my hand and
25 seal this 21st day of July, 1998.

26 Tammie A. St. Arbor, CSR

Page 89

1 STATE OF MISSOURI)
2 CITY OF ST. LOUIS)

3

4

5 I, ROBERT KELLER, do hereby certify:

6 That I have read the foregoing deposition;

7 That I have made such changes in form and/or
8 substance to the within deposition as might be necessary
9 to render the same true and correct;

10 That having made such changes thereon, I hereby
11 subscribe my name to the deposition.

12 I declare under penalty of perjury that the
13 foregoing is true and correct.

14

15 Executed this day of ,
16 19 , at

17

18

19

20 _____
ROBERT KELLER

21

22 My Commission Expires: _____

23 Notary Public: _____

24 Signature Page to Mr. Dimuro _____

25 Witness Letter Sent to Mr. Dimuro _____

Page 90

1 Taylor * Schroeder Reporting & Video
2 7494 Ethel Avenue
3 St. Louis, Missouri 63117
4 Phone (314) 644-2191

5 July 21, 1998
6

7 Mr. Christopher DiMuro, Esq.
8 Latham & Watkins
9 One Newark Center
Newark, New Jersey 07101-3174

10 RE: Maertin, et al. vs. Armstrong, Monsanto & American
Mineral Spirits

11 Dear Mr. DiMuro:

12 Please find enclosed your copies of the deposition of
13 Robert Keller taken on June 23, 1998 in the
14 above-referenced case. Also enclosed is the original
signature page and errata sheets.

15 Please have the witnesses read your copies of the
16 transcript, indicate any changes and/or corrections
17 desired on the errata sheets, and sign the signature page
before a notary public.

18 Please return the errata sheets and notarized signature
19 page to Mr. Craig Turek for filing with the court prior to
trial.

20 Sincerely,

21 Tammy A. St. Arbor, CSR

22 Enclosures

23 cc: Mr. Turek
24 Mr. O'Connor
25 Ms. Karlovich
File

-1-			053006-008 [1] 1:15			1954 [1] 7:8			21 [6] 46:11 61:21 80:10 81:23 82:3 90:5			-7-		
'49 [1] 6:19			053515 [2] 1:11 44:2			1955 [1] 10:14			21st [2] 80:21 88:17			7 [5] 1:6 1:12 46:6 46:7 46:10		
'50 [1] 6:22			053518 [2] 1:10 42:18			1956 [1] 11:10			22 [1] 80:10			71 [1] 1:18		
'51 [3] 6:15 6:22 6:22			053634 [1] 48:12			1960 [2] 21:6 21:15			22nd [1] 80:21			732 [1] 74:15		
'56 [2] 7:11 11:19			053636 [1] 1:9			1960's [2] 20:22 24:1			23 [1] 90:13			74 [1] 1:19		
'60's [4] 23:4 23:4 23:16 23:23			05364 [1] 1:13			1962 [1] 11:11			23rd [1] 2:13			742 [1] 77:14		
'62 [1] 11:19			053933 [1] 39:7			1963 [1] 12:15			247 [1] 71:17			7494 [3] 2:16 88:7 90:2		
'65 [2] 68:8 68:10			053933-35 [1] 1:8			1965 [1] 68:4			26th [1] 39:7			77 [1] 1:20		
'66 [1] 68:11			053978 [1] 82:24			1966 [15] 12:15 20:17 24:9 24:13 24:22 25:1 25:5			27 [3] 41:5 64:10 64:14			-8-		
'67 [15] 19:4 19:5 21:12 26:10 27:6 31:20 38:9 41:20 41:21 54:21 56:7 60:4 61:7 61:21 62:3			053978-984 [1] 1:22			1967 [29] 13:20 19:13 19:23 24:24 25:6 25:9 26:6 28:14 28:20 29:8 29:22 30:3 30:8 30:17 39:7 39:11 39:19 40:5 40:9 40:13 40:24 41:5 51:11 56:10 59:22 60:15 61:13 61:22 62:7			27401 [1] 3:17			8 [5] 1:13 48:8 48:9 48:12 81:14		
'68 [6] 27:25 54:21 63:7 64:3 64:11 64:14			054039 [2] 1:23 86:2			1968 [13] 27:6 27:11 28:25 42:18 43:1 46:11 51:7 62:21 63:2 63:9 63:20 63:25 64:21			28 [2] 34:25 82:24			80 [1] 1:21		
'69 [15] 19:4 21:13 27:25 28:25 38:5 51:1 51:7 53:9 54:15 56:8 56:9 65:10 73:3 76:15 77:2			07101-3174 [1] 90:8			1969 [27] 13:21 15:2 27:14 38:6 48:13 50:1 51:19 51:22 54:12 55:24 56:17 56:24 65:13 65:14 67:23 71:15 73:1 73:13 74:1 74:13 77:16 78:2 78:7 78:19 78:24 79:8 79:22			28th [2] 65:14 83:4			82 [1] 1:22		
'70 [2] 19:9 19:22			07101-3474 [1] 3:14			1970 [24] 15:2 19:14 19:23 27:16 28:14 29:8 29:22 30:3 30:8 30:17 31:23 80:11 80:21 80:24 81:2 81:16 81:21 82:7 82:12 82:24 83:4 84:12 86:2 86:13			2nd [2] 62:7 74:13			85 [1] 1:23		
'70's [1] 16:5			07102-5311 [1] 3:10			1971 [1] 31:14			3 [8] 1:8 39:2 39:3 39:6 50:1 69:5 72:18 72:19			892 [1] 57:24		
'71 [2] 19:10 19:22			08054 [1] 3:6			1972 [2] 17:5 32:1			3/3/69 [1] 1:14			-9-		
'86 [1] 17:19			-1-			1973 [1] 17:8			3/5/69 [1] 58:16			9 [6] 1:14 49:21 49:22 49:25 50:15 63:25		
'89 [2] 17:8 17:19			1 [6] 1:6 6:1 6:2 6:5 6:9 6:14			1974 [1] 18:12			30 [1] 64:3			984 [1] 82:24		
'91 [1] 18:12			10 [5] 1:15 55:2 55:3 55:6 77:16			1975 [1] 18:12			300 [1] 3:16			-A-		
-0-			101 [1] 3:5			1976 [1] 18:12			3000 [1] 3:5			Abatement [1] 77:15		
008 [1] 55:7			1016 [1] 79:17			1977 [1] 18:12			31 [2] 42:18 65:8			ability [1] 28:5		
017390 [2] 1:7 32:18			11 [4] 1:16 57:17 57:18 57:21			1978 [1] 18:12			314 [1] 90:3			able [6] 11:6 26:10 31:11 55:22 55:25 68:10		
021890 [1] 57:23			11/12/97 [1] 55:11			1979 [1] 18:12			32 [1] 1:7			above-referenced [1] 90:13		
021890-892 [1] 1:16			12 [4] 1:17 65:4 65:5 81:14			1980 [1] 18:12			35 [1] 39:7			absolute [1] 21:11		
022199 [1] 80:13			12/2/68 [1] 44:11			1981 [1] 16:17			39 [1] 1:8			absolutely [1] 22:19		
022199-208 [1] 1:21			1254 [2] 72:13 73:6			1982 [1] 17:8			4 [6] 1:3 1:9 41:1 41:4 70:18 70:23			acceptable [1] 5:6		
023422 [1] 65:8			1260 [1] 73:6			1983 [1] 17:8			41 [1] 1:9			accommodate [2] 5:16 34:14		
023422-31 [1] 1:17			13 [5] 1:18 71:10 71:11 71:14 86:2			1984 [1] 17:8			42 [1] 1:10			accomplish [1] 85:13		
023703 [1] 77:14			13th [1] 61:7			1985 [2] 17:5 32:1			43 [1] 1:11			accurate [4] 49:10 49:15 49:18 59:19		
023703-742 [1] 1:20			14 [3] 1:19 74:9 74:10			1986 [1] 17:8			46 [1] 1:12			accurately [2] 4:25 28:9		
025243 [1] 71:16			1400 [1] 3:17			1987 [1] 17:8			48 [1] 1:13			acquired [1] 39:20		
025243-247 [1] 1:18			15 [3] 1:20 77:10 77:13			1988 [4] 2:13 88:17 90:5 90:13			49 [1] 1:14			action [6] 2:5 63:21 78:19 85:12 88:14 88:15		
02849 [1] 2:6			16 [4] 1:21 80:5 80:6 80:9			1989 [1] 18:7			5 [5] 1:10 42:13 42:14 42:17 78:14			actions [3] 45:15 85:2 85:21		
036720 [1] 74:15			17 [4] 1:22 82:19 82:23 85:1			1990 [1] 18:7			5460 [3] 64:12 64:16 64:19			activities [1] 15:25		
036720-732 [1] 1:19			18 [4] 1:23 48:13 85:23 86:2			1991 [2] 18:7 18:17			55 [1] 1:15			actual [2] 28:5 49:12		
050542 [2] 1:12 46:13			19 [1] 89:16			1992 [1] 18:7			57 [1] 1:16			ad [3] 73:12 73:16 74:14		
051020 [1] 1:12			19103-7396 [1] 3:21			1993 [1] 18:7			5th [1] 65:13			ADC [1] 16:1		
051029 [1] 46:13			1950 [1] 6:14			1994 [1] 18:7			6 [5] 1:11 43:22 43:23 44:1 50:9			add [3] 27:19 43:21 65:23		
053006 [1] 55:7			1950's [2] 9:18 10:5			1995 [1] 18:7			6/5/69 [1] 65:23			added [2] 15:23 16:10		
			1951 [1] 6:14			1996 [1] 18:7			63117 [1] 90:2			adding [1] 28:12		
			1952 [2] 7:2 7:20			1997 [1] 18:7			644-2191 [1] 90:3					
						1998 [1] 18:7			65 [1] 1:17					
						2 [5] 1:7 32:12 32:13 32:16 55:11			-6-					
						2/13/68 [2] 62:23 62:24								
						208 [1] 80:13								

additional [1] 26:3	41:15 42:3 42:12	85:2	beginning [2] 80:24	broke [1] 67:4
address [2] 45:9	43:20 49:17 51:24	assisted [1] 10:11	81:2	brought [1] 26:20
71:21	52:2 52:3 52:10	associated [1] 40:15	begins [2] 49:3	Brussels [2] 34:20
addressed [3] 44:21	52:13 53:23 53:24	assume [5] 44:17	72:21	41:6
59:8 78:24	54:5 54:6 56:2	47:4 59:17 62:10	behalf [1] 4:9	Bs [2] 6:12 46:5
addresses [1] 47:2	56:9 56:15 56:19	68:10	bell [1] 72:6	Buchanan [5] 32:19
addressing [1] 74:1	60:25 67:6 68:23	Atrium [2] 3:5	below [2] 43:15	34:1 39:8 60:16
advanced [1] 29:4	70:17 73:15 76:2	3:5	64:3	61:3
afternoon [1] 2:15	78:21 78:22 79:5	attached [8] 1:24	benefit [2] 28:4	building [1] 14:1
afterwards [1] 4:4	79:12	5:25 33:4 33:8	51:6	built [1] 18:12
again [11] 10:23	answered [1] 75:22	34:23 58:5 75:5	Benignus [3] 9:25	business [13] 9:21
11:19 14:14 21:9	anyway [1] 7:17	75:8	10:2 39:12	20:3 24:5 35:8
39:22 64:13 69:25	apart [2] 17:25 21:19	attachment [3] 47:8	Bergen [1] 81:5	37:11 43:3 43:5
70:1 75:10 76:1	apparatus [1] 45:17	47:10 71:19	best [23] 5:1 17:12	74:7 85:11 85:13
against [1] 78:3	apparent [1] 12:21	attachments [3] 76:3	19:2 19:9 24:22	85:15 85:18 85:19
age [1] 4:9	appear [4] 31:1	77:21 84:25	27:23 30:13 31:25	
agency [2] 84:7	50:21 71:18 85:2	attempting [1] 85:20	32:2 35:6 35:23	-C-
84:10	appeared [1] 30:21	attend [2] 66:20	38:22 48:3 59:21	C [1] 3:1
ago [3] 4:15 53:21	applications [2] 14:4 73:6	79:23	59:24 64:20 67:21	California [6] 50:23
63:14	applied [12] 15:3	attorney [2] 88:13	75:3 76:1 80:2	51:23 53:2 54:14
agree [7] 69:17 71:8	15:8 15:16 16:16	88:14	84:14 85:9 87:3	54:17 70:12
73:3 76:18 81:15	16:19 16:23 16:24	audio [1] 15:25	better [7] 21:23	cannot [1] 73:8
81:20 82:7	16:25 17:3 44:20	August [1] 71:15	37:10 45:16 45:24	capability [4] 29:24
agreed [2] 4:1	45:5 76:18	author [1] 42:24	55:23 55:25 56:13	53:7 54:2 56:4
76:13	apportioned [1] 11:20	authored [1] 83:3	between [7] 2:13	capable [2] 29:20
ahead [5] 43:20	appreciate [1] 26:14	available [5] 5:11	4:1 11:10 12:15	72:13
55:19 62:20 72:16	approached [1] 40:15	6:21 25:18 37:2	17:19 26:15 63:7	capacitor [1] 40:10
81:13	April [3] 65:14	68:20	beyond [2] 31:11	care [1] 15:16
air [3] 29:17 30:8	82:24 83:3	Avenue [3] 2:16	61:4	carefully [1] 88:10
30:10	aquatic [2] 35:25	88:7 90:2	Bill [2] 46:4 55:10	Carolina [1] 3:17
al [3] 2:4 2:23	36:1	aware [4] 39:11	biodegradability [1] 77:4	carry [1] 78:9
90:10	Arbor [5] 2:17	39:17 45:1 47:13	biodegradable [2] 79:20 79:21	case [9] 4:17 9:23
all-embracing [1] 43:17	4:4 88:5 88:20		biphenyl [2] 57:3	32:24 54:23 55:24
alone [2] 22:15	90:21	-B-	60:17	56:10 74:23 75:4
52:4	area [5] 7:4 13:14	B [1] 45:19	biphenyls [4] 39:15	90:13
along [2] 16:14	15:15 28:1 55:18	background [2] 5:22	40:16 57:24 58:17	cases [3] 17:22
36:19	areas [1] 17:12	37:14	birds [1] 36:1	17:23 75:20
American [3] 2:9	arm [2] 10:4 10:4	Barrett [1] 66:21	bit [1] 10:19	cc [1] 90:23
2:24 90:10	Armstrong [1] 90:10	based [6] 22:9	black [2] 52:2	cease [1] 78:18
among [1] 11:20	Armstrong [5] 2:6	52:1 59:19 68:7	54:20	center [7] 3:10
analysis [1] 24:4	2:23 4:16 86:24	68:13 69:19	blank [1] 59:7	3:14 18:8 18:11
analytical [32] 6:25	Armstrong's [1] 87:4	Bates [38] 1:7	board [1] 44:25	18:15 18:16 90:8
7:4 7:10 7:14	Aroclor [17] 39:15	1:8 1:9 1:10	Bob [2] 44:12 44:18	certain [7] 2:19
8:13 10:24 13:18	44:14 45:15 45:23	1:11 1:12 1:13	bombards [1] 22:21	17:9 35:25 54:11
14:1 14:11 14:15	48:24 64:12 64:16	1:15 1:16 1:17	book [1] 54:22	71:1 73:25 78:12
15:19 16:14 19:6	72:13 74:14 79:10	1:18 1:19 1:20	bottom [5] 44:9	certainly [3] 9:20
19:7 19:8 19:11	79:18 79:19 80:18	1:21 1:22 1:23	50:2 58:11 62:6	36:9 66:19
24:11 37:9 37:14	82:24 83:9 84:13	32:17 32:25 39:6	buy [2] 25:16	CERTIFICATE [1] 88:1
41:11 41:24 42:1	84:22	42:18 44:1 46:12	26:3	Certified [2] 2:17
45:5 49:7 82:4	Aroclors [3] 65:9	46:13 48:12 55:7	break [9] 5:15	88:5
82:25 83:7 83:14	70:25 73:6	57:22 58:3 65:7	21:19 47:17 47:18	certify [3] 88:6
83:18 83:21 85:12	Arpino [1] 34:20	71:16 71:18 74:15	67:3 82:18 82:21	88:13 89:5
86:17	article [1] 43:8	74:22 74:23 75:4	87:17 87:19	challenge [1] 54:9
analytically [1] 17:12	asks [1] 75:19	77:14 80:12 82:23	breakdown [1] 83:13	chance [1] 71:22
analyze [2] 55:22	aspects [1] 83:8	86:2	Brian [2] 3:4	change [5] 9:2
56:1	assessing [1] 37:10	battle [1] 41:10	87:14	10:9 17:4 27:6
analyzing [1] 29:6	assign [1] 85:19	Baxter [4] 62:22	brief [1] 5:23	31:14
answer [47] 4:24	assigned [2] 11:24	62:22 62:25 63:7	14:11	changed [1] 31:17
5:5 20:25 21:3	85:7	bearing [1] 77:14	briefly [2] 6:11	changes [3] 89:7
21:10 22:4 23:19	assignment [1] 10:11	became [9] 9:2	Britain [1] 69:6	89:10 90:15
24:14 24:17 27:7	assignments [4] 10:15 34:12 48:5	12:24 13:20 15:3	broad [1] 16:1	chemical [8] 8:8
28:22 29:1 29:10		15:12 16:14 16:19		8:14 11:1 13:19
29:18 31:9 33:13		19:6 19:18		22:22 24:5 39:14
33:20 39:23 40:18		become [3] 10:17		
		12:16 25:14		

59:5	chemicals [14] 7:3	7:5 7:12 7:22	7:23 10:3 15:10	15:11 15:12 15:13	17:1 20:23 65:8	65:24	chemist [9] 6:23	7:4 7:21 8:11	9:7 9:10 10:14	44:25 45:4	chemistry [26] 6:13	7:5 7:25 8:1	9:16 9:17 9:23	10:22 13:16 13:18	13:19 14:2 14:2	14:12 14:13 14:17	15:19 15:20 15:25	37:14 45:5 62:1	83:14 83:14 83:21	84:2	chemists [1] 69:18	chickens [1] 44:14	chlorinated [6] 39:15	40:15 57:3 57:24	58:17 60:17	chose [1] 17:1	Christopher [2] 3:13	90:7	chromatograms [1] 86:18	chromatograph [8] 21:18 22:12 23:5	23:24 25:20 25:23	26:8 67:24	chromatography [3] 22:8 23:11 23:12	chronological [3] 57:25 58:19 58:25	circulated [1] 36:12	circulation [2] 66:11	66:16	cited [1] 75:21	CITY [2] 88:3	89:2	Civil [1] 2:5	clarification [1] 68:14	clarify [4] 24:7	25:15 30:6 66:21	clients [1] 15:14	close [1] 49:12	closer [1] 38:8	column [3] 22:10	22:11 22:12	combination [1] 12:3	combined [1] 67:24	comfortable [1] 52:22	coming [1] 51:8	comment [5] 10:7	49:13 49:13 61:3	61:17	commented [1] 14:20	comments [3] 40:14	57:11 57:12	commercially-produced [1] 50:20	Commission [1] 89:22	commissioned [1] 88:5	committee [7] 73:12	73:16 73:17 73:18	74:14 79:24 80:1	commonly [1] 23:13	communicated [4] 35:16 35:18 39:12	60:22	communication [6] 41:5 41:10 41:23	48:13 63:19 64:7	communications [3] 62:21 74:4 87:8	company [16] 2:9	2:10 2:24 2:25	12:10 15:10 15:13	17:1 39:20 59:23	59:24 59:25 60:4	60:9 80:11 82:4	competent [1] 25:14	compile [1] 58:25	completed [1] 67:5	complex [1] 25:12	components [4] 8:19	22:9 22:14 22:22	composition [1] 12:10	compounds [2] 53:1	54:13	comprised [1] 73:19	computer [4] 15:25	27:21 27:23 28:12	computerization [1] 28:2	computerized [3] 27:20 27:22 28:6	conceive [1] 50:19	concerning [2] 86:8	88:10	concerted [2] 72:23	72:25	conclusions [3] 68:21	82:6 82:13	conclusively [1] 51:11	confident [1] 47:25	confidential [1] 63:25	confirm [7] 52:25	53:8 53:16 54:2	54:12 69:8 74:24	confirmed [7] 60:17	62:17 69:3 69:15	69:17 70:7 70:15	confirms [3] 61:23	62:4 62:5	confusion [1] 54:8	connected [1] 25:20	connection [3] 17:21	42:6 79:8	consisted [1] 54:15	consistent [4] 15:9	17:3 60:18 60:21	consists [1] 77:21	constants [2] 8:7	9:19	consultant [2] 17:7	17:18	consulting [3] 17:8	18:2 18:20	contact [2] 38:23	61:14	contacted [1] 35:6	contained [1] 53:17	contaminating [1] 72:13	continue [5] 13:10	27:10 27:13 28:17	57:5	continued [4] 27:17	72:24 73:1 79:3	continues [1] 57:5	continuing [1] 54:25	Continuous [1] 31:24	contractor [1] 18:7	control [1] 55:21	controversy [2] 51:19	88:10	conversations [3] 86:23 87:1 87:2	convinced [1] 82:4	coordination [1] 76:9	copies [2] 90:12	90:15	copy [2] 6:5 61:2	Cornell [1] 70:13	corner [1] 55:15	corporate [2] 79:23	80:1	corporation [1] 15:9	correct [13] 18:5	19:16 20:8 20:20	33:2 33:10 38:14	43:18 49:8 75:14	88:11 89:9 89:13	correction [1] 19:16	corrections [1] 90:15	correctly [2] 44:13	53:14	correlates [1] 33:17	correspondence [2] 35:3 58:17	Coughlin [5] 3:15	46:3 47:6 77:17	84:5	counsel [4] 4:2	4:2 88:13 88:15	counterpart [1] 20:6	couple [2] 10:9	52:24	course [1] 78:19	court [6] 2:1 2:20	5:9 26:14 75:12	90:18	cover [1] 34:22	covered [2] 57:22	84:10	covering [1] 66:19	Craig [4] 3:20	4:14 78:13 90:18	created [1] 5:10	CSR [3] 4:4 88:20	90:21	Cumming [4] 42:19	42:24 76:12 76:21	Cumming's [1] 42:25	curiosity [1] 31:13	curriculum [1] 6:8	curves [1] 69:25	customer [3] 45:16	45:24 73:6	customers [8] 57:4	57:7 57:8 73:25	74:5 78:7 81:5	85:4	cutting [1] 10:18	CV [3] 1:6 6:6	18:17	-D-	D [6] 32:19 34:23	39:8 60:16 60:18	60:22	D.V.N [3] 34:9	62:12 67:22	dash [4] 39:7 65:9	71:17 82:24	data [3] 42:7 42:11	82:4	date [6] 61:7 65:10	65:12 65:18 65:20	65:22	dated [3] 44:11	74:13 82:24	dates [2] 59:18 60:11	Dave [3] 41:6 42:7	42:11	DDT [3] 31:5 31:7	50:20	deal [1] 24:5	Dear [1] 90:11	debate [1] 49:9	deceased [2] 45:8	63:14	December [3] 32:18	59:6 64:3	decision [2] 24:20	78:17	declare [1] 89:12	defendant [1] 4:17	Defendant/American [1] 3:7	Defendant/Armstrong [2] 3:19 4:10	Defendant/Monsanto [1] 3:12	Defendants [2] 2:25	4:2	definitely [1] 68:9	DeGarmel [1] 19:21	degree [1] 6:15	degrees [1] 6:13	department [14] 6:25	7:6 7:24 7:25	8:2 8:23 12:12	35:7 43:2 43:3	61:25 63:13 63:20	71:16	departure [1] 38:21	deposed [1] 4:17	deposes [1] 4:10	deposition [27] 2:12	4:3 18:5 33:4	33:8 46:3 46:17	47:6 47:12 47:19	50:3 50:5 55:10	58:6 58:7 71:20	74:20 75:8 76:3	77:17 84:5 88:11	88:14 89:6 89:8	89:11 90:12	depositions [4] 75:5	75:11 75:16 75:21	describe [1] 35:2	described [7] 9:19	10:1 14:18 15:8	60:19 66:15 83:13	describing [1] 38:20	DESCRIPTION [1] 1:5	design [1] 13:25	designated [1] 79:17	designations [1] 50:8	desired [1] 90:16	detail [4] 39:1	59:16 69:5 72:7	determine [6] 9:18	12:10 20:22 21:6	51:11 84:21	determining [1] 8:16	develop [3] 8:12	18:10 20:4	developed [4] 11:2	11:6 14:3 85:10	developing [2] 10:23	19:10	development [20] 7:1 7:8 7:10	7:24 8:24 10:24	10:25 14:3 14:14	14:19 14:20 15:20	43:2 44:20 55:18	79:9 79:24 80:1	83:9 83:15	Dicker [1] 3:9	Diego [1] 70:13
------	--------------------	---------------	-----------------	-------------------	-----------------	-------	------------------	---------------	----------------	------------	---------------------	--------------	----------------	-------------------	-----------------	-------------------	-------------------	-----------------	-------------------	------	--------------------	--------------------	-----------------------	------------------	-------------	----------------	----------------------	------	-------------------------	------------------------------------	-------------------	------------	-------------------------------------	-------------------------------------	----------------------	-----------------------	-------	-----------------	---------------	------	---------------	-------------------------	------------------	------------------	-------------------	-----------------	-----------------	------------------	-------------	----------------------	--------------------	-----------------------	-----------------	------------------	------------------	-------	---------------------	--------------------	-------------	---------------------------------	----------------------	-----------------------	---------------------	-------------------	------------------	--------------------	------------------------------------	-------	------------------------------------	------------------	------------------------------------	------------------	----------------	-------------------	------------------	------------------	-----------------	---------------------	-------------------	--------------------	-------------------	---------------------	------------------	-----------------------	--------------------	-------	---------------------	--------------------	-------------------	--------------------------	-----------------------------------	--------------------	---------------------	-------	---------------------	-------	-----------------------	------------	------------------------	---------------------	------------------------	-------------------	-----------------	------------------	---------------------	------------------	------------------	--------------------	-----------	--------------------	---------------------	----------------------	-----------	---------------------	---------------------	------------------	--------------------	-------------------	------	---------------------	-------	---------------------	------------	-------------------	-------	--------------------	---------------------	-------------------------	--------------------	-------------------	------	---------------------	-----------------	--------------------	----------------------	----------------------	---------------------	-------------------	-----------------------	-------	-----------------------------------	--------------------	-----------------------	------------------	-------	-------------------	-------------------	------------------	---------------------	------	----------------------	-------------------	------------------	------------------	------------------	------------------	----------------------	-----------------------	---------------------	-------	----------------------	-------------------------------	-------------------	-----------------	------	-----------------	-----------------	----------------------	-----------------	-------	------------------	--------------------	-----------------	-------	-----------------	-------------------	-------	--------------------	----------------	------------------	------------------	-------------------	-------	-------------------	-------------------	---------------------	---------------------	--------------------	------------------	--------------------	------------	--------------------	-----------------	----------------	------	-------------------	----------------	-------	-----	-------------------	------------------	-------	----------------	-------------	--------------------	-------------	---------------------	------	---------------------	-------------------	-------	-----------------	-------------	-----------------------	--------------------	-------	-------------------	-------	---------------	----------------	-----------------	-------------------	-------	--------------------	-----------	--------------------	-------	-------------------	--------------------	----------------------------	-----------------------------------	-----------------------------	---------------------	-----	---------------------	--------------------	-----------------	------------------	----------------------	---------------	----------------	----------------	-------------------	-------	---------------------	------------------	------------------	----------------------	---------------	-----------------	------------------	-----------------	-----------------	-----------------	------------------	-----------------	-------------	----------------------	-------------------	-------------------	--------------------	-----------------	-------------------	----------------------	---------------------	------------------	----------------------	-----------------------	-------------------	-----------------	-----------------	--------------------	------------------	-------------	----------------------	------------------	------------	--------------------	-----------------	----------------------	-------	-------------------------------	-----------------	------------------	-------------------	------------------	-----------------	------------	----------------	-----------------

diet [1] 71:2	79:15	35:7 35:13 35:19	Electric [2] 80:11	20:5 58:17
Dietrich [2] 15:1	disposal [1] 57:5	35:19 35:19 36:6	80:18	Ethel [3] 2:16
84:3	distillation [1] 22:10	36:6 36:7 36:22	eleven [1] 13:7	88:7 90:2
differ [1] 13:23	distinguished [1] 14:13	36:25 36:25 37:4	Elmer [9] 35:7	evaluate [3] 41:25
differed [1] 12:17	distribution [1] 55:12	37:6 37:13 37:18	36:19 46:11 48:3	42:10 54:16
difference [2] 51:2	District [4] 2:1	37:20 37:23 37:25	50:1 73:20 76:21	evaluating [1] 42:7
51:21	2:1 2:20 2:20	38:1 39:5 39:9	86:3 86:10	evaluations [1] 17:11
different [6] 12:2	division [11] 7:3	40:19 41:3 41:6	Elser [1] 3:9	events [3] 57:25
22:22 45:15 54:10	7:5 7:13 7:23	41:16 41:17 41:18	elsewhere [2] 39:13	58:19 58:25
69:6 71:17	10:3 14:16 15:11	42:1 42:5 42:9	51:16	evidence [2] 68:20
difficult [1] 50:19	15:12 72:21 72:22	42:16 42:20 43:20	elution [2] 22:10	81:16
Dimuro [99] 3:13	76:10	43:25 44:24 45:2	Emery [2] 83:23	exact [1] 20:2
20:25 21:3 21:9	divisions [1] 15:12	46:9 46:18 46:21	83:24	exactly [2] 35:18
22:3 23:18 24:14	Doctor [3] 47:8	46:24 47:23 47:24	Emmet [2] 41:5	83:6
24:17 27:7 28:21	66:2 73:15	48:11 49:10 49:15	48:13	examination [3] 4:12 84:16 88:11
29:1 29:9 29:14	document [58] 1:14	49:24 51:1 51:23	employed [3] 18:18	examined [4] 2:13
29:18 31:9 32:20	6:5 32:16 32:17	55:5 55:9 56:3	88:13 88:15	4:9 84:14 88:10
32:25 33:7 33:11	32:21 33:3 33:4	56:19 57:11 57:12	employee [2] 34:15	example [3] 8:21
33:14 33:18 33:22	33:8 33:24 39:6	57:20 58:11 60:25	88:14	17:10 61:6
38:11 39:16 39:22	39:9 41:4 42:17	61:12 65:21 68:24	Employment [1] 6:18	except [3] 18:5
40:18 41:14 41:17	42:19 43:15 44:1	70:11 71:7 71:13	enclosed [2] 90:12	36:21 47:10
43:19 45:21 46:1	44:6 46:10 46:14	72:1 72:3 73:11	90:13	exchanged [1] 63:6
46:14 46:18 46:20	46:15 47:5 47:20	73:24 74:12 74:15	enclosure [1] 46:12	Executed [1] 89:15
46:23 47:7 47:12	48:12 48:15 48:23	77:12 78:21 79:12	Enclosures [1] 90:22	Executrix [2] 2:3
47:19 47:20 48:17	49:25 50:1 50:17	79:22 80:8 80:13	end [15] 8:15 25:9	2:21
50:3 50:5 50:9	55:6 55:20 57:21	81:6 82:22 85:25	26:6 26:10 27:6	exhibit [26] 6:1
50:12 51:13 52:9	58:2 58:13 58:22	draft [1] 77:16	41:20 51:11 54:21	6:2 32:11 32:13
52:13 53:4 53:18	65:9 66:8 67:22	Duane [1] 3:20	54:21 56:7 56:10	39:3 41:1 42:14
53:22 54:4 55:9	71:14 71:25 72:17	duc [2] 50:24 67:25	65:18 68:4 68:7	43:23 46:7 48:9
56:2 56:18 58:1	72:20 74:13 74:16	duly [2] 88:5 88:9	ends [1] 57:10	49:22 50:3 55:2
58:7 60:24 61:16	74:18 75:19 75:23	during [9] 10:10	entire [1] 77:24	55:3 55:11 57:18
62:18 63:22 65:15	77:13 77:19 77:21	10:13 11:14 12:4	entirely [2] 31:18	58:5 65:5 71:11
65:20 65:22 66:1	77:24 80:9 80:12	13:11 29:22 30:3	78:18	74:8 74:10 74:20
66:3 68:5 68:14	80:14 82:23 82:25	Durland [1] 48:14	entitled [2] 77:15	77:10 80:6 82:19
68:23 70:21 71:6	85:1 86:1 86:4	duties [1] 12:23	80:10	85:23
72:18 73:14 74:19	documents [14] 18:25	-E-	environment [8] 38:17 40:11 50:25	exhibits [4] 1:4
75:2 75:10 75:15	33:1 36:11 58:18	E [3] 1:14 3:1	73:5 74:2 74:5	1:24 18:11 75:4
75:18 76:5 76:16	58:23 59:1 60:11	3:1	76:23 82:14	existed [2] 23:23
76:25 78:12 78:20	60:13 75:3 75:20	E-L-U-T-I-O-N [1] 22:11	environmental [7] 16:1 16:3 64:23	58:16
79:4 79:11 81:7	75:24 77:22 78:23	E.P [1] 76:11	65:1 77:15 79:8	exited [3] 46:3
81:24 82:8 82:15	doesn't [5] 32:25	early [8] 20:22 23:3	85:5	47:12 77:17
82:18 84:23 86:21	52:4 54:6 58:2	23:4 23:15 23:23	equation [1] 30:20	expanded [1] 7:9
87:12 87:14 87:17	85:7	24:11 25:8 41:20	equipped [3] 56:13	expansion [4] 9:3
87:20 89:24 89:25	done [15] 11:7	Edelman [1] 3:9	56:13 56:16	12:18 12:22 15:7
90:7 90:11	20:10 21:12 23:2	edible [3] 44:14	errata [3] 90:14	expected [1] 4:24
dioxin [2] 84:8	30:11 32:9 37:8	45:15 45:23	90:16 90:17	experineces [1] 18:1
84:14	38:25 52:6 52:18	Education [1] 6:12	Escambia [2] 72:4	expertise [7] 11:25
dioxins [2] 84:12	69:8 70:4 77:3	educational [1] 5:22	72:6	12:2 13:15 13:17
84:21	84:11 84:20	Edward [2] 73:19	Esq [6] 3:4 3:9	13:18 17:13 25:12
direct [2] 45:1	doubt [5] 39:13	81:10	3:13 3:15 3:20	Expires [1] 89:22
78:2	51:6 68:21 70:19	effect [3] 16:4	90:7	explain [2] 22:1
directed [4] 8:17	70:25	62:1 66:10	essentially [4] 16:24	53:20
8:23 59:17 83:8	down [12] 5:9	effects [2] 40:17	28:19 44:2 53:2	exposure [1] 55:22
director [2] 20:1	43:15 49:3 52:11	78:9	establishments [1] 69:4	expressly [1] 4:6
35:9	52:24 58:11 62:6	effort [3] 72:23	Estate [2] 2:3	extended [1] 69:3
disagree [1] 81:15	62:23 64:3 68:3	72:25 76:10	2:21	extent [4] 23:10
discontinuing [1] 73:8	69:1 70:10	17:4	et [3] 2:4 2:23	47:10 75:18 76:19
discovery [1] 76:23	Dr [109] 1:6 4:14	eight [4] 2:14 11:16	90:10	extremely [1] 50:19
discuss [1] 36:10	5:21 6:4 9:15	13:7 69:7	etc [4] 8:19 14:24	
discussed [3] 19:17	11:19 13:10 13:14	cither [4] 19:9		
22:8 36:9	16:7 18:22 18:23	31:17 45:4 55:17		
discussion [6] 39:18	19:15 19:16 19:18			
40:7 64:21 78:1	21:10 22:4 23:19			
78:6 78:16	24:15 26:20 26:22			
discussions [8] 36:5	27:8 28:22 29:2			
40:4 40:8 40:13	29:10 29:19 31:10			
64:25 79:1 79:7	32:3 32:15 33:23			

Index Page 5

Index Page 6

Index Page 7

objective [1]	85:4	original [4]	1:24	Patrick [1]	19:22	Philadelphia [2]		pre-publication [1]	
objectives [7]	85:10	57:22 69:2	90:13	Paul [3]	9:25 10:2	3:21 6:24		64:1	
85:10 85:12	85:14	ourselves [1]	52:18	73:19		Phone [1]	90:3	preceding [2]	29:13
85:14 85:16	85:21	outline [1]	77:15	pay [1]	18:14	phrased [1]	30:6	52:16	
obtain [2]	24:12	outside [5]	11:3	PCB [23]	10:15	physical [20]	7:4	precise [1]	21:6
24:20		12:9 84:17	84:21	37:11 40:23	43:16	7:25 8:1	8:4	preface [1]	21:22
obtained [7]	46:16	85:17		50:20 50:23	50:25	8:7 9:16	9:17	prepared [2]	33:5
60:12 71:19	75:7	outstanding [1]	5:17	51:4 51:12	51:23	9:19 9:23	10:22	33:7	
75:10 75:12	75:20	overall [1]	80:19	52:8 53:1	53:17	13:16 14:2	14:13	presence [3]	29:6
occasion [3]	12:5	own [6]	2:4 2:22	62:16 67:19	76:14	14:17 15:19	44:24	29:17 29:25	
79:23 81:9		17:25 57:3	85:13	76:22 77:15	78:4	45:4 45:5	83:14	present [4]	20:23
October [8]	46:11	85:14		79:8 80:10	83:8	84:1		21:7 82:13	84:22
61:21 63:25	74:13			85:4		picked [1]	58:21	press [8]	39:19 39:24
76:14 76:24	77:2			PCBs [56]	12:6	picture [2]	22:9	39:25 40:4	59:23
86:2				17:22 17:23	18:2	80:19		60:3 60:7	60:9
off [3]	10:19 18:17			20:11 20:12	20:16	piece [1]	22:13	pressure [1]	8:16
69:7				21:7 22:12	22:15	pieces [1]	21:19	pressures [2]	8:5
offhand [2]	58:9			22:16 22:25	29:6	place [10]	3:21	73:7	
71:20				29:17 29:25	30:8	31:23 31:23	32:1	prevent [1]	73:5
office [4]	32:7			30:16 30:21	31:3	34:5 51:10	51:17	preventing [1]	85:5
34:11 62:14	74:25			31:8 34:13	35:21	80:20 81:1	84:17	previous [1]	34:15
offices [3]	2:15			35:24 36:3	38:17	places [1]	66:19	previously [3]	34:16
3:4 88:6				40:6 40:11	49:16	Plaintiffs [3]	2:23	55:10 82:12	
officialcy [1]	28:13			52:20 56:1	56:14	3:3 4:2		primarily [6]	9:3
officially [1]	78:8			59:14 60:23	63:3	plan [2]	77:16 85:12	9:9 12:1	12:18
oil [3]	24:3 24:6			67:11 67:13	67:25	63:2 67:1	72:9	14:5 37:22	
44:14				68:22 70:20	70:25	plants [2]	57:3	primary [1]	28:4
oils [2]	45:16 45:23			72:4 72:8	72:14	85:6		principal [2]	17:17
old [1]	31:18			73:1 73:13	73:21	Plasticizer [2]	20:6	19:6	
Oliver [1]	19:21			74:1 74:5	78:18	55:17		principally [1]	76:10
on-going [1]	54:18			79:3 81:17	82:5	poetic [1]	54:24	print [1]	71:17
once [2]	31:21 36:6			82:13 86:9	86:13	point [25]	10:6	printing [1]	4:5
one [40]	3:14 3:21			86:18		12:20 13:25	16:25	printout [1]	30:22
6:19 6:20	10:6			peaks [9]	22:13	19:11 19:17	19:18	Prize [1]	77:5
16:10 17:17	21:6			22:14 22:18	22:20	19:20 20:18	25:19	problem [6]	34:4
21:8 23:12	26:20			31:1 31:2	31:2	26:4 26:9	26:22	37:12 54:5	80:10
27:19 27:23	32:17			31:8 67:25		27:19 27:22	30:4	83:9 85:4	
36:21 36:23	40:21			penalty [1]	89:12	38:21 45:11	45:20	problems [1]	64:7
42:1 43:9	43:13			pending [2]	2:19	47:11 56:5	56:12	process [5]	8:19
43:17 45:15	47:22			65:15		72:3 84:1	84:13	8:24 10:25	14:4
48:25 50:7	50:7			Pennsylvania [2]		pointed [1]	82:11	28:3	
64:10 64:13	69:6			3:21 87:5		pointing [1]	46:5	processes [1]	14:21
69:11 70:11	70:21			Pensacola [1]	72:9	points [1]	31:3	produced [14]	2:12
72:12 77:24	79:16			people [11]	11:14	poisoned [1]	44:13	4:9 32:21	32:24
80:5 83:3	84:13			13:4 13:5	41:25	pollutant [1]	64:23	33:3 33:5	33:9
85:6 90:8				42:1 44:14	49:7	pollutants [1]	65:1	44:4 58:4	75:5
ones [3]	58:19 66:14			53:8 54:3	61:15	pollution [7]	57:2	75:7 75:22	76:3
82:11				66:20		57:4 57:7	77:15	77:23	
open [1]	18:12			perfectly [1]		79:9 80:10	85:5	produces [1]	72:22
operate [1]	17:12			26:10		polychlorinated [3]		product [5]	10:24
operated [1]	25:24			perform [3]	9:18	64:19 64:22	65:1	65:9 78:9	79:17
operating [4]	24:8			11:7 12:9		position [11]	12:17	80:18	
53:7 54:2	62:14			perhaps [7]	12:12	13:24 15:6	15:17	production [1]	73:9
operation [1]	51:14			12:21 15:17	19:2	15:18 16:22	19:24	products [20]	8:19
operational [1]	25:8			25:15 42:25	49:11	20:10 34:18	42:25	8:23 10:15	20:4
operations [1]	57:6			period [9]	11:14	54:18		24:6 40:23	67:2
opinion [3]	49:14			12:20 15:24	16:1	positions [1]	12:21	67:12 67:19	72:23
51:2 51:21				21:12 30:3	30:4	positive [1]	34:4	73:1 76:23	78:8
opportunity [1]	47:17			65:14 66:7		positively [1]	22:25	79:9 79:10	83:10
oral [1]	35:17			perjury [1]	89:12	possessed [1]	26:2	84:13 84:14	84:22
organic [12]	7:3			person [4]	9:4	possibility [1]	78:2	85:6	
7:5 7:12	7:21			11:24 11:25	34:10	possible [3]	27:21	Professor [15]	35:4
7:23 8:18	10:3			personal [1]	17:25	28:8 40:17		35:4 35:20	35:20
15:11 15:11	49:7			pertained [1]	76:13			36:21 38:2	38:13
72:21 72:21				pesticides [3]	30:23			38:13 40:14	40:22
				31:4 50:21					
				PhD [5]	6:12 6:14				
				6:21 44:24	45:4				

59:8 59:12 69:16 70:7 70:15	Professors [5] 32:5 36:2 36:16 37:8 38:23	profitable [1] 72:22	program [7] 52:25 54:11 54:15 54:19 54:25 82:25 83:7	project [6] 7:8 9:2 9:12 10:8 10:14 18:10	projects [3] 8:13 12:5 30:10	prompted [1] 24:12	properly [1] 30:7	propose [1] 45:14	protect [2] 72:23 73:1	prove [1] 52:5	provide [2] 57:11 84:9	providing [1] 57:12	PRR [8] 1:12 1:16 1:18 1:21 46:13 57:23 71:16 80:13	public [6] 2:18 4:4 73:7 88:5 89:23 90:16	publication [7] 38:19 38:24 43:10 62:3 86:8 86:10 86:12	publicized [1] 20:19	published [4] 38:10 47:24 48:1 69:5	purchase [1] 25:6	purchased [3] 24:23 25:1 26:17	purchasing [1] 31:17	purpose [4] 29:6 29:21 30:2 37:17	put [6] 6:14 22:12 22:17 23:1 27:23 59:19	puzzling [1] 50:19	R [4] 3:1 41:5 47:2 48:13	R&D [7] 7:5 8:23 9:20 10:25 14:16 15:14 17:2	R-A-A-B [1] 81:10	R.A [1] 34:6	R.E [1] 76:12	Raab [1] 81:10	raised [1] 52:12	raises [1] 50:21	rather [4] 5:1 17:2 22:1 57:8	RE [1] 90:10	re-entered [3] 47:6 47:19 84:5	re-read [1] 29:12	reached [2] 26:9 82:13	read [15] 29:13 45:17 45:25 46:1 47:3 52:14 52:14 52:15 52:16 53:22 53:23 53:24 71:6 89:6 90:15	reading [5] 44:12 47:7 71:24 72:11 78:12	ready [1] 18:12	really [4] 24:8 25:18 46:4 49:17	reason [4] 5:11 22:24 25:17 85:21	reasoning [1] 68:20	reccive [1] 61:2	recipient [2] 42:22 86:4	recipients [1] 55:14	reclaim [1] 57:5	recognize [4] 34:4 44:2 58:13 83:1	recollection [13] 5:1 19:9 35:6 35:23 60:21 61:19 61:20 63:5 64:6 70:6 80:2 85:9 87:3	recommended [1] 63:21	record [5] 5:18 32:17 65:7 65:18 88:11	reduced [1] 88:11	refer [3] 42:9 48:15 84:8	reference [16] 39:24 44:15 57:1 58:22 59:6 59:22 60:2 60:15 61:21 63:9 63:25 64:3 64:11 64:17 68:1 84:7	references [3] 59:3 60:12 76:8	referred [9] 18:25 42:6 43:9 49:13	57:6 58:18 61:6 62:13 64:7	referring [5] 25:4 41:18 42:2 68:3 86:11	refinery [1] 24:9	reflected [1] 86:13	regulatory [2] 84:7 84:10	relate [1] 85:11	related [7] 10:15 18:2 58:17 65:13 84:12 86:18 88:13	relating [2] 40:5 59:9	relative [3] 80:18 85:20 88:14	release [9] 39:15 39:19 39:24 39:25 40:5 59:23 60:3 60:7 60:10	reliable [2] 82:5 82:12	remain [3] 15:19 28:24 31:23	remained [1] 28:14	remember [36] 23:16 30:11 31:16 32:4 35:3 35:16 36:2 36:11 40:8 45:11 47:22 55:13 57:11 59:12 59:16 59:16 60:3 64:25 66:23 72:3 72:8 72:11 73:24 74:4 78:23 79:14 79:16 80:23 80:25 81:1 81:4 84:11 86:8 86:10 86:12 86:16	remitted [1] 35:4	render [1] 89:9	repeat [5] 5:4 21:4 42:8 56:23 74:17	rephrase [2] 5:4 17:24	replace [1] 79:10	replacement [1] 79:17	report [9] 32:6 59:5 60:17 66:9 68:10 71:15 74:14 80:17 80:22	reported [6] 19:12 19:14 19:15 19:20 53:1 70:10	reporter [22] 2:17 5:9 6:3 26:14 32:14 39:4 41:2 42:15 43:24 46:8 48:10 49:23 55:4 57:19 65:6 71:12 74:11 77:11 80:7 82:20 85:24 88:5	reporters [1] 75:12	reporting [5] 2:16 19:18 60:8 88:7	90:1 60:8 72:4 72:8	reports [4] 36:7	represent [9] 22:14 32:20 32:22 32:23 33:5 71:19 74:19 74:21 77:20	representation [1] 58:1	representatives [4] 80:18 80:24 81:2 86:23	representing [2] 4:15 77:23	request [3] 12:13 75:19 75:23	required [2] 52:20 52:20	requires [1] 25:12	research [42] 6:23 6:25 7:1 7:3 7:3 7:11 7:13 7:20 7:24 8:11 8:22 9:7 9:10 10:13 10:17 10:20 11:10 11:21 12:4 12:8 12:16 12:22 12:23 12:24 12:25 13:11 17:2 20:1 20:2 20:10 20:12 35:9 35:11 40:23 52:25 54:15 62:9 62:25 67:7 67:11 69:21 83:8	researcher [3] 19:7 26:17 66:25	researchers [1] 51:5	resemble [1] 22:14	reserved [1] 4:6	residues [1] 55:23	respond [1] 81:25	responded [1] 13:1	response [1] 75:25	responsibilities [7] 8:10 9:2 10:9 12:17 13:23 15:5 18:9	responsibility [5] 8:12 11:20 12:19 20:4 76:11	responsible [3] 7:13 14:12 44:19	rest [2] 56:16 77:22	restrictions [1] 73:8	result [2] 48:5 78:3	results [3] 27:2 38:9 47:23	resume [1] 5:23	retire [1] 17:5	retired [3] 17:10 32:1 34:10	retirees [1] 17:14	retirement [1] 18:18	return [1] 90:17	review [2] 6:7 86:17	Richard [24] 3:15 19:24 35:13 35:13 35:19 36:6 36:22 37:25 38:1 44:12 45:14 46:4 46:11 55:20 57:11 57:12 63:7 64:4 64:11 73:20 76:11 76:21 79:2 86:3	Richardson [4] 62:7 62:8 62:9 62:11	rid [1] 31:18	right [14] 2:4 2:22 6:10 10:21 13:20 22:6 34:6 38:15 41:22 49:5 50:13 51:12 62:4 75:2	right-hand [1] 55:15	rings [1] 72:6	Risebrough [6] 48:6 49:10 49:15 51:23 52:1 63:25	Risebrough's [2] 47:24 70:11	Rising [1] 34:24	river [3] 72:5 72:6 72:13	Robert [7] 2:12 4:8 5:19 88:8 89:5 89:20 90:13	role [2] 37:22 37:22	Roman [1] 83:11	room [6] 46:3 47:6 47:12 47:19 77:17 84:5	rose [1] 13:7	Rosen [1] 2:8	Rough [1] 77:16	roughly [1] 19:13	Ruabon [4] 62:25 67:1 67:8 77:4	run [1] 53:15	running [6] 26:7 41:19 41:20 52:20 53:2 53:11
-Q-																									-S-																																																																																																												
qualify [2] 20:14 66:18	quarterly [1] 71:15	questions [11] 1:2 4:13 4:24 7:17 22:4 22:5 87:10 87:13 87:15 87:18 87:20	quick [1] 82:18	quickly [2] 45:13 76:7	quite [2] 47:25 63:14	quiz [1] 47:10	quotes [1] 81:16	-R-																	S [2] 3:1 33:18																																																																																																												
																									S000195 [2] 1:7 32:18																																																																																																												
																									sales [8] 10:2 10:4 10:7 12:12 55:18 72:24 73:1 73:9																																																																																																												
																									sample [1] 22:21																																																																																																												
																									samples [3] 28:6 40:23 54:16																																																																																																												
																									San [1] 70:13																																																																																																												
																									satisfied [2] 52:7 52:18																																																																																																												
																									saw [1] 68:16																																																																																																												
																									says [24] 4:11 41:10 41:23 43:16 44:12																																																																																																												

45:22 45:24 49:6	shorthand [3] 2:17	8:13 10:25 12:13	29:7	support [10] 8:22
50:1 50:18 52:24	4:3 88:5	14:15 34:11	statement [9] 48:23	8:24 8:25 9:23
55:20 57:24 60:16	show [12] 32:15	specific [4] 10:15	49:8 50:17 67:23	10:24 14:15 15:15
61:1 61:23 64:11	39:5 41:3 42:16	11:23 36:8 48:4	73:4 75:2 76:9	74:6 76:12 76:19
64:15 69:2 69:8	43:25 49:24 50:20	specifically [10]	76:13 81:15	supported [1] 15:15
74:13 76:9 80:22	55:5 56:22 77:13	8:10 29:5 30:10	statements [2] 49:1	supportive [1] 51:9
82:3	80:8 86:1	42:6 42:9 47:11	49:6	surface [1] 8:5
scale [1] 9:4	showing [5] 46:9	59:9 68:1 68:3	states [12] 2:1	Susan [2] 3:9
scanned [1] 50:13	57:20 71:13 74:12	81:11	2:18 2:20 41:25	87:12
school [1] 6:22	82:22	specifics [1] 84:9	42:10 62:4 65:13	Sweden [18] 24:18
Schroeder [1] 90:1	shown [3] 48:11	specimens [1] 12:9	70:11 70:19 70:24	35:21 35:24 35:25
science [5] 18:8	48:24 67:25	spectograph [1] 23:16	72:21 88:6	36:7 36:12 36:15
18:11 18:15 18:15	shows [1] 18:6	spectrograph [5]	statistics [1] 15:25	36:18 37:5 38:17
18:16	sign [1] 90:16	23:22 23:25 24:2	Steenrod [1] 34:6	39:15 40:6 40:10
sciences [7] 15:3	signature [7] 4:5	24:13 24:20	step [2] 37:3 52:19	54:13 54:17 60:16
15:8 15:16 16:16	34:23 58:11 89:24	spectrometer [14]	steps [1] 57:2	60:23 70:8
16:24 44:20 45:6	90:14 90:16 90:17	21:13 21:15 21:17	sticker [1] 57:22	Swedish [8] 20:18
Scientist [4] 38:19	signed [1] 44:18	21:20 23:8 23:9	still [6] 18:20 31:22	50:22 51:4 53:1
38:24 43:8 59:6	Simandle [1] 2:7	25:17 25:21 26:5	31:25 51:19 51:21	53:8 54:3 59:25
scientist's [1] 49:8	similar [1] 62:2	39:21 40:1 41:19	56:11	61:14
scientists [4] 51:16	Simmons [1] 61:22	67:25 69:23	STIPULATED [1]	sworn [3] 2:12
53:2 54:17 76:18	simply [5] 7:9	spectrometry [1]	4:1	4:9 88:9
SCM [2] 1:12 46:13	44:25 53:6 54:1	14:24	stop [1] 7:15	system [64] 21:13
scope [1] 10:11	74:7	spectroscopy [17]	stopped [1] 19:18	21:16 21:17 21:21
Scotland [1] 69:11	Sincerely [1] 90:20	14:23 14:25 15:21	STR [2] 1:7 32:18	22:17 23:8 23:9
Scott [8] 18:23 19:2	sit [1] 63:5	16:10 16:11 16:13	Strand [1] 34:24	23:17 23:23 23:24
19:4 19:10 33:16	site [2] 63:1 63:2	19:5 22:20 24:4	Street [1] 3:16	23:25 24:13 24:20
42:3 49:11 81:6	sites [3] 67:17 69:6	24:8 24:10 25:7	studied [1] 73:13	24:23 25:7 25:11
scal [1] 88:17		25:11 25:22 26:7	studies [11] 8:6	25:12 25:16 25:16
second [7] 47:1	situations [1] 23:15	26:8 84:4	10:25 14:15 14:15	25:17 25:18 25:19
49:3 55:19 67:24	six [5] 2:14 11:16	speculate [1] 4:25	20:18 38:13 38:16	25:23 25:25 26:1
70:21 72:20 77:20	13:7 13:9 25:13	speed [3] 28:3	70:10 70:13 70:15	26:8 26:16 26:25
section [7] 13:20	sketch [1] 5:22	28:13 37:7	84:20	27:3 27:5 27:10
14:5 14:6 16:8	skill [2] 69:19 69:21	spell [1] 77:8		27:20 27:22 28:6
19:4 19:19 70:18	skim [1] 71:23	Spirits [4] 2:10	study [8] 25:13	28:13 28:14 28:19
sec [7] 4:23 9:1	skipped [2] 64:10	2:24 3:8 90:10	38:18 47:24 52:6	28:23 28:25 29:4
11:18 53:14 60:7	64:15	spring [2] 38:5	70:3 73:21 76:14	29:7 29:16 29:24
65:19 75:25	slash [3] 26:8 26:15	38:6	83:9	30:7 30:20 31:14
seeing [3] 59:7	44:14	spun [1] 16:13	subject [2] 39:14	31:16 31:22 41:19
59:11 60:9	slightly [1] 47:1	St [18] 2:16 2:17	74:14	44:15 51:10 51:14
seem [2] 54:6 85:7	small [1] 17:11	4:4 7:2 18:7	subscribe [1] 89:11	51:16 52:7 52:21
senior [13] 6:23	Smith [2] 3:16	18:15 34:1 34:7	subsequent [1] 84:20	53:3 53:7 53:11
7:3 7:20 8:11	6:23	35:8 39:13 80:11	subsequently [1]	53:15 53:16 54:1
9:7 9:10 10:13	smudged [1] 47:2	88:3 88:5 88:7	64:25	54:16 56:7 60:1
12:16 12:23 12:24	soil [2] 29:25 30:5	88:20 89:2 90:2	subspecialties [1]	systems [3] 23:1
13:11 19:3 20:12	sold [1] 11:3	90:21	11:23	26:3 26:4
sent [2] 41:24 89:25	someone [4] 25:13	stabilities [1] 8:5	substance [12] 35:16	-T-
sentence [5] 41:9	34:12 42:10 84:17	staff [1] 26:17	50:22 51:3 51:22	takes [1] 15:2
41:23 48:15 57:4	sometime [3] 27:25	stages [2] 24:3	57:12 59:12 61:9	taking [5] 52:22
74:17	56:17 56:24	24:11	61:12 61:13 63:6	54:23 78:18 81:1
separate [1] 22:9	somewhat [1] 62:3	Stamped [5] 32:17	63:19 89:8	84:17
September [3] 71:15	somewhere [1] 28:1	39:7 42:18 48:12	substances [2] 53:3	Tammie [5] 2:17
72:25 73:3	sophisticated [1]	55:7	53:16	4:4 88:5 88:20
series [3] 4:24	14:23	stand [2] 52:23	such [8] 14:24 23:4	90:21
62:20 72:22	sorry [7] 22:6 24:25	61:1	23:7 24:9 29:4	Tatton [2] 61:22
set [3] 25:11 57:5	26:7 31:21 37:21	standpoint [2] 37:9	75:24 89:7 89:10	61:25
88:16	64:14 70:23	45:2	suggests [1] 54:11	Taylor [1] 90:1
sets [1] 46:13	sound [1] 44:25	stands [1] 43:13	Suite [2] 3:5 3:17	Taylor*Schroeder [2]
several [4] 4:21	source [1] 81:17	stapled [1] 77:22	summary [2] 70:18	2:15 88:6
13:6 14:1 66:12	sources [4] 75:8	started [3] 7:20	71:5	team [7] 83:17 83:17
sheets [3] 90:14	75:11 75:15 81:17	10:18 16:14	supervision [4] 14:9	83:23 83:25 84:3
90:16 90:17	speak [1] 68:9	starting [1] 19:7	15:18 16:12 26:23	84:6 85:7
Shell [2] 62:9 69:21	special [6] 8:5	state [3] 5:18 88:2	supervisor [4] 9:15	teams [2] 83:11
short [5] 47:18 67:3		89:1	11:17 11:18 13:11	85:3
82:21 87:17 87:19		state-of-the-art [4]	supplied [3] 39:20	techniques [10] 8:14
		28:19 28:23 28:24	42:7 42:11	8:15 8:17 11:1
				11:2 11:3 13:19

21:8 82:4 86:17 technology [7] 8:25 15:15 16:20 16:23 16:25 17:2 17:3 Telephone [2] 3:3 3:7 telling [1] 38:19 ten [2] 13:9 13:10 tension [1] 8:5 terphenyl [1] 64:19 terphenyls [2] 64:22 65:1 test [2] 45:16 45:24 testified [1] 31:22 testifying [1] 5:13 testimony [4] 5:8 5:12 17:25 88:12 testing [6] 8:21 9:18 16:2 16:3 45:15 45:22 tests [4] 11:7 12:9 38:9 38:11 thank [2] 41:23 87:13 themselves [2] 9:22 59:1 theory [2] 43:16 43:18 therefore [1] 50:18 thereon [1] 89:10 thereupon [1] 88:10 thermal [1] 8:5 third [4] 50:18 63:24 68:3 72:16 thought [4] 16:9 24:25 37:21 52:3 three [8] 14:4 14:6 16:9 16:14 69:7 69:10 70:10 72:12 through [26] 6:11 7:17 12:12 12:20 15:2 15:24 16:17 20:9 21:13 21:14 22:11 22:12 22:17 27:13 28:14 31:17 31:18 47:7 52:21 53:3 53:16 55:7 57:23 65:8 77:14 80:13 throughout [2] 22:9 27:11 thrust [2] 45:11 59:15 thumbnail [1] 5:22 times [3] 4:20 4:21 34:13 title [1] 20:2 today [18] 4:18 4:23 33:24 42:19 44:6 47:5 48:21 50:15 55:8 60:19 63:6 66:6 70:13 71:25 77:19 80:14 83:13 86:5 together [5] 22:24	23:1 37:5 37:25 59:19 too [4] 41:11 63:11 71:19 78:14 took [3] 6:16 6:22 80:20 tool [1] 24:11 top [10] 44:11 45:13 46:22 50:18 57:24 59:3 65:12 72:19 78:14 81:14 total [2] 25:21 54:25 touching [1] 88:9 toward [4] 8:17 8:23 16:5 83:8 towards [1] 76:8 toxicologists [1] 59:14 toxicology [3] 37:22 41:12 65:9 trace [1] 22:13 traces [2] 70:19 70:25 Tracy [1] 19:22 train [1] 26:19 trained [2] 26:18 26:21 transactions [1] 74:7 transcribed [1] 4:5 transcript [9] 1:24 5:10 33:4 33:8 33:11 46:17 56:22 71:20 90:15 transcripts [2] 75:9 76:3 transfer [1] 44:15 transmitted [1] 59:10 transposed [1] 65:25 travel [1] 36:14 traveled [1] 37:25 trial [3] 5:11 5:13 90:18 trip [11] 36:24 37:4 37:4 37:5 37:17 37:18 38:1 38:4 38:6 66:9 66:14 trips [4] 38:8 66:14 66:19 66:20 true [5] 56:6 56:25 88:11 89:9 89:13 truth [2] 88:9 88:9 trying [4] 21:6 34:5 51:24 85:11 Tucker [10] 18:23 18:23 19:2 26:20 26:22 42:4 49:11 81:6 83:18 83:19 Turet [133] 1:3 3:20 4:13 4:15 6:4 21:2 21:5 22:7 23:3 23:20 24:19 27:10 28:24 29:5 29:12 29:16 29:21 31:13 32:15	32:22 33:2 33:10 33:12 33:16 33:20 33:23 38:12 39:2 39:5 39:18 39:25 40:21 41:3 41:16 41:22 42:13 42:16 43:22 43:25 45:22 46:6 46:9 46:16 46:19 46:21 46:24 47:1 47:9 47:21 47:22 48:8 48:11 48:19 48:21 49:20 49:24 50:4 50:7 50:11 50:14 51:15 52:11 52:19 53:9 53:19 54:6 55:2 55:5 55:14 56:6 56:21 57:16 57:20 58:4 58:9 58:10 61:5 61:18 62:20 63:24 65:4 65:7 65:12 65:16 65:21 65:23 66:5 67:4 68:6 68:16 68:19 69:1 70:23 70:24 71:9 71:10 71:13 71:22 72:19 73:18 74:8 74:12 74:21 75:7 75:14 75:17 75:25 76:7 76:20 77:2 77:12 77:18 78:14 78:16 78:23 79:7 79:14 80:5 80:8 81:9 82:1 82:3 82:10 82:17 82:22 84:6 84:25 85:25 86:22 87:10 87:16 90:18 90:23 twelve [1] 13:8 twice [1] 32:17 two [16] 3:10 7:7 9:5 10:10 15:12 21:19 22:24 23:1 27:20 27:24 36:20 44:2 45:14 45:16 46:12 48:16 two-year [1] 18:10 type [11] 7:1 8:6 8:21 14:21 24:3 24:6 24:6 30:24 51:8 67:1 84:14 types [3] 8:3 9:1 12:2	23:20 26:11 54:4 56:9 81:18 understood [4] 5:6 24:25 53:14 53:21 underway [3] 54:12 72:23 72:25 unidentified [2] 48:24 49:4 unit [5] 31:18 31:18 37:11 76:19 85:15 United [4] 2:1 2:19 34:13 70:11 University [6] 6:13 6:18 6:19 70:2 70:5 70:12 unknown [1] 22:25 up [23] 8:15 10:14 13:7 20:9 21:18 25:11 25:23 26:7 28:3 37:7 41:19 46:21 50:20 51:24 53:11 55:15 56:22 57:5 57:22 58:21 59:3 64:14 76:9 updated [1] 6:6 upper [1] 55:15 used [23] 16:25 21:8 23:10 23:13 23:23 23:25 24:2 25:24 26:11 27:11 27:13 27:17 29:21 30:2 30:5 30:7 30:13 30:16 38:20 39:21 40:1 60:1 81:18 uses [3] 40:16 72:24 73:1 using [4] 44:25 54:16 67:24 78:8 usually [2] 26:15 33:17 Utrecht [2] 70:2 70:5	visiting [1] 34:12 visits [1] 66:10 vitac [1] 6:9 Vodden [4] 66:24 66:25 67:5 67:7 vs [1] 90:10 -W- W-I-L-D-E [1] 61:6 W.R [3] 46:11 55:20 76:11 wait [2] 66:3 70:21 waiting [1] 65:16 walk [1] 6:11 water [4] 20:23 21:7 29:6 30:17 Watkins [2] 3:13 90:7 WER [1] 44:11 Westenberger [1] 83:19 Whales [3] 63:1 67:1 67:8 Wheeler [27] 1:14 35:7 35:19 36:7 36:19 37:13 37:13 37:20 37:22 37:23 37:23 37:24 37:25 46:11 48:3 50:1 53:5 53:25 59:2 59:17 73:20 76:11 76:21 81:6 86:3 86:11 86:16 Wheeler's [2] 37:4 54:23 wherein [1] 2:21 WHEREOF [1] 88:16 white [2] 52:3 54:20 whole [3] 46:1 48:14 79:8 Widmark [28] 24:18 32:5 32:10 35:5 35:20 36:2 36:16 36:22 36:25 37:1 37:1 37:6 37:8 38:2 38:13 38:23 39:21 40:2 40:22 43:9 51:6 59:7 59:8 59:12 60:1 60:23 62:2 69:3 Widmark's [1] 25:4 Wilce [3] 61:5 61:12 61:13 wildlife [2] 50:20 71:1 William [8] 19:24 44:11 45:14 63:15 63:17 73:20 76:21 86:3 Wilson [1] 3:9 withdraw [7] 11:13 28:11 28:18 51:20 53:19 60:20 64:1 within [21] 2:18
---	--	--	---	--

-V-

v [2] 2:5 2:8	
vague [1] 81:3	
valid [1] 82:6	
value [1] 37:10	
vapor [2] 8:4 8:16	
variety [1] 8:18	
various [2] 31:3 83:8	
varying [2] 48:25 49:6	
version [1] 7:9	
versus [1] 78:18	
vicinity [1] 72:9	
Video [3] 2:16 88:7 90:1	
visit [3] 34:14 36:22 36:23	
visited [4] 36:24 70:5 37:1 60:16	

-U-

U.K [2] 62:10 67:18	
U.S [2] 25:18 69:7	
U.S.D.J [1] 2:7	
U.S.M.J [1] 2:8	
under [15] 11:15 11:24 13:1 14:9 15:18 16:11 26:23 34:23 45:13 55:21 66:16 84:6 84:12 88:10 89:12	
underneath [1] 13:5	
understand [12] 5:3 5:8 5:14 11:22 21:2 21:25 22:2	

7:23	11:25	15:17				
17:12	22:15	39:19				
49:9	51:2	51:22				
64:21	65:2	72:12				
78:1	78:6	78:17				
79:2	84:17	87:7				
88:5	89:8					
without [2]	27:21					
73:8						
witness [9]	4:5					
22:6	52:15	65:10				
82:2	88:10	88:12				
88:16	89:25					
witnesses [1]	90:15					
wood [18]	32:7					
32:19	34:23	35:3				
35:6	35:16	37:19				
37:21	39:8	39:11				
40:9	41:6	42:7				
42:11	60:16	60:19				
60:22	61:2					
words [1]	85:16					
worked [8]	11:14					
11:21	11:24	17:9				
17:15	18:1	34:11				
67:12						
workers [2]	40:15					
69:4						
world [11]	2:6					
2:23	3:19	4:10				
4:16	51:16	55:23				
55:25	56:14	56:16				
86:24						
worried [1]	40:16					
worth [1]	47:9					
writing [4]	5:9					
5:12	41:15	88:11				
written [5]	5:10					
66:7	68:17	71:3				
74:4						
wrote [2]	44:24					
69:15						
-Y-						
year [7]	6:19	25:8				
25:9	25:11	26:6				
27:20	53:12					
years [4]	7:7					
10:9	10:10	27:24				
yet [1]	48:18					
yourself [2]	9:6					
9:9						
Yusho [1]	44:16					