

1 Cerro Copper Products, Co.

2 vs.

3 Monsanto Company

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13 VOLUME I

14

15 Deposition of William B. Papageorge

16 Taken October 20, 1994

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1 IN THE UNITED STATES DISTRICT COURT

2 SOUTHERN DISTRICT OF ILLINOIS

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4 CERRO COPPER PRODUCTS, CO.,

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6 Plaintiff,

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8 vs. NO. 92-CV-204-WDS

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10 MONSANTO COMPANY,

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12 Defendant.

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14 Deposition of WILLIAM B. PAPAGEORGE, taken

15 on behalf of the Plaintiff, at the offices of

16 Coburn & Croft, One Mercantile Center,

17 Suite 2900, in the City of St. Louis, State of

18 Missouri, on the 20th day of October, 1994,

19 before Tracey Balsitis, Registered

20 Professional Reporter and Notary Public.

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1 APPEARANCES OF COUNSEL:

2

3 FOR THE PLAINTIFF:

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9 FOR THE DEFENDANT:

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1 WILLIAM B. PAPAGEORGE
2 of lawful age, having been first duly sworn to
3 testify the truth, the whole truth, and
4 nothing but the truth in the case aforesaid,
5 deposes and says in reply to oral
6 interrogatories propounded as follows, to-wit:

7 EXAMINATION

8 QUESTIONS BY MR. RICCI:

9 Q Good morning, Mr. Papageorge.

10 A Good morning.

11 Q My name is Rich Ricci, and I represent
12 Cerro Copper Products Company in the case
13 styled Cerro Copper Products Company versus
14 Monsanto. We are going to be taking your
15 deposition here today, and I'm going to be
16 asking you a series of questions, and you are
17 going to be hopefully giving me answers to the
18 best of your ability. And our court reporter
19 here is going to be taking down the answers.

20 Although this is an informal setting,
21 you are under oath, and your answers and my
22 questions will be bound in a printed
23 transcript, and that transcript can be used at
24 the trial of this matter so that your
25 testimony here today is as given in Court, and

1 I just want you to be aware of that.

2 In the course of the deposition, if I
3 ask you a question that you don't understand,
4 I would appreciate it if you tell me that you
5 don't understand it, and I will try to
6 rephrase it in a way that it will become
7 understandable to you. If I ask you a
8 question and you answer it, then I'm going to
9 assume that you understood the question and
10 answered it as asked.

11 In addition, I will warn you that I'm
12 not an engineer or a scientist or a chemist,
13 and so as a result, my questions may at times
14 be inartfully drawn or inappropriately use
15 scientific or technical terms. If I do that
16 and you pick it up, please feel free to point
17 that out to me, and again we can try and work
18 through the difficulties.

19 It will be helpful if you let me
20 finish my questions before you give your
21 answers, and I will in turn try to let you
22 finish your answers before I ask the next
23 question. Our court reporter can only take
24 down one at a time, and so we have to try to
25 avoid stepping on each other's lines.

1 If you need a break at any time,
2 please feel free to ask. It is not an
3 endurance contest, and I'm more than happy to
4 accommodate you. Do you have any questions
5 before we begin?

6 A Not so much a question, but when you
7 referred earlier to understanding the
8 question, it is possible that my understanding
9 may not match your intent, but I will give you
10 the answer based on my understanding.

11 Q Okay. And I will try to avoid asking
12 ambiguous questions. And if I do ask an
13 ambiguous question, I'm sure Mr. Nassif will
14 throw his two cents in, too.

15 A Very good.

16 Q Mr. Papageorge, are you on any
17 medication here that might in any way affect
18 your ability to testify?

19 A No.

20 Q Can you give me your home address,
21 please.

22 A 321 Pebble Valley Drive, St. Louis,
23 Missouri 63141-8039.

24 Q Are you currently employed by
25 Monsanto?

1 A No.

2 Q Are you retired?

3 A Yes.

4 Q Who is your current employer, if any?

5 A I consider myself self-employed.

6 Q When did you retire?

7 A My last working day was December 31,
8 1986.

9 Q In your capacity as a self-employed
10 individual, do you do consulting work? Is
11 that a fair characterization?

12 A Yes.

13 Q Do you do any consulting work for
14 Monsanto currently?

15 A Not directly, no.

16 Q Indirectly?

17 A Yes.

18 Q How so?

19 A Through law firms.

20 Q Have you been retained by any law
21 firms with respect to the lawsuit that's
22 subject to this deposition?

23 A I honestly don't know.

24 MR. NASSIF: He hasn't, Rich.

25 Q (By Mr. Ricci) Are you being

1 compensated for the time that you are spending
2 today being deposed?

3 A Not that I'm aware of, no.

4 Q In the course of your current self
5 employment, do you do consulting work in
6 matters other than those in which Monsanto is
7 involved?

8 A Occasionally.

9 Q Is that also for law firms for the
10 most part?

11 A No.

12 Q Who else have you done consulting work
13 for?

14 A A supplier of steel and a property
15 owner who wanted to sell some property, that
16 kind of thing.

17 Q Approximately how many hours a week do
18 you spend in this consulting business?

19 A I have never kept score. It is
20 difficult for me to estimate because some
21 months I don't spend any time at all and other
22 months I may spend as much as 40 or 50 hours,
23 so.

24 Q Let me see if I can rephrase the
25 question. And first let me ask you have you

1 been engaged in this consulting since your

2 retirement from Monsanto?

3 A Yes.

4 Q Perhaps it would be easier for you to

5 estimate again to the best of your ability how

6 much time you spend in consulting work on a

7 yearly basis?

8 A This would be a very crude estimate.

9 About a hundred hours a year.

10 Q A hundred hours a year?

11 A Something like that.

12 Q Has that been fairly constant

13 throughout the course of your retirement?

14 A Like I say, I just have never sat down

15 and studied my records to come up with a good

16 answer.

17 Q Can you tell me what percentage of

18 your consulting work is spent on cases

19 involving Monsanto?

20 A About 90 to 95 percent.

21 Q In your consulting, do you charge on

22 an hourly basis?

23 A For which? It depends on the client.

24 Q For the work that you do involving

25 Monsanto, do you charge on an hourly basis?

1 A I'm on a retainer.

2 Q Is your retainer with Monsanto or with
3 the law firms that you mentioned?

4 A With a law firm.

5 Q Is that Coburn & Croft?

6 A No.

7 Q Which law firm is that?

8 A Smith, Helms, Mulliss & Moore in
9 Greensboro, North Carolina.

10 Q Has your consulting pursuant to that
11 agreement been with respect to a specific
12 case?

13 A Not just one case, no.

14 Q A number of cases?

15 A Yes.

16 Q Are the cases related?

17 A Yes, they are.

18 Q What do those cases involve?

19 A Polychlorinated biphenyls.

20 Q I will predict that that term will

21 come up again in the course of this

22 deposition, and so can we understand that we

23 can refer to that as PCBs?

24 A Certainly.

25 Q Now, when you estimated that 90 to 95

1 percent of your consulting work involves
 2 Monsanto, is that all in relation to the work
 3 that you do with Smith, Helms, Mulliss &
 4 Moore?

5 A No. There are other law firms.

6 Q You have retainer agreements with
 7 other law firms?

8 A No.

9 Q Okay. Let's focus on the Smith, Helms
 10 relationship first. What is the nature of
 11 your retainer agreement?

12 A Oh, I don't recall the exact words,
 13 but I am to be available for consultation
 14 relating to PCBs and my past involvement, my
 15 understanding of the issues relating to PCBs
 16 for a period of time that runs roughly, quite
 17 roughly, from the late '60s until the early
 18 part of '76 or thereabouts.

19 Q What's the compensation arrangement
 20 under that agreement?

21 A It is 8,500 a month.

22 Q And that compensation rate applies
 23 whether you do no work or whether you work 300
 24 hours a month?

25 A Correct.

1 Q And is it your understanding that
2 ultimately the source of that compensation is
3 Monsanto?

4 A No. I have never questioned it.

5 Q Your checks -- I'm sorry. Go ahead.

6 A I have never questioned who the
7 ultimate payer is.

8 Q Your checks come from the law firm?

9 A Yes.

10 Q And you don't know whether the law
11 firm is reimbursed by Monsanto?

12 A I do not.

13 Q Are the cases that you are consulting
14 with Smith, Helms on personal injury cases?

15 A Well, some of them are allegations of
16 health problems relating to exposures.

17 Q Are there cases that you consult with
18 Smith, Helms on that relate to other than
19 allegations of health problems?

20 A Yes.

21 Q And what do those cases relate to?

22 A There are -- there were and -- there
23 were cases in which the parties claimed damage
24 to property. There were cases relating to
25 reimbursement for costs relating to cleanup,

1 cases related to effect on dairy cattle. As
2 an example, there was a case relating to harm
3 to a mink fur farm. I'm sure that's not all
4 of them, but those are examples of the kinds
5 of things that have come up.

6 Q That's good. That gives me an idea of
7 what we are talking about. And those are all
8 cases in which Smith, Helms was involved?

9 A To some degree.

10 Q Did any of those cases involve
11 environment contamination in Anniston,
12 Alabama?

13 A Well, as I understand it, there is --
14 at least there was a case that was discussed
15 with me. I don't know where it stands at the
16 moment.

17 Q Relating to contamination in Anniston?

18 A In Anniston, yes.

19 Q Do you know if that case is still
20 pending?

21 A I do not.

22 Q Is that a case that Smith, Helms was
23 involved with?

24 A To a degree again, yes.

25 Q Do you know who the Plaintiff was in

1 that case?

2 A I'm under an impression it was a class

3 action type case.

4 Q Are there other law firms besides

5 Smith, Helms that you consult with relating to

6 cases involving Monsanto?

7 A Yes.

8 Q How many law firms?

9 A I have no idea.

10 Q More than a hundred?

11 A Oh, no. No. I don't know. A dozen

12 or so.

13 Q Are they all over the country?

14 A Yes.

15 Q Any here in St. Louis?

16 A Yes.

17 Q Which firms in St. Louis?

18 A The one that comes to mind is Husch,

19 Eppenberger.

20 Q Do you have a retainer agreement with

21 Husch & Eppenberger?

22 A No.

23 Q Are you compensated on an hourly basis

24 when you work for Husch & Eppenberger?

25 A No.

1 Q How are you compensated?

2 A Through the Smith, Helms.

3 Q Do you work with any law firms related
4 to cases involving Monsanto where you are
5 compensated other than through Smith, Helms?

6 A No.

7 Q Is it fair to say then that all of the
8 consulting work that you do in cases involving
9 Monsanto are encompassed or compensated
10 through your retainer agreement with Smith,
11 Helms?

12 A Yes.

13 Q What steps, if any, did you take to
14 prepare for your deposition here today? And
15 let me caution you before you answer this
16 question that I am not expecting you to relate
17 to me conversations that you had with your
18 attorney. And I will ask you initially did
19 you have any conversations with the attorneys
20 from Monsanto in this case?

21 A Yes.

22 Q Other than those conversations, what
23 did you do, if anything, to prepare for your
24 deposition today?

25 A I did nothing else.

1 Q You didn't review any documents?

2 A No.

3 Q Did you consult with any present or

4 former Monsanto employees?

5 A No.

6 Q Have you spoken to anybody else who

7 has been deposed in this matter?

8 A No.

9 Q Was it Mr. Nassif that you met with?

10 A Yes.

11 Q When did you meet with Mr. Nassif?

12 A Yesterday.

13 Q And approximately how long did that

14 meeting last?

15 A From about 10:00 in the morning until

16 about 4:30 or so in the afternoon with lunch

17 time included and breaks.

18 Q Mr. Papageorge, can you give me your

19 educational background post high school?

20 A I attended Washington University.

21 Q Here in St. Louis?

22 A In St. Louis and received a Bachelor

23 of Science degree in chemical engineering in

24 1943. I also attended the same school and

25 received a Master of Science degree in

1 chemical engineering in 1947. Between the
2 period 1947 and '51, I received credits at the
3 then Oklahoma A & M University toward a Doctor
4 of Science degree in chemical engineering. I
5 did not complete that full course there.

6 Q I'm sorry. What years were you taking
7 credits towards a Ph.D.?

8 A '47 to '51.

9 Q Have you had any other formal
10 education?

11 A Well, I have had courses that I
12 suggest might be considered formal. I
13 attended classes at Washington University,
14 business courses. There were a series, as I
15 remember, of weekends. Thursday, Friday,
16 Saturday type. I attended about four of those
17 weekend courses. That's in a university
18 setting.

19 Q But not working toward a degree of any
20 kind?

21 A No. No. Those were sort of exposing
22 me to new fields other than engineering.
23 There were other seminars and all, but they
24 were not conducted by any universities, so I'm
25 not including those.

1 Q Are there any seminars that you recall

2 of a week or more duration?

3 A Yes.

4 Q And approximately how many?

5 A Two come to mind immediately, and I

6 suspect that there were at least two more, but

7 I don't remember them specifically.

8 Q Why don't you tell me about the two

9 that you do recall?

10 A The American Management Association

11 had a course, business oriented type subjects.

12 Q Okay.

13 A That, as I recall, involved several

14 week-long sessions about a month apart for a

15 six-month period or so in New York, and I

16 attended a course a week and would come back

17 and then repeat it for about six months or so.

18 Q And these are management type courses?

19 A Management type, yes.

20 Q And what's the other one that you

21 recall?

22 A The U.S. Chamber of Commerce.

23 Q Was that also a management?

24 A Management type. And it was a little

25 more oriented to governmental type exposures.

1 Also in the Washington D. C. area.

2 Q Have you served in the military?

3 A Yes.

4 Q When was that?

5 A From 1943 to 1947.

6 Q Which branch of the service were you
7 in?

8 A Army.

9 Q What were your duties when you were in
10 the army?

11 A Of course it varied. I went in as a
12 private and came out a captain. It was rather
13 varied. And I started out in the artillery,
14 went through infantry and ended up in
15 engineering.

16 Q You were honorably discharged?

17 A Yes.

18 Q So if I'm getting the sequence right,
19 you received your BS in '43 and then went into
20 the military?

21 A Well, I was in the military while I
22 was earning my last year of the BS. Then I
23 went into active duty in '43.

24 Q And you were in active duty from '43
25 to '47?

1 A No. '43 to '46. I misled you there.

2 Yes. '46.

3 Q Because then you got your MS in '47?

4 A In the period of '46 to '47, yes.

5 Q So that was after you got out of the

6 army that you went back to college?

7 A Yes.

8 Q Mr. Papageorge, can I ask you how old

9 you are?

10 A 72.

11 Q Can you trace for me your employment

12 history starting at the time that you -- well,

13 I guess starting with your first full-time job

14 after the military?

15 A Okay. My first full-time job would

16 then be my working with Phillips Petroleum

17 Company in Bartlesville, Oklahoma, from '47 to

18 '51.

19 Q What was your position there?

20 A Two different assignments. I started

21 out as a research engineer working with oil

22 wells and oil production in the field. And

23 then I spent two years as a design engineer in

24 the company's refining department.

25 Q Where did you go from Phillips

1 Petroleum?

2 A I then joined Monsanto Company in
3 1951.

4 Q Why did you leave Phillips Petroleum?

5 A I guess it is the looking for a
6 greener pastures approach is all I can
7 remember.

8 Q What was the first position that you
9 held with Monsanto?

10 A As I remember, the title was process
11 engineer. It was in the design department
12 where I was assigned the task of designing
13 equipment used for manufacturing of a
14 chemical.

15 Q Did you hire into a specific plant at
16 Monsanto?

17 A Yes.

18 Q Which plant was that?

19 A It is the one called the J. F. Queeny
20 plant in St. Louis.

21 Q And what was the chemical that you
22 were designing equipment for the manufacture
23 of?

24 A Phthalic anhydride.

25 Q How long were you involved -- let me

1 withdraw that. When you first hired in with
2 Monsanto, were your duties related
3 specifically to designing for the manufacture
4 of that chemical?

5 A Yes.

6 Q How long did that position last?

7 A As I remember, about three years
8 total. That's design and what we called at
9 the time demonstration. In other words, when
10 it was installed I had to go out and
11 demonstrate that it could do what I said it
12 would do.

13 Q Was this a new product for the Queeny
14 plant?

15 A No. It was a new process for making
16 an old product.

17 Q So you were involved from
18 approximately '51 to '54 in the phthalic
19 anhydride project?

20 A Yes.

21 Q What was the next position that you
22 had with Monsanto?

23 A I was assigned as an assistant
24 supervisor in the production unit that made
25 chemicals that we referred to at Monsanto as

1 plasticizers. These are chemicals that are
2 added to plastics to give them desirable
3 properties such as flexibility.

4 Q How long did you hold that position?

5 A Keep in mind these are estimates at
6 this point in time. That's a long time ago.

7 Q I understand that.

8 A I think I had that job for about a
9 year to two years, something like that.

10 Q So somewhere around '55 or '57?

11 A Yes, something like that.

12 Q Was that also at the Queeny plant?

13 A Yes.

14 Q Were any of the plasticizers that you
15 were involved with PCB containing?

16 A No.

17 Q What were your duties and
18 responsibilities as an assistant supervisor?

19 A Well, I was to help the supervisor of
20 that operation to determine whether the
21 products produced met the specifications and
22 that the amounts of the products produced were
23 as scheduled, the amount of usable product was
24 as designed by the research people. In other
25 words, did we get proper yields? In other

1 words, did we waste our raw material or was it
2 made into useful product?

3 And I had to assist him also in making
4 sure that all of this was done safely. That's
5 all that comes to mind at the moment.

6 Q Were there any responsibilities in
7 that position relating to the extent to which
8 the production process might contribute to
9 water pollution?

10 A No.

11 Q Were there others at the Queeny plant
12 at that time who were responsible for whether
13 various production processes contributed to
14 water pollution?

15 A At that point in time I don't recall
16 anyone having that specific assignment.

17 Q Do you know whether at that point in
18 time Monsanto had any positions either at the
19 plant level or at the corporate level whose
20 responsibility related to pollution control?

21 A I don't remember anyone.

22 Q What was the next position that you
23 held at Monsanto after assistant supervisor in
24 the plasticizers?

25 A I was made supervisor of another

1 production unit.

2 Q Okay. And we are talking about '55 or
3 '56, in that range?

4 A Somewhere in there, yes, sir.

5 Q How long did you hold this supervisor
6 position?

7 A Again, about a year, year and a half,
8 two.

9 Q So we are talking about '55 or '56 to
10 '57 or '58?

11 A Yes. Somewhere in there.

12 Q What were you supervisor of?

13 A This unit produced a group of similar
14 chemicals that were used eventually as rubber
15 additives.

16 Q Do you recall the chemical name of the
17 rubber additives?

18 A Well, I don't want to mislead you.
19 These were raw materials in turn processed
20 further to make the rubber additives. The
21 materials I was involved with were the
22 nitrochlorobenzenes.

23 Q So you were involved in the production
24 of nitrochlorobenzene which was used as a raw
25 material in the production of rubber

1 additives?

2 A Correct.

3 Q And this was at Queeny?

4 A Yes.

5 Q And the rubber additives production

6 was also at Queeny?

7 A A minor part was. Most of it was

8 across the river in Sauget, Illinois.

9 Q That would be at the Krummrich plant?

10 A Krummrich plant.

11 Q Let me go back a second to your work

12 as assistant supervisor in the plasticizers.

13 What was the chemical name of the material

14 that you were producing in that department?

15 A It was a whole family of phthalate

16 esters.

17 Q What were the raw materials used in

18 the production of nitrochlorobenzenes at the

19 Queeny plant during the time that you were

20 supervisor?

21 A I would receive chlorinated benzene,

22 and the unit that I was responsible for would

23 add the nitrate to produce the

24 nitrochlorobenzene.

25 Q The chlorinated benzene raw material,

1 was that monochlorobenzene or dichlorobenzene
2 or some other compound?

3 A It was several of them depending on
4 which of the nitrochlorobenzenes we were asked
5 to produced. Some of them were dichloros and
6 some were tris and monos.

7 Q So I'm sorry. I didn't quite
8 understand your last answer. You were
9 producing monochloro -- I'm sorry. Let me go
10 back a second.

11 Can I understand from your last answer
12 that depending upon which nitrochlorobenzenes
13 you were producing, you could be receiving or
14 using monochlorobenzene, dichlorobenzene or
15 trichlorobenzene as a raw material?

16 A Correct.

17 MR. NASSIF: Producing monochloro,
18 dichloro and trichloro as opposed to receiving
19 or using.

20 MR. RICCI: I don't think that's
21 correct, but I will let the witness answer.

22 A No. I was producing the nitrated
23 version of the mono, di and trichlorobenzenes.

24 Q (By Mr. Ricci) Right. And so you
25 were using the unnitrated chlorinated benzenes

1 as raw materials?

2 A Correct.

3 Q Did you produce the unnitrated

4 chlorinated benzenes?

5 A No.

6 Q You received them as raw materials?

7 A Correct.

8 Q Were those chlorinated benzene

9 compounds manufactured at Queeny?

10 A No.

11 Q Where were they manufactured?

12 A Krummrich plant.

13 Q So it was your understanding that they

14 manufactured monochlorobenzene,

15 dichlorobenzene and trichlorobenzene at

16 Krummrich?

17 A Yes.

18 Q Do you know if they manufactured

19 tetrachlorobenzene at Krummrich?

20 A Yes.

21 Q That question was ambiguous so I'm

22 going to ask did they manufacture

23 tetrachlorobenzene at Krummrich?

24 MR. NASSIF: Objection. Asked and

25 answered.

1 A Yes.

2 Q (By Mr. Ricci) Thank you.

3 MR. RICCI: Off the record.

4 (Discussion off the record)

5 Q (By Mr. Ricci) Do you know -- let me

6 withdraw that. Did they manufacture

7 nitrochlorobenzenes at the Krummrich plant?

8 A I don't know.

9 Q Can you give me a general description

10 of the manufacturing process for

11 nitrochlorobenzenes?

12 A It would be very general because I

13 don't recall the specifics. We just -- as I

14 remember, we would just mix the chlorinated

15 benzene with nitric acid, and I have forgotten

16 all the refining steps that follow, but the

17 net result is that the nitrogen oxide attaches

18 itself to this benzene molecule to form the

19 nitro version of the chlorinated benzene.

20 Q Were there any by-products in the

21 production of the nitrochlorobenzenes?

22 A If I understand the meaning of

23 by-products, I'm assuming you are talking

24 about materials that are useful and can be

25 sold as a product?

1 Q Okay. Let me clarify. I'm not
2 necessarily talking about materials that are
3 useful. I'm just talking about any materials
4 other than the nitrochlorobenzenes that are
5 produced in the process of manufacturing the
6 nitrochlorobenzenes, whether they be useful or
7 not?

8 A There were waste materials produced,
9 yes.

10 Q What were the waste materials?

11 A It is a tarry material that's the
12 residue of a distillation step.

13 Q Still bottom?

14 A Still bottoms is a good word, yes.

15 Q Was there any by-product, gaseous
16 material, any hydrogen chloride or any other
17 gaseous material produced in this production
18 process?

19 A No.

20 Q Did the production process for
21 nitrochlorobenzenes result in any -- let me
22 withdraw that. Was the Queeny plant served by
23 a sewer system?

24 A Yes.

25 Q Were there any waste products or

1 by-product in the manufacture of the
2 nitrochlorobenzenes that were discharged to
3 the sewers?

4 A Not directly.

5 Q Indirectly?

6 A Indirectly through washing the floors
7 down and so on.

8 Q The discharges to the sewers from the
9 washing of floors would then consist of
10 materials that had spilled or leaked on the
11 floors?

12 A Whenever it happened, yes.

13 Q There was no regular process
14 discharged into the sewers as part of that
15 manufacturing process?

16 A That is correct.

17 Q How were the still bottoms disposed
18 of?

19 A They were drained into steel drums and
20 hauled over to Monsanto's landfill in
21 Illinois.

22 Q Whereabouts in Illinois?

23 A Near the Sauget, Krummrich plant.

24 Q Was that a landfill owned by Monsanto?

25 A Yes.

1 Q Do you know whether the still bottoms
2 were disposed of in any other landfills in
3 Sauget or the Village of Monsanto?

4 A Not to my knowledge.

5 Q What did those still bottoms consist
6 of?

7 A I don't know.

8 Q What was the next position that you
9 held with Monsanto after supervisor in the
10 nitrochlorobenzene manufacture?

11 A I was appointed as supervisor in the
12 plant maintenance and engineering department.

13 Q That was plant engineering and
14 maintenance?

15 A Yes. We didn't use quite that
16 expression, but that describes it well.

17 Q How long did you hold that position?

18 A A couple years again.

19 Q So we are getting into the early '60s
20 maybe, '57, '58 to '59 or '60?

21 A Yes. I would suggest that about '57,
22 '58 is close here.

23 Q To when you started or?

24 A When I was working as a maintenance
25 supervisor.

1 Q This was at the Queeny plant as well?

2 A Yes.

3 Q What were your duties and

4 responsibilities in that position?

5 A I was responsible for the small new

6 equipment projects.

7 Q Anything else?

8 A That was it.

9 Q What do you mean when you say small

10 new equipment projects?

11 A These are projects that are small

12 enough to be handled by the plant personnel

13 and not contracted out to construction

14 contractors.

15 Examples include such things as

16 replacing a pipeline with a new pipeline,

17 increasing its size or replacing it because it

18 has a leak in it, or replacing a pump or

19 adding a new pump because the production

20 department needs a pump, installing a new tank

21 or a new instrument panel with a new

22 instrument in it. It was quite varied.

23 Q And it would include both regular

24 maintenance as well as addition of new

25 equipment?

1 A Yes. I want to make a distinction.
2 The regular maintenance was done by other
3 teams. By regular, I gave you a poor example
4 when I said leaking pipeline. I would only
5 replace a leaking pipeline if it was going to
6 be enlarged at the same time and rerouted.
7 But a replacement like for like would be done
8 by the repair teams as distinguished from the
9 new project team.

10 Q And that was plant wide?

11 A Yes.

12 Q Were there any products manufactured
13 at the Queeny plant during this time period
14 when you were working there that were also
15 manufactured at Krummrich?

16 A I don't recall any that were common to
17 both plants. I just don't recall any.

18 Q You had mentioned in an earlier answer
19 that the still bottom residues from the
20 nitrochlorobenzene process were hauled to a
21 Monsanto landfill in Sauget. Do you know when
22 that landfill opened?

23 A I do not, no.

24 Q How long had they been manufacturing
25 nitrochlorobenzenes at Queeny prior to the

1 time that you became supervisor in that
2 department?

3 A I don't know.

4 Q What was the next position that you
5 held with Monsanto after supervisor of new
6 equipment projects?

7 A I became the superintendent of the
8 maintenance engineering department.

9 Q And when was that?

10 A About the late '50s, '58, '59,
11 somewhere in there.

12 Q How long did you hold that position?

13 A Again, a couple years.

14 Q How did your duties and
15 responsibilities change in your move from
16 supervisor to superintendent?

17 A When I became superintendent, I was
18 responsible for the entire plant, which
19 included the group that I had, the new small
20 project group, as well as all of the
21 maintenance activities in the plant.

22 Q Was any of your work either as
23 supervisor of plant engineering or
24 superintendent related to environmental
25 controls or environmental control apparatus?

1 A Can you help me with your definition
2 of environmental control apparatus?

3 Q Devices that were designed to reduce
4 or eliminate discharges either to the sewer
5 system, to other bodies of water or to the
6 air.

7 A Well, every process is designed with
8 that intent in mind using the available
9 technology at the time. There are scrubbers.
10 There are condensers that catch the fumes and
11 then bring them back into the system. So to a
12 degree some of it did involve that type of
13 apparatus.

14 Q Was there anyone at the Queeny plant
15 either during the time that you were
16 supervisor or superintendent in plant
17 engineering whose specific responsibility was
18 environmental controls as I have defined them
19 previously?

20 MR. NASSIF: I will object to the form
21 of the question.

22 MR. RICCI: Can I have a basis for
23 your objection?

24 MR. NASSIF: Yes. He already
25 testified he was responsible for environmental

1 controls as you have defined them because he
2 had responsibility for condensers and these
3 other things, so everyone in his group was
4 responsible.

5 MR. RICCI: My question was
6 specifically responsible.

7 MR. NASSIF: You mean had the title
8 environmental controls?

9 MR. RICCI: That would be one example,
10 or if they didn't have the title if that was
11 their specific or exclusive responsibility.

12 MR. NASSIF: If you can answer it,
13 Bill, go ahead and answer it.

14 A My hesitation is due to the timing.
15 Eventually there was an individual, but I'm
16 not -- I don't recall now whether he was in
17 place in that time period we are talking
18 about, the late '50s or not. I just can't
19 remember when this person was designated as
20 the individual that concerned himself with
21 environmental matters.

22 Q (By Mr. Ricci) Was there anybody at
23 the corporate level with responsibility for
24 environmental matters or environmental
25 controls during the time period either when

1 you were supervisor or superintendent in
2 engineering?

3 A At that point in time I don't recall
4 ever hearing the expression environmental
5 control mentioned.

6 Q Whether that term was mentioned or
7 not, was there anyone at the corporate level
8 who was specifically responsible for
9 monitoring supervisors or overseeing
10 discharges to water and air?

11 A No.

12 Q What was the next position that you
13 held at Monsanto after superintendent for
14 maintenance and engineering?

15 A I was appointed a superintendent in
16 the technical department in the plant called
17 technical services department.

18 Q I'm sorry. That was superintendent of
19 technical services?

20 A One of about four of us, yes.

21 Q What year did you take that position,
22 do you recall?

23 A About '61, '62. Keep in mind these
24 dates could be off.

25 Q Sure. You mentioned that you were one

1 of four superintendents?

2 A As I remember, yes.

3 Q One of four superintendents for

4 technical services?

5 A Yes.

6 Q Did you have a specific area of

7 responsibility or specialization?

8 A It wasn't a geographic area. It was

9 product associated.

10 Q Which products were within your

11 jurisdiction?

12 A I don't think I will remember all of

13 them, but I do recall phthalic anhydride,

14 which we referred to earlier, maleic

15 anhydride, the plasticizers we talked about

16 earlier. The product was called bisphenol,

17 B-I-S-P-H-E-N-O-L. I'm sure there were many

18 more. I just can't remember all of them.

19 Q Was nitrochlorobenzenes within your

20 jurisdiction?

21 A No. In fact, no. I'm positive it

22 wasn't.

23 Q What were your responsibilities as

24 superintendent of technical services?

25 A I supervised a team of engineers and

1 technicians, and the number of individuals in
2 that team varied depending of course on the
3 work load. And we were responsible for
4 assisting the production supervisor in either
5 making more product or better product or safer
6 or whatever help he needed technically to
7 achieve what his bosses were expecting of him.

8 Q Do you have any recollection of anyone
9 in the technical services department during
10 this time period being specifically assigned
11 to deal with issues of environmental control?

12 A No.

13 Q How long did you hold this position?

14 A Until about 1962 or so.

15 Q What was the next position that you
16 held at Monsanto?

17 A I was then named the -- appointed as a
18 general superintendent of, and I have
19 forgotten the exact title, but it involved
20 warehousing, shipping, receiving, utilities.
21 These were all the services required by the
22 manufacturing teams other than the
23 maintenance.

24 Q This was at Queeny as well?

25 A Yes.

1 Q And this was in '62, '61, around there
2 that you were appointed?

3 A About that, yes.

4 Q How long did you hold that position?

5 A Until '64.

6 Q Is '64 an approximation as well?

7 A That's firmer.

8 Q What were your duties as general
9 superintendent of warehousing, shipping,
10 receiving and whatever else was included in
11 that title?

12 A Well, I was responsible for
13 supervising all the personnel involved in
14 those many activities, the warehousing team,
15 the shipping team, the people who distributed
16 the steam, electricity, and water in the
17 plant, the trash pickup teams. We even had a
18 facility for blending chemicals.

19 Q You indicated that your
20 responsibilities included supervising trash
21 disposal?

22 A Yes.

23 Q Did they also include supervising
24 chemical waste disposal?

25 A Yes.

1 Q Do you recall the Queeny plant
2 disposing of any trash or chemical waste in
3 any landfills in Sauget?

4 A Yes.

5 Q Which landfills do you recall the
6 Queeny plant using?

7 A The Krummrich plant landfill.

8 Q Any others?

9 A That's all I ever heard of.

10 Q Do you recall the Queeny plant ever
11 using a landfill owned or operated by Leo
12 Sauget?

13 A Not that -- no. No.

14 Q Paul Sauget?

15 A Well, I have heard the names of the
16 individuals, but.

17 Q Right.

18 A But the plant, the Queeny plant, sent
19 the material to the Krummrich plant landfill.

20 Q Did the Queeny plant maintain its own
21 fleet of trucks?

22 A No.

23 Q Were products manufactured at the
24 Queeny plant shipped in trucks at times?

25 A Certainly.

1 Q Do you recall using a trucking firm by
2 the name of Rogers Cartage during this time
3 period?

4 A Yes.

5 Q Where were they located?

6 A Over in Illinois near the Krummrich
7 plant, as best I recall.

8 Q Do you recall what products the Queeny
9 plant used Rogers to ship?

10 A I certainly can't recall all of them.

11 Q Can you recall any?

12 A The plasticizers we talked about
13 earlier. That's all that comes to mind at the
14 moment. I'm sure there were others.

15 Q Do you know whether the Krummrich
16 plant was using Rogers to haul material during
17 the time period that you were a general
18 superintendent of warehousing and shipping and
19 receiving?

20 A Would you mind repeating that again?

21 Q Yes. Do you know whether the
22 Krummrich plant was using Rogers Cartage as a
23 hauler during the time that you were general
24 superintendent at the Queeny plant?

25 A I did not know that, no.

1 Q Was there any coordination between
2 Queeny and Krummrich with respect to material
3 transport?

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

6 A I don't know how to define
7 coordination.

8 Q (By Mr. Ricci) Okay. Did you work
9 with your counterpart at the Krummrich plant
10 with respect to scheduling or pricing or
11 anything like that relating to shipping of
12 materials?

13 A No.

14 Q Are you aware of any requirements that
15 Monsanto imposed upon Rogers with respect to
16 the cleaning out of tank cars or tank trailers
17 that were used to haul Monsanto products?

18 A Yes. I'm aware that he was expected
19 to arrive at the plant with a clean vehicle so
20 that the product that he was going to haul
21 would not be contaminated.

22 Q When you say not contaminated, you
23 mean not contaminated by other products or
24 other materials that had been hauled in that
25 trailer?

1 A Yes.

2 Q Was it then your understanding that
3 when Rogers hauled materials for Monsanto, it
4 was to clean out its trailers before they were
5 used to haul other materials for Monsanto?

6 A Certainly.

7 Q Do you know where this cleaning
8 process took place?

9 A At that time?

10 Q Yes.

11 A No, I did not.

12 Q Do you know whether it occurred at
13 their facility in Sauget?

14 A Again, at that time, I did not know.

15 Q Did there ever come a time when you
16 were aware of where Rogers conducted its
17 trailer cleaning operations?

18 A My awareness came by comments made by
19 others. I personally did not see any of that
20 activity.

21 Q What comments by others are you aware
22 of relating to Rogers cleaning of trailers?

23 A It seems to me I recall reports that
24 referred to the authors mentioning that Rogers
25 could have or may have or did drain materials

1 into certain areas in the cleaning steps that
2 he took.

3 Q These reports, were they related to
4 efforts to control PCB discharges at the
5 Krummrich plant?

6 A No.

7 Q I believe you testified that you
8 recall reports by others. What kinds of
9 reports were you referring to?

10 A Primarily reports generated by people
11 at the Krummrich plant. That's the best my
12 memory will help me.

13 Q Do you recall the nature of these
14 reports?

15 A The nature was one of reporting
16 environmental kinds of activities relating to
17 the Krummrich plant and its area there.

18 Q By its area, are you referring to the
19 village?

20 A That general area surrounding the
21 Sauget, Illinois, area.

22 Q So you recall reports by individuals
23 at Krummrich which related to environmental
24 activities at Krummrich and in the vicinity of
25 Krummrich where Rogers truck cleaning was

1 mentioned?

2 A Yes.

3 Q And I believe in your earlier answer

4 you testified to some recollection that Rogers

5 drained certain materials in certain areas?

6 A That is the recollection I have, that

7 I gleaned from some of these reports.

8 Q Do you recall what kinds of materials

9 were discussed in those reports?

10 A I only recall one. That doesn't make

11 it complete. I do recall a reference to a PCB

12 type heat transfer fluid.

13 Q And the reference was that Rogers was

14 cleaning trailers that resulted in the

15 discharge of this material?

16 A I don't know it was so much cleaning.

17 My memory is fuzzy. I associate that with an

18 accident of some kind. There was some

19 incident that occurred with the release of

20 heat transfer fluid.

21 Q And it somehow involved Rogers?

22 A Yes.

23 Q Have I taxed your recollection to its

24 limit on that incident?

25 A I believe you have, yes, sir.

1 Q Do you know if it involved a release
2 of PCB type heat transfer fluids to the
3 sewers?

4 A I'm left with that impression that it
5 was released to an undesirable spot or system.

6 Q Wherever that may be?

7 A Yes. I can't remember the specifics.

8 Q Did Rogers haul any waste materials
9 for the Queeny plant?

10 A No.

11 Q Just product?

12 A Yes.

13 Q Do you know whether Rogers hauled any
14 waste materials for the Krummrich plant?

15 A I do not know.

16 Q In your position as this general
17 superintendent of warehousing, et cetera, were
18 you responsible for the transfer or transport
19 of materials from the Queeny plant to other
20 Monsanto plants and vice versa?

21 A I was responsible for the shipment of
22 material leaving the plant. I was responsible
23 for the proper receipt of material arriving at
24 the plant but not for what happened at the
25 source.

1 Q Were there any materials that the
2 Krummrich -- sorry. Were there any materials
3 that the Queeny plant was receiving from the
4 Krummrich plant during the time that you were
5 general superintendent?

6 A Yes.

7 Q What were they?

8 A For example, the chlorinated benzenes
9 we referred to earlier. As I recall, we
10 received phenol, chlorinated phenol, and some
11 phosphorous chemicals. I can't recall
12 specifically which at the time. I think I
13 know there were some phosphorous chemicals
14 from the Krummrich plant to Queeny plant. I
15 at the moment just don't remember which
16 phosphorous chemicals. That's all that comes
17 to mind at present.

18 Q You said in that last answer
19 chlorinated phenols. Were you referring to
20 PCBs?

21 A No. Those are biphenyl, not phenols.

22 Q What are chlorinated phenols? Can you
23 give me an example?

24 A Yes. You have heard of penta, the
25 wood treating chemical.

1 Q So pentachlorophenol?

2 A That's pentachloro. Yes, that's a
3 member of the family.

4 Q Okay. Did the Queeny plant receive
5 any PCB-containing products or materials from
6 Krummrich?

7 A Yes.

8 Q Which products that you recall?

9 A As best I remember, they received just
10 about all of the liquid PCBs.

11 Q What applications did the Queeny plant
12 put the PCBs to that it received from
13 Krummrich?

14 A There were several.

15 Q That you can recall?

16 A Of course it was used to service the
17 electrical equipment, the transformers in
18 particular. It was used as a heat transfer
19 fluid in the operating equipment, and it was
20 also in a raw material -- I want to call it a
21 raw material -- used in the blending at this
22 lending station that I mentioned earlier for
23 the manufacture of hydraulic fluids.

24 Q Any other applications that you can
25 recall?

1 A That's it.

2 Q And these materials were received

3 during the time that you were general

4 superintendent?

5 A Yes.

6 Q Were they received prior to the time

7 that you were general superintendent as well?

8 A Yes.

9 Q How were those materials transported?

10 By those materials, I should be specific. I'm

11 referring to the liquid PCBs that the Queeny

12 plant received from the Krummrich plant.

13 A Primarily through rail tank cars.

14 Occasionally in 55 gallon steel drums.

15 Q Were they ever transported by tank

16 car?

17 MR. NASSIF: That's what he just said.

18 Q (By Mr. Ricci) I'm sorry.

19 A Rail tank car.

20 Q I'm sorry. I mean tank trailers?

21 A No.

22 Q How many production processes at the

23 Queeny plant used PCB-containing heat transfer

24 fluids?

25 A I have no idea.

1 Q Do you know of any?

2 A Yes. I recall some.

3 Q Which do you recall?

4 A The one that comes to mind is the

5 production unit that made chemicals referred

6 to as phosphate esters. I believe the

7 department that made the bisphenol product

8 also had a heat transfer unit that used PCBs

9 as the heating media. I can't recall the

10 others.

11 Q In either of those two operations that

12 you do recall, do you know whether the PCB-

13 containing heat transfer fluids ever became

14 spent or got to the point where they needed to

15 be replaced or changed out?

16 A I was never that close to them. No, I

17 do not.

18 Q You indicated that the Queeny plant

19 received PCB liquids that were used as a raw

20 material in the blending of hydraulic fluids.

21 What were the names of the hydraulic fluids

22 that were blended at Queeny plant? What was

23 the name?

24 A It was the trade name Pydraul followed

25 by letters and numbers to distinguish the

1 different recipes and mixtures.

2 Q What other raw materials were involved

3 in the blending of Pydraul besides the PCB

4 liquids?

5 A The phosphate esters were an

6 ingredient. Some of them contained mineral

7 oil, and I forgot all the chemicals that were

8 added to give the proper fluidity, viscosity

9 and color.

10 Q Do you recall the specific aroclors

11 that were used in this process?

12 A I recall some of them.

13 Q Which ones do you recall?

14 A The aroclor 1242 and aroclor 1248.

15 Those are the only two that come to mind.

16 Q Do you recall the number or letter

17 designations that were attached to the

18 Pydrauls that were made at Queeny?

19 A Again, there were many. I remember

20 Pydraul F-9. The others don't come to mind.

21 Q Do you recall A-200?

22 A Yes, A-200.

23 Q A-280?

24 A A-280 does not ring a bell, no.

25 MR. NASSIF: Are you asking him if

1 those were, A-200 and A-280, made at Krummrich

2 or if he recalls?

3 Q (By Mr. Ricci) Made at Queeny. Do

4 you recall if those were made at Queeny?

5 A Yes.

6 Q Do the numbers that we just mentioned

7 refresh your recollection as to any others

8 that were manufactured at Queeny?

9 A No. There were, gosh, as many as a

10 dozen altogether. I just don't recall all the

11 numbers.

12 Q Do you know if these Pydrauls were

13 also blended at Krummrich?

14 A Yes, they were.

15 Q Why were they blended at both places?

16 A Well, it is a matter of timing. At

17 one time these products were blended both at

18 Queeny and Krummrich. And when this central

19 blending system was installed at Queeny plant,

20 it was consolidated at the Queeny plant. So

21 beginning in 1963, the Pydrauls were all made

22 at the Queeny plant. Krummrich plant no

23 longer blended.

24 Q The product that came out of the

25 blending operations at Queeny were finished

1 products?

2 A Yes.

3 Q How were those materials shipped to

4 customers?

5 A Primarily in 55 gallon steel drums.

6 Q Were they ever shipped in tank

7 trailers?

8 A I don't know.

9 Q Do you have any recollection of Rogers

10 being involved in the shipment of Pydrauls

11 from Queeny?

12 A I just don't remember that.

13 Q What was the next position that you

14 held at Monsanto?

15 A I was assigned as one of the general

16 superintendents of manufacturing at the W. G.

17 Krummrich plant. That was in '64.

18 Q How long did you hold that position?

19 A About a year.

20 Q '64 to '65?

21 A Yes.

22 Q And I'm sorry. You testified you were

23 one of a number of general superintendents?

24 A Yes.

25 Q How many?

1 A About five as I remember.

2 Q Did you have specific products or
3 operations that you were responsible for?

4 A I did.

5 Q What were those?

6 A I recall the phenol department, the
7 chlorinated phenol department, a rubber
8 additive department. And there were a couple
9 three more I can't recall at the moment.

10 That's all I can remember.

11 Q What was the rubber additive?

12 A It was called 4-NDPA. I don't recall
13 the chemical terminology that fits that
14 acronym.

15 Q Do you recall if chlorinated benzenes
16 were within your jurisdiction as general
17 superintendent of manufacturing?

18 A No. That was one of the other
19 superintendents.

20 Q How about aroclors?

21 A No. That was not mine.

22 Q Phosphate esters?

23 A No.

24 Q Chlorine?

25 A No.

1 Q Benzyl chloride?

2 A Yes. Benzyl chloride, yes.

3 THE WITNESS: Can we take a break at
4 this point?

5 (Recess)

6 MR. RICCI: Back on the record.

7 Q (By Mr. Ricci) Mr. Papageorge, in
8 your position as general superintendent of
9 manufacturing at Krummrich, were you required
10 to gain a working knowledge of the
11 manufacturing processes that were within your
12 jurisdiction?

13 A Can you help me with the expression
14 working knowledge?

15 Q Were you required to familiarize
16 yourself with the production processes?

17 A In a general way, yes. But not
18 specifically in terms of exact temperatures,
19 pressures, which valve to turn and when and so
20 on.

21 Q But in terms of what raw materials
22 were used and what reactions were involved,
23 are those concepts that you gained some
24 familiarity with?

25 A Yes.

1 Q Did you have any responsibility or
2 knowledge with respect to issues like material
3 balances and waste products generated?

4 A Indirectly.

5 Q Okay. What do you mean by that?

6 A My responsibility was to make certain
7 that the amount of product produced met a
8 standard in terms of yield. We refer to it as
9 yield on the raw materials. So by
10 concentrating on that yield, it indirectly
11 affects the amount that might have been lost
12 elsewhere or resulted in some other chemical.

13 Q Were you aware of documents that were
14 referred to as standard manufacturing
15 processes?

16 A Yes.

17 Q What did you understand those
18 documents to be?

19 A In a way, these are the technical
20 documents prepared by technically oriented
21 people including the research chemists and so
22 on where the process was studied. And it is a
23 -- I'm going to call it a recipe for making
24 the product.

25 Q Were those documents relied upon by

1 the individuals who were involved in the
2 manufacturing operations?

3 A Certainly.

4 Q And they were to the best of your
5 knowledge accurate in their description of the
6 manufacturing processes or the recipes?

7 A As accurately as the understanding
8 available at the time or the technology
9 available at the time, yes.

10 MR. RICCI: Let me go off the record
11 for a second.

12 (Discussion off the record)

13 (Plaintiff Deposition Exhibit Number 1
14 marked for identification).

15 Q (By Mr. Ricci) Mr. Papageorge, I'm
16 showing you a document that's been marked as
17 Exhibit 1 to your deposition. And I would ask
18 you -- and it is a document with Bates
19 No. CER 111154, M13196. And I'd ask you to
20 take a look at it and just identify it for me.
21 I want to test your eyesight as well as your
22 memory with this series of questions.

23 A You asked me to identify it. I can
24 only read the title of the document.

25 Q Okay.

1 A Which is the WGK plant 1964 sewers,
2 Monsanto Company, Sauget, Illinois.

3 Q And you are just reading the legend
4 there --

5 A Yes.

6 Q -- in giving that answer?

7 A Yes.

8 Q Do you understand the WGK plant to be
9 the Krummrich plant?

10 A Yes.

11 Q As you look at this map, can you tell,
12 other than from reading the legend, that this
13 is in fact a map that depicts the Krummrich
14 plant?

15 A I'm having some difficulty spotting
16 specific information that would really help
17 me. I do see a reference to, say, Falling
18 Springs Road. That helps.

19 Q Okay.

20 A I do see the reference to the service
21 building, and I do recall that. I do see the
22 near location of a section here referred to as
23 the American Zinc Company, which fits my
24 understanding of the WG Krummrich plant site.

25 But other than that, I'm having some

1 difficulty identifying the rest of the map.

2 Q Do you mind if I just stand? I don't
3 mean to hover over you.

4 A Sure.

5 Q You see the reference to Monsanto
6 Avenue?

7 A I do.

8 Q Does that assist you in orienting
9 yourself as to what this map depicts or how it
10 depicts the plant layout?

11 A That does help. Monsanto Avenue and
12 Falling Springs Road does help.

13 Q Now, were you familiar with what was
14 referred to as the north plant and the south
15 plant at Krummrich?

16 A Yes.

17 Q What did you understand the north
18 plant to be? Not in terms of what they made
19 there, but just what delineated between the
20 north and the south plant.

21 A As best I recall, the north plant to
22 me represented the older facility, which dated
23 back to World War I. That was purchased by
24 Monsanto and became a part of the overall
25 site. The north end also made, as I recall,

1 the oil additives which were later sold to the
2 Ethel Corporation. That's about all I
3 remember of that distinction.

4 Q Was it your understanding that the
5 north plant was located north of Monsanto
6 Avenue?

7 A I did not try to reach any
8 understanding in my own mind as to where the
9 description north, what it related to.

10 Q You indicated that one of the areas of
11 responsibility that you had as general
12 superintendent at the Krummrich facility was
13 manufacturing of phenol?

14 A Yes.

15 Q Can you show me on this map where the
16 phenol manufacturing operation took place?

17 A I was looking for that earlier. And I
18 am disoriented at the moment. I just cannot
19 spot it.

20 Q Do you recall if it was east of
21 Falling Springs Road or west of Falling
22 Springs Road?

23 A No, I don't.

24 Q Do you recall the location of any of
25 the manufacturing operations that you were

1 responsible for during the time that you were

2 general superintendent of manufacturing?

3 A No.

4 Q So you can't identify any of their

5 locations on the map?

6 A I cannot, no.

7 Q Do you have any recollection of a

8 concern being raised at the Krummrich facility

9 with respect to phenol discharges to the sewer

10 system?

11 A No.

12 Q Any recollection of a project or

13 program to reduce phenol discharges to the

14 sewers?

15 A No.

16 Q Do you know whether any of the

17 manufacturing processes that you were

18 responsible for as general superintendent

19 resulted in the discharge of phenol to the

20 sewers?

21 A Yes.

22 Q Which processes were those?

23 A We are talking about phenol per se?

24 Q Yes.

25 A Just straight phenol?

1 Q Correct.

2 A There were occasions in the phenol
3 producing unit when some of the phenol would
4 get into the sewer system, yes.

5 Q By what mechanism did that occur?

6 A I don't remember all the details. I
7 do know that there were phenol-containing
8 waste waters.

9 Q Waste waters from the manufacturing
10 operation of phenol?

11 A Yes.

12 Q Do you know whether there were any --
13 let me withdraw that. Do you have any
14 recollection of the quantity or concentration
15 of the phenol discharges from the phenol
16 manufacturing operation?

17 A No. The only recall I have was not
18 with respect to specific numbers but to the
19 point that the phenol content should not be
20 such that it destroyed the municipal waste
21 treatment procedures or methods that they were
22 using to treat the wastes.

23 Q You are talking about the village
24 waste water treatment?

25 A Yes.

1 Q Were there instances where the phenol
2 discharge did interfere with the village waste
3 water treatment operations?

4 A Not that I recall, no.

5 Q Were there any specific steps taken to
6 prevent that from happening taken by Monsanto?

7 A Well, in the design of the system and
8 in the training of the operators and all, this
9 is one of the points that was covered.

10 Q Were there any specific design
11 features that you can recall that related to
12 reducing phenol discharges to the sewers?

13 A Not specifically, no.

14 Q How did phenol interfere or how
15 potentially could phenol interfere with the
16 village waste water operation treatment?

17 A It is my understanding that activated
18 sludge was part of their system. And phenol,
19 being a good disinfectant at high enough
20 levels, could destroy the bacteria to the
21 point where the system didn't do what was
22 expected of it.

23 Q Is it your understanding that the
24 village employed activated sludge during the
25 time that you were general superintendent of

1 manufacturing?

2 A That was my understanding, yes, sir.

3 Q What was the source of the phenol-

4 containing waste water that came out of the

5 phenol manufacturing operation?

6 A I don't recall now.

7 Q Do you know whether the chlorinated

8 phenol manufacturing operation resulted in any

9 discharges of phenol to the sewers?

10 A On occasion, yes.

11 Q How so?

12 A Well, I recall blockages in the

13 production system. And during the cleanup of

14 these blockages, although the intent was made

15 to salvage the material, some of it would get

16 on the floors. It was difficult to sweep up

17 to the point where none of it was there. And

18 eventually the floors would get hosed down and

19 the material would end up in the sewer.

20 Q This would be phenol?

21 A Well, it would be the chlorinated

22 phenol.

23 Q Do you recall whether there were any

24 waste waters discharged from the chlorinated

25 phenol production into the sewers?

1 A I don't.

2 Q Do you recall -- let me withdraw that.

3 What was the chemical reaction or reactions

4 involved in the manufacture of chlorinated

5 phenol?

6 A It was the introduction of chlorine

7 gas into a molten batch of phenol, and the

8 chlorine would attach itself randomly and

9 produce the chlorinated phenols. That's not a

10 scientific explanation, but that's in essence

11 what happens.

12 Q Were there any by-product or waste

13 materials generated in that production

14 process?

15 A There were some residues, yes, when it

16 was distilled.

17 Q After the reaction of chlorine and

18 phenol, there was a distillation process?

19 A Yes.

20 Q Are we talking again about still

21 bottom type materials?

22 A Yes.

23 Q How were those materials disposed of?

24 A Into the landfill.

25 Q Was there a hydrogen chloride gas

1 generated in the reaction of chlorine and
2 phenol?

3 A Yes.

4 Q How was that hydrogen chloride gas
5 handled?

6 A It was scrubbed with water and
7 resulted in an acid, hydrogen chloride acid,
8 which is known commonly as muriatic acid.

9 Q Was the muriatic acid that resulted
10 from that scrubbing process treated as a
11 product at Krummrich?

12 A Yes.

13 Q Was the hydrogen chloride gas ever
14 scrubbed to the sewer?

15 A Not to my knowledge, no.

16 Q The hydrogen chloride gas was
17 generated in the initial reaction of chlorine
18 and phenol; is that correct?

19 A Correct.

20 Q And that gas came off the reactor?

21 A Yes.

22 Q How was it transported to the
23 manufacture of muriatic acid?

24 A I think I know what you mean by
25 transported.

1 Q Conveyed may be a better word.

2 A Well, as I remember, there are vacuum
3 jets that suck in essence the system such that
4 the gas will go to the low pressure side, and
5 it is introduced into a vertical still column
6 with the presence of water sprays. And the
7 gas has to work its way up either through
8 packing or trays. I don't know the internals
9 of the absorption column. And the water, of
10 course, will be flowing downward, the gas
11 trying to go upward, and you get this mixing,
12 and you end up with the acid coming out the
13 bottom.

14 Q Is 100 percent of the hydrogen
15 chloride gas consumed in that mixing process?

16 A With the analytical methods available
17 at the time, it was considered a hundred
18 percent, yes.

19 Q As the hydrogen chloride came off the
20 reactor, do you know whether any organic
21 material came off with it?

22 A That I don't know.

23 Q Do you know whether there were any
24 condensers or mist eliminators of any kind
25 that were used to treat the hydrogen chloride

1 gas coming off the reactor before it went into

2 the scrubber?

3 A Yes, there were.

4 Q What exactly was there, to the best of

5 your recollection?

6 A Oh, I can't remember the details, no.

7 Q Do you remember if there was a

8 condenser?

9 A Yes. The intent there is to -- yes,

10 condense out any of the organic chemical

11 vapors that are there at the higher

12 temperatures, yes.

13 Q Do you recall if there was a mist

14 eliminator?

15 A Yes.

16 Q And what were the functions of the

17 mist eliminator?

18 A To catch any of the droplets of liquid

19 that are formed as a result of this condensing

20 step, the cooling step.

21 Q So the gas is cooled in the condenser,

22 and the vaporous organics are converted to

23 liquid form and then removed by the mist

24 eliminator?

25 A Well, the gases are condensed to form

1 liquids and they trickle on down. Some of the
2 droplets continue on with the gases. These
3 droplets are captured in the mist eliminator,
4 sort of a second capture of liquids.

5 Q And would the organics removed by the
6 condenser and mist eliminator consist of
7 chlorinated phenols?

8 A Yes. They are put back into the
9 original pot for further chlorination.

10 Q Do you know whether these
11 remanufactured organics were ever discharged
12 to the sewers?

13 A I don't recall that ever being done,
14 no. That's valuable product. You don't want
15 to lose it.

16 Q Do you recall any process type
17 discharges to the sewers in the manufacture of
18 chlorinated phenol?

19 A I do not.

20 Q You indicated that benzyl chloride was
21 another production operation within your
22 jurisdiction as general superintendent?

23 A I did.

24 Q Where was that production operation
25 located? No recollection?

1 A I don't recall.

2 Q What were the raw materials in the
3 manufacture of benzyl chloride?

4 A Benzene and chlorine, as I remember.

5 Q Do you recall whether toluene was a
6 raw material?

7 A I'm sorry. Toluene and chlorine, yes.

8 Q What chemical reaction was involved in
9 that production?

10 A As I remember, the hydrogen is
11 replaced by chlorine, and you again form
12 hydrogen chloride.

13 Q So you react -- the chlorine is
14 reactive with the toluene?

15 A Yes. On the methyl part of the
16 toluene molecule. Toluene is the benzene ring
17 with a CH₃ attached. As I remember, the
18 chlorine affixes itself to that CH₃ portion.

19 Q Displacing a hydrogen --

20 A Hydrogen.

21 Q So HCL hydrogen chloride is a
22 by-product in this manufacturing operation as
23 well?

24 A Yes.

25 Q Do you recall how the by-product HCL

1 was dealt with in the benzyl chloride

2 manufacturing process?

3 A The same as we discussed earlier on

4 the chlorinated phenol.

5 Q So that it was taken off the reactor

6 by a vacuum system?

7 A Uh-huh.

8 Q And passed through a condenser and a

9 mist eliminator?

10 A Yes.

11 Q And then the HCL went to the -- was

12 scrubbed to create muriatic acid?

13 A Correct.

14 Q Did that scrubbing process take place

15 in the benzyl chloride department, or did it

16 take place someplace else?

17 A I don't recall specifically for the

18 benzyl chloride because there were situations

19 where chlorinated process -- chlorination

20 process took place and released hydrogen

21 chloride which had its own absorbing column.

22 There were other instances that I

23 remember where the streams were combined and

24 sent to some other operation for absorption.

25 And I don't recall specifically which of the

1 chlorination steps or processes were involved
2 with their own absorption system or a joint
3 kind of system.

4 Q And you don't recall which of those
5 two categories benzyl chloride fits into?

6 A That is correct.

7 Q And do you recall which of those two
8 categories chlorinated phenols fit into?

9 A As best I recall, the chlorinated
10 phenol had their own. Because of the higher
11 volume it justified its own unit.

12 Q The muriatic acid was then sold as a
13 product?

14 A Yes.

15 Q Were there ever times that you can
16 recall when you were generating more -- let me
17 try again. Were there times that you can
18 recall where the generation of HCL exceeded
19 the demand for muriatic acid?

20 A No. I don't recall that at all.

21 Q So it is your recollection that you
22 were able to move as product all of the
23 muriatic acid that was produced from this
24 by-product HCL?

25 A Yes.

1 Q Did the benzyl chloride manufacturing
2 operation result in any discharges to the
3 sewers?

4 A No.

5 Q Was there a distillation step in the
6 benzyl chloride manufacturing operation?

7 A Yes.

8 Q Were there still bottoms generated?

9 A Yes.

10 Q How were those disposed of?

11 A Disposed of in the landfill, the
12 Sauget landfill, Krummrich landfill.

13 Q Do you recall the Krummrich plant ever
14 disposing of materials in a landfill owned by
15 Leo Sauget?

16 A I never -- no, I don't recall that.

17 Q And where was the location of the
18 Krummrich landfill?

19 A I don't know how to describe it. It
20 was -- I recall looking out over it and I
21 could see the Mississippi River and the old
22 power plant. I don't know how else to
23 describe that area.

24 Q So looking at it from the plant, you
25 had to look west from the plant?

1 A Yes.

2 Q And it was between the plant and the
3 Mississippi River?

4 A Yes.

5 Q Was Rogers Cartage involved in the
6 shipment of any of the products that you were
7 responsible for as general superintendent of
8 manufacturing?

9 A I don't know.

10 Q Did your duties as general
11 superintendent include shipment of product?

12 A No.

13 Q Do you know whether the Krummrich
14 plant -- let me withdraw that. Do you know
15 whether Roger Cartage engaged in shipment of
16 any product for the Krummrich plant?

17 A Oh, yes.

18 Q Did the Krummrich plant impose the
19 same requirements on Rogers Cartage as the
20 Queeny plant did with respect to making sure
21 that the tankers were cleaned out?

22 A Yes.

23 Q Have you been able to recall in the
24 course of my questioning any other products
25 that you were responsible for as general

1 superintendent of manufacturing at the
2 Krummrich plant?

3 A No, I haven't.

4 Q And what was the position that you
5 next held after general superintendent of
6 manufacturing?

7 A I was assigned as plant manager of the
8 Monsanto plant in Anniston, Alabama.

9 Q When was that?

10 A 1965 to the end of 1969.

11 Q So you moved then to Alabama?

12 A Yes.

13 Q What were your responsibilities as
14 plant manager?

15 A I guess one way to describe it, the
16 buck stopped at my desk. I was responsible
17 for virtually everything that occurred within
18 the plant and any association of Monsanto with
19 the community.

20 Q General superintendents reported to
21 you?

22 A Yes.

23 Q Were you responsible for liaisons with
24 local and state governmental agencies?

25 A Yes.

1 Q Approximately how many products were
2 manufactured at the Anniston plant while you
3 were plant manager?

4 A About a dozen. It all depends on how
5 you define products. When I say a dozen, I'm
6 talking broad categories which are broken down
7 further into specific product and in specific
8 packages.

9 Q So, for instance, you would be
10 considering aroclors as a single product?

11 A Correct.

12 Q Out of the dozen?

13 A Correct.

14 Q But there were numerous aroclors that
15 were manufactured?

16 A That is correct.

17 Q What were the dozen categories of
18 products manufactured at Anniston during the
19 time that you were plant manager?

20 A I will try to remember them. We made
21 biphenyl, we made a hydrogenated biphenyl, we
22 made the chlorinated biphenyl, the PCBs, we
23 made terphenyls and chlorinated terphenyls.
24 We made chlorine and caustic soda, phosphorous
25 pentasulfide, and the parathion,

1 P-A-R-A-T-H-I-O-N. That's all that comes to
2 mind at the moment.

3 Q Did you make muriatic acid?

4 A Yes. Didn't I mention that? Muriatic
5 acid.

6 Q Any others that you recall?

7 A Doesn't come to mind at the moment.

8 Q Were any of the products that were
9 manufactured at Anniston also manufactured at
10 Krummrich?

11 A Yes. The chlorine and caustic soda,
12 the PCBs, the phosphorous pentasulfide and the
13 muriatic acid.

14 Q With respect to the manufacture of
15 PCBs, did the Anniston plant employ the same
16 manufacturing process as was employed at
17 Krummrich?

18 A Basically, yes.

19 Q How about with respect to phosphorous
20 pentasulfide?

21 A Yes.

22 Q How about chlorine?

23 A Yes.

24 Q Phosphorous pentasulfide is also
25 referred to as P2S5?

1 A Correct.

2 Q With respect to the PCB manufacturing
3 operation, are you aware of any differences in
4 the operations at Anniston versus Krummrich?

5 MR. NASSIF: You mean in terms of
6 production or shipments or what?

7 Q (By Mr. Ricci) In terms of production
8 processes.

9 A Of course there were --

10 Q Let me try to be more specific. I
11 mean I'm not talking about you use the
12 different size reactor or you had different
13 size storage tanks. I'm getting more at the
14 basic steps in the manufacture of the product.
15 I don't know if that helps you or not.

16 MR. NASSIF: I will object. I think
17 he has answered that question already that the
18 processes were the same. He said they were
19 basically the same.

20 MR. RICCI: And I'm trying to
21 determine if there were any differences that
22 he can recollect.

23 MR. NASSIF: Okay.

24 A I could speak directly to the Anniston
25 process. There were two approaches taken in

1 the manufacture of PCBs in Anniston. One was
2 the use of a single pot, so to speak, and
3 introducing the chlorine into the biphenyl and
4 making the resulting PCB. The refinement on
5 that was the cascading step or three pots,
6 let's say, that are in series where chlorine
7 is introduced to each pot and the material
8 overflows from one to the other.

9 What I don't recall because I was not
10 intimate with the PCB unit at the Krummrich
11 plant is as to whether they used both
12 approaches or settled for the cascading. And
13 I didn't want to mislead you.

14 Q (By Mr. Ricci) That's fine. I
15 understand. Was the single pot method also
16 referred to as a batch method?

17 A Yes. Well, again, that is a batch
18 definitely. But even with the cascading we
19 have to be careful because they were using
20 batch numbers and so on, so that was an
21 arbitrary cutoff. With the cascading it was
22 somewhat continuous. They would just number
23 their watches. You would see reporting by
24 time, from midnight to one period to midnight
25 of the next. I didn't want to confuse you

1 there.

2 Q And they used both systems at
3 Anniston, and you are just not sure whether
4 they used both at Krummrich?

5 A That is correct.

6 Q Did Anniston and Krummrich manufacture
7 the same aroclors?

8 A At what point in time?

9 Q During the time period that you were
10 plant manager at Anniston?

11 A Yes.

12 Q Did there come a time when different
13 aroclors were manufactured at Krummrich and
14 Anniston?

15 A Yes.

16 Q When was that? Before or after you
17 were plant manager?

18 A After.

19 Q What differences do you recall?

20 A Well, in 1971 or so, actually there
21 was no production of PCBs at Anniston. The
22 Krummrich plant continued producing the
23 aroclors and introduced the new one, the one
24 referred to as 1016.

25 Q So PCB production at Anniston ceased

1 in '71?

2 A Yes.

3 Q But continued at Krummrich, and

4 Krummrich added this new aroclor?

5 A Correct.

6 Q 1016 was not produced at Anniston?

7 A That is correct.

8 Q Was the Anniston plant served by a

9 sewer system?

10 A Yes.

11 Q Where did that sewer system discharge

12 to?

13 A The Anniston municipal waste treatment

14 plant.

15 Q And where did the treatment plant

16 discharge to?

17 A One of the creeks, as I remember.

18 Q Was it Snow Creek?

19 A No. Choccolocco Creek.

20 Q Was the production capacity of the

21 Anniston plant for PCBs greater or less than

22 the capacity at Krummrich?

23 A I would suggest about equal for all

24 practical purposes.

25 Q Is it fair to say then that during the

1 time that they were both producing PCBs, they
2 both produced approximately the same volume?

3 A That is correct.

4 Q During the time that you were plant
5 manager at Anniston, what was the volume of
6 PCBs that you were producing on a yearly
7 basis?

8 A I would only be guessing. I don't
9 know.

10 Q I don't want you to guess.

11 MR. NASSIF: Did you say you wanted
12 him to guess?

13 MR. RICCI: No. I said I don't want
14 him to guess.

15 Q (By Mr. Ricci) Were there any sewer
16 discharges that you were aware of that
17 emanated from the PCB production operation at
18 Anniston?

19 A Yes.

20 Q What were they?

21 A It was waste water from the -- well,
22 there were two separate systems. That's why I
23 hesitate. The waste waters from the
24 parathion, which is the insecticide, had their
25 system which included bacteria-activated

1 sludge treatment.

2 Q Let me stop you there. I think I
3 asked you about sewer discharges from the
4 production of PCBs.

5 A Oh, okay.

6 Q So I thought you were going off there.

7 A Right. The PCBs did have some wastes
8 that were sent to a limestone pit and
9 eventually went into the sewer system.

10 Q Where in the process did those -- let
11 me stop you there for a second. Can you
12 describe generally the steps in the PCB
13 production process at Anniston?

14 A I can try to recall it. It is very
15 similar to any other chlorination step. You
16 take the biphenyl, introduce the chlorine.
17 You produce hydrogen chloride gas. The gas is
18 again sent through condensers and demisters
19 and it is absorbed and made into a muriatic
20 acid which is sold as a product.

21 At the Anniston plant, there were some
22 I'm going to call it fumes or gases that came
23 off of the demister system that were absorbed
24 in a separate scrubber that ended up in the
25 waste water that went to this limestone pit

1 for neutralization.

2 Q Let me stop you there. There were
3 fumes that came off the scrubber that went to
4 the limestone pit?

5 A Yes. No. No.

6 Q I'm sorry. You have lost me there.
7 Maybe you could repeat that answer again in
8 terms of what got to the limestone pit and
9 where it came from.

10 A All right. The hot gases coming off
11 the chlorination reaction were condensed. The
12 liquid form from that condensation step goes
13 back to the reactor. The cooled gases then
14 containing droplets of liquid went to a
15 demister. The system, being the older system,
16 didn't get it all, so there was an additional
17 little scrubber to scrub any remaining
18 droplets of hydrogen chloride gas that didn't
19 get absorbed. And that dropped into the sewer
20 system which sent this water to limestone pits
21 to neutralize any acid that was still in that
22 waste water.

23 Q So that the gas comes off the
24 chlorinator?

25 A Yes.

1 Q Into a condenser?

2 A Correct.

3 Q Condensed materials go back into

4 production?

5 A Correct.

6 Q Gas proceeds to the demister?

7 A Correct.

8 Q And the liquid from the demister goes

9 to another scrubber?

10 A No. The liquid goes back where that

11 other liquid, the condenser liquid went.

12 Q Back into production?

13 A Now the gases still coming off of that

14 demister --

15 Q Which is HCL?

16 A -- had some HCL in it. I'm sorry.

17 Yes, you are right. It does have HCL, yes.

18 That goes to the scrubber. And the scrubber

19 gases then still have residual.

20 Q So the gas coming off the demister

21 goes to the scrubber. And it is at that point

22 that it is combined with the water to make a

23 muriatic acid?

24 A Muriatic acid.

25 Q And some additional gas that escapes

1 off the scrubber?

2 A Correct. It goes to a smaller
3 scrubber which makes a very dilute kind of
4 acid, and it was found easier to sewer and
5 neutralize to the limestone pit rather than
6 try to salvage that small amount of acid.

7 Q And the reason for this second
8 scrubber was that the first scrubber was not
9 as efficient as the scrubber, for instance, at
10 the Krummrich plant?

11 A Yes. This was overloaded. It was an
12 older unit that was being overloaded.

13 Q The organic material that is in the
14 gas coming off the reactor, what does that
15 consist of?

16 A Gas coming off the reactor, organic.
17 I don't recall ever seeing an analysis of it,
18 so I can't really tell you exactly what's in
19 it.

20 Q Is it fair to say that it has either
21 got to be biphenyl or chlorinated biphenyl or
22 both?

23 MR. NASSIF: Objection. The witness
24 has told you he never did an analysis of it,
25 and he can't tell you what's in it.

1 A It calls for chemical speculation.

2 Q (By Mr. Ricci) What are the organics
3 that are in the reactor?

4 A I don't know. I can't give you all of
5 them. I can give you the ones we are looking
6 for, but I can't tell you what's in the
7 residue, in the pot that's thrown away.

8 Q Okay. So what are you looking for?

9 A The product you are trying to make,
10 like the aroclor 1242, for example.

11 Q You are starting out with chlorine and
12 biphenyl, correct?

13 A Correct.

14 Q Chlorine is not an organic; is that
15 correct?

16 A That's correct.

17 Q And biphenyl is an organic, correct?

18 A Yes.

19 A Biphenyl has a little benzene in it.
20 It has a little terphenyl in it. It may have
21 some naphthalene. It has never been really
22 analyzed. That's why I call it chemical
23 speculation here.

24 Q So the biphenyl may not be 100 percent
25 pure biphenyl. Is that what you are saying?

1 A That's correct.

2 Q You said it may have benzene,
3 naphthalene?

4 A This is all speculation. It has never
5 been analyzed to this degree because
6 instrumentation and technology was not
7 available.

8 Q What led you to testify that it may
9 have benzene and naphthalene? Was that based
10 on your knowledge of the biphenyl
11 manufacturing process?

12 A And the raw materials that go into
13 that process, yes.

14 Q What is terphenyl?

15 A It is a three benzene chemical.
16 Instead of the two that make biphenyl, there
17 is a third one.

18 Q And, again, do you have any
19 recollection of the organics that were taken
20 off of the gas coming out of the chlorinator
21 being sent to the sewers as opposed to being
22 put back into production?

23 A Organics -- I don't know that I
24 understand the question exactly.

25 Q Let me take you back. We talked about

1 this HCL gas that comes off the chlorinator?

2 A Yes.

3 Q Or the reaction of the biphenyl and

4 the chlorine?

5 A Yes.

6 Q And you testified that there was the

7 condenser and the demister to remove organics

8 from that gaseous stream?

9 A All right.

10 Q Okay.

11 A To remove condensables.

12 Q Right.

13 A There might have been moisture or

14 water in there. I don't know.

15 Q My question is do you recall the

16 materials removed from the HCL by the

17 condenser and the demister ever being sent to

18 the sewers?

19 A No.

20 Q From the chlorination of the biphenyl,

21 what's the next step in production?

22 MR. NASSIF: You mean other than this

23 process he described with the condenser to

24 demister to scrubbers?

25 Q (By Mr. Ricci) Yes. The condensers,

1 the demisters and the scrubbers deal with the
2 HCL that's coming off of the reactor, correct?

3 A It deals with any vapors, any gases
4 and vapors that come off, yes.

5 Q What is left in the reactor after that
6 material is taken off?

7 A What is left, again, no chemical
8 analysis has been made of the whole thing or
9 the whole bit, but it is predominantly the
10 product that we are striving to produce at
11 that time.

12 Q Which is the chlorinated biphenyls?

13 A Of a given type.

14 Q What, is that a liquid in the
15 production process?

16 A At the temperatures of the process, it
17 is a liquid, yes.

18 Q Where does that liquid go from the
19 reactor?

20 A It goes into a distillation unit.

21 Q Do you recall whether at the Anniston
22 plant there was a step between the reactor and
23 the distillation unit known as a blow tank?

24 A Yes. That expression was used. It is
25 moved by air pressure instead of pumps. And

1 they push the material into a tank. And in
2 that tank there is a neutralization step that
3 takes place where lime is added to neutralize
4 any residual acid that's still in the batch
5 that hasn't escaped with the vapors.

6 Q Is air also passed through the batch?

7 A Air is blown through initially to
8 sweep out any free acid. You get as much of
9 it as you can blowing air through, and then
10 you get the residual with the lime treatment.

11 Q Where did the air that was blown
12 through the batch discharge to?

13 A It joins the stream that's going to
14 the absorber, the muriatic acid absorber.

15 Q Do you recall that the air from the
16 blow tank was ever scrubbed to the sewer?

17 A No, I do not.

18 Q When you testified that the air went
19 to the muriatic acid absorber, were you
20 referring to the absorber that resulted in the
21 production of muriatic acid as opposed to the
22 acid that resulted in the discharge to the
23 limestone pit?

24 A I was referring to the acid producing
25 unit.

1 Q So as far as you know, the Anniston
2 plant didn't discharge the air from the blow
3 tank, didn't scrub it to the sewers?

4 A As far as I recall they did not.

5 Q Do you recall if that was the case at
6 Krummrich as well?

7 A As I said, I wasn't familiar with the
8 Krummrich system.

9 Q Are you familiar with the development
10 of the numbering system to identify the
11 various aroclor products?

12 A I believe I am.

13 Q How was that numbering system
14 developed?

15 A Since I wasn't there, I really can't
16 tell you. I can tell you what it meant.

17 Q Okay. I will take that.

18 A The 12 refers to the two benzene
19 rings. And the last two digits of the four
20 digit numbering system refers to the percent
21 by weight of chlorine in that mixture.

22 So when you see a reference to aroclor
23 which is the Monsanto trademark for
24 chlorinated aromatics which describes the
25 benzene ring and you see the 12, that says it

1 is a biphenyl by definition. And then when
2 you say 42 after the 12, that indicates that
3 42 percent of that material by weight is
4 chlorine.

5 Q Now, you referred to a product that
6 was known as 1016. What does the -- what do
7 the first two digits of that number signify?

8 A Nothing special. The 1016 came from a
9 system used by the research laboratory to
10 identify samples under test of all kinds of
11 materials. So the researcher who was going to
12 work on this material goes to a log book and
13 takes the next number available, which
14 happened to be 1016. And initially that
15 material was studied with the acronym in front
16 of the number of MCS, Monsanto Company Sample
17 1016.

18 Throughout the study of that material
19 and the sending of the samples of this
20 material to prospective customers, that whole
21 community in the electrical field referred to
22 this material as 1016. It became a common
23 terminology.

24 When it was finally accepted and ready
25 to be sold as a product, the initial batches

1 were sold as aroclor 1242B, indicating
2 biodegradable. Immediately that created some
3 concerns because 1242 and 1242B stock was
4 getting mixed up in their warehouses, not only
5 Monsanto's but the customers. The
6 communications became garbled, and it was
7 decided to go back to the 1016 which everybody
8 felt comfortable with. So 1016 does not
9 follow the old designations.

10 Q Doesn't mean 16 percent chlorine by
11 weight?

12 A No, it doesn't. It had the 42 percent
13 chlorine.

14 MR. RICCI: Off the record.

15 (Discussion off the record)

16 Q (By Mr. Ricci) Now, the various
17 aroclor products, 1242, 1254, consisted of a
18 number of compounds; is that correct?

19 A Yes.

20 Q A number of chlorinated biphenyls?

21 A Correct.

22 Q Did Monsanto analyze the aroclor
23 products to determine which compounds and
24 isomers they consisted of?

25 A At what point in time?

1 Q Well, at any point in time that you

2 are aware of?

3 A Beginning in the late '60s, the

4 technology was available where the research

5 chemist in particular, as distinguished from

6 the routine analytical chemist, because this

7 was still high-technology, the research

8 chemist could identify the different isomers

9 present in the commercial mixture.

10 Q Prior to that, how did you tell which

11 aroclor you had?

12 A They had what was called the old wet

13 chemistry approach where you analyzed for

14 chlorine. And this is why it was reported as

15 percents of chlorine.

16 Q In the late '60s did Monsanto have the

17 capability to analyze the aroclors for the

18 various isomers that made them up?

19 A Yes.

20 Q And did Monsanto perform those

21 analyses?

22 A Yes.

23 Q Did any of the commercial aroclors

24 contain as a constituent any unchlorinated

25 biphenyl?

1 A Yes.

2 Q Which aroclors were those?

3 A I recall the 21 percent version as
4 having some unchlorinated biphenyl in it. I
5 do not recall the others. I would have to see
6 the reports to refresh my memory. I don't
7 recall.

8 Q So that would be aroclor 1221?

9 A Yes.

10 Q Do you recall if any of the higher
11 chlorinated aroclors contained any
12 unchlorinated biphenyl?

13 A No, I don't. All I remember is a
14 listing of a number of chlorines and the
15 percent present, but I just don't remember the
16 zero chlorine.

17 Q Is it -- I'm sorry. I don't know what
18 you mean by zero chlorine.

19 A No chlorine. The biphenyl, straight
20 biphenyl.

21 Q No chlorine on the biphenyl?

22 A Yes.

23 Q Is it fair to say that the higher the
24 percent of chlorination of the aroclor, the
25 less likely it would be to include

1 unchlorinated biphenyl?

2 A Can you help me with the word fair?

3 It has so many definitions. Is it true?

4 Q Is it true?

5 A It is very likely, yes, that it is

6 true.

7 Q So any -- I will leave it at that.

8 What was the next highest chlorinated aroclor

9 that Monsanto produced after 1221?

10 A 1232.

11 Q There wasn't anything that you can

12 recall between 1221 and 1232, any commercial

13 product?

14 A That's true.

15 Q Was 1221 manufactured at the Anniston

16 plant?

17 A On occasion, yes.

18 Q What was the use of 1221 as a product?

19 A Well, it was used as a capacitor fluid

20 and it was also used in some ink formulations,

21 some adhesive mixtures, some coatings, paints

22 and coatings. It was also used in some of the

23 caulking types of materials.

24 Q Biphenyl was another product

25 manufactured at Anniston?

1 A Yes.

2 Q That biphenyl was used as a raw
3 material in the manufacturing of PCBs?

4 A Yes.

5 Q Was the biphenyl manufactured at
6 Anniston also used as a raw material in
7 Krummrich's manufacture of PCBs?

8 A Yes.

9 Q What other uses were there of biphenyl
10 that was manufactured at Anniston?

11 A It was sold as a product, but at the
12 moment I can't recall who the customers were.
13 I just don't remember.

14 Q And you don't recall the uses?

15 A I do not.

16 Q Sold as a product to other than other
17 Monsanto plants?

18 A Correct.

19 MR. NASSIF: Rich, off the record.

20 (Discussion off the record)

21 Q (By Mr. Ricci) Another product that
22 was manufactured at -- let me go back for a
23 second. You had testified to some extent
24 earlier about the biphenyl manufacturing
25 process. What were the raw materials in the

1 manufacture of biphenyl?

2 A Benzene.

3 Q Anything else?

4 A That's it.

5 Q Just benzene?

6 A Yes.

7 Q How was benzene converted to biphenyl?

8 A It is high temperatures and high

9 pressure the biphenyl was formed.

10 Q Were there any by-products?

11 A Hydrogen.

12 Q What happened to the hydrogen?

13 A It is used to make the hydrogenated --

14 no. Let me think a bit now. Hydrogen, we

15 used it for something. We used it to make the

16 product called HB40 which is a hydrogenated

17 biphenyl.

18 Q You mentioned that another product

19 manufactured at Anniston was P2S5?

20 A Yes.

21 Q Do you recall that there was a heat

22 exchanger in that manufacturing process that

23 used PCB-containing heat transfer fluids?

24 A Now that you mention it, yes, I do

25 recall it.

1 Q Do you recall the trade name of the
2 heat transfer fluid that was used in that heat
3 exchanger?

4 A It is one of Monsanto's Therminols,
5 but I don't remember which Roman Numeral
6 followed it.

7 Q Was that Therminol manufactured at
8 Anniston?

9 A Yes.

10 Q And you just shifted basically from
11 the PCB department over to the --

12 A Just transferred it over, yes.

13 Q -- P2S5 department?

14 A Yes. For the initial fill, and then
15 the makeup later was from drums out of the
16 warehouse.

17 Q Were there ever times when the heat
18 transfer fluid in that heat exchanger became
19 spent and had to be changed out?

20 A I don't recall that.

21 Q Do you recall whether heat transfer
22 fluid from that heat exchanger in the P2S1
23 department was ever discharged to the sewer in
24 Anniston?

25 A Not while I was there.

1 Q Was any heat transfer fluid from any
2 heat exchanger at the Anniston plant ever
3 discharged to the sewer while you were plant
4 manager?

5 A No.

6 Q How are you certain of that?

7 A First of all, it is a big no-no. We
8 just don't do it that way especially for a
9 plant that has the facilities to either
10 recover it or dispose of it in its landfill,
11 and it would be so obvious for that kind of
12 material to show up in the surrounding
13 environment.

14 Q So from an environmental perspective,
15 you wouldn't view that as a good thing to do?

16 A That's correct. Just to dump all that
17 material on the ground, no.

18 Q Or into the sewer?

19 A Even the sewer. It would show up
20 eventually. Somewhere it is going to show up.

21 Q And it wasn't a situation where they
22 were doing it and you had to stop it. It
23 didn't occur as of the time you got there?

24 A I had no reports that it ever
25 occurred, no.

1 Q What was the consistency of the heat
2 transfer fluid that was used in that heat
3 exchanger?

4 A I would compare it to the motor oil
5 out of your car.

6 Q As it was employed in the heat
7 transfer system, did its consistency change?

8 A Yes. When new the material is almost
9 clear as water, drinking water, but with use
10 it slowly turns color to a light yellow or a
11 darker yellow. And if it is stressed, and by
12 stressed I mean at temperatures, very high
13 temperatures, it starts to get dark. Just
14 like the motor oil in your car gets dark. It
15 eventually reaches the point where it just
16 gets pretty tarry really, pretty viscous. And
17 this is the point where you decide to drain
18 the system, flush it and then refill.

19 Q And when that occurred at Anniston,
20 the material that was drained was landfilled?

21 A Well, it depended on how badly it was
22 damaged. In some instances it was put into
23 the still pot to still off the good portion.
24 And the heel then that was left, which gave
25 the dark color and viscosity, would be put

1 into the landfill.

2 Q And then in other instances if you

3 felt it was too far gone, would you just

4 dispose of it?

5 A Put it in drums and take it to the

6 landfill.

7 Q We had talked about the PCB

8 manufacturing process at Anniston, and I think

9 that we had gotten to the blow tank or the

10 aeration process and then I sort of took you

11 off in a different direction, and I wanted to

12 go back to that to just complete out the

13 manufacturing process for PCBs at Anniston.

14 Where did it go from the aeration and lime

15 neutralization?

16 A It is transferred then to the

17 distillation unit. We take it to the still

18 pot. That still pot has associated with it a

19 vacuum system to draw the vapors that are

20 boiling off out of the pot, and it has a

21 condensing unit.

22 These were air cooled condensers, just

23 like the automobile radiator in your car. The

24 vapors then are boiled off and pass through

25 the condenser and become liquefied again, and

1 that liquid is collected into a receiving
2 tank. And that liquid is, as I said, clear as
3 drinking water. What's left in the pot then
4 is the pot residue that is hauled to the
5 landfill.

6 Q So the material that comes off the top
7 of the pot is the product?

8 A Correct.

9 Q And, what, as it comes off of the
10 still pot, it is vaporized?

11 A Yes.

12 Q And then it goes through the condenser
13 and that reliquefies it?

14 A Correct.

15 Q And at that point it is the product?

16 A Correct.

17 Q What factors determine whether you are
18 going to get 1221 or 1232 or any of the other
19 aroclors?

20 A Well, there are two factors. One is
21 from experience the operators know that after
22 a given time, they are approaching that point
23 in the process where the material they are
24 looking for is ready. So just time alone does
25 that for them.

1 Q Time in the reactor?

2 A In the reactor. You bubble chlorine

3 to a given amount of biphenyl at a given rate,

4 and you know it takes so many hours before you

5 reach the point where you are almost finished.

6 At that point the operator dips in or taps

7 either through a spigot or through a dipper

8 and gets a sample.

9 He tests that sample by checking its

10 weight, its specific gravity. If it reaches a

11 certain number, he is finished. He turns off

12 the chlorine and goes through all these steps

13 we talked about.

14 From experience they know if they do

15 that just right each time, you will end up

16 with 42 percent, plus or minus a percent or

17 two, or 54 percent and so on. So it is not a

18 research pure chemical. It is an industrial

19 mixture.

20 Q And it is basically dictated by the

21 residence time in the reactor?

22 A Confirmed by the specific gravity.

23 Q Is it also a function of the rate at

24 which the chlorine is fed into the reactor?

25 A Yes, the rate at which the chlorine is

1 fed determines the time.

2 Q Okay.

3 A The two are related. If you put it in

4 slowly, it takes longer.

5 Q And they just know all this by

6 experience?

7 A And the operating instructions also

8 remind them.

9 MR. RICCI: I think this is a good

10 point to break.

11 (Lunch Recess)

12 Q (By Mr. Ricci) Mr. Papageorge, in the

13 heat transfer unit that was employed in the

14 P2S5 department at Anniston, do you know the

15 components of the heat transfer fluid that was

16 used?

17 A I'm puzzled by the use of the word

18 components.

19 Q I think you testified that there was a

20 Therminol, but you weren't sure which suffix

21 attached to the particular Therminol that was

22 used?

23 A That is correct, yes.

24 Q My question is do you know which

25 aroclors made up that Therminol and whether

1 there were any components besides aroclors?

2 A The Therminols are 100 percent

3 commercial PCB mixtures. They were designated

4 by the trademark Therminol with Roman Numerals

5 I, II, and III. The Roman Numerals I, II and

6 III refer to one of the commercial aroclor

7 mixtures. Roman Numeral I was aroclor 1242.

8 Roman Numeral II was aroclor 1248, and Roman

9 Numeral III was aroclor 1254. I do not recall

10 which of those were in that particular unit.

11 Q But it would have been one of those

12 three?

13 A Yes.

14 Q You indicated that you were plant

15 manager at Anniston until 1969?

16 A Yes.

17 Q Do you recall when in 1969 you

18 relinquished that post?

19 A The end of the year, December 31.

20 Q What was the next position that you

21 held at Monsanto?

22 A I was designated as manager

23 environmental control located in the St. Louis

24 area.

25 Q How long did you hold that position?

1 A Well, there were several changes in
2 title, but the job in essence -- the job
3 itself ran from the first of the year 1970 to
4 the end of February 1976 as it related to the
5 PCB assignment.

6 Q You testified that you were at least
7 initially manager of environmental control?

8 A Yes.

9 Q And then you said in the St. Louis
10 area. Was that part of your title or was that
11 just where you were located?

12 A No. I was just showing that I was no
13 longer in Anniston. I relocated to the
14 St. Louis area.

15 Q Was that a position at the corporate
16 offices?

17 A Yes.

18 Q And you worked out of company
19 headquarters in St. Louis?

20 A Yes.

21 Q What were your duties and
22 responsibilities in that job?

23 A I was designated as the Monsanto
24 individual to coordinate communications
25 relating to the PCB environmental issues

1 within Monsanto. Sort of letting the left
2 hand know what the right was doing, and
3 outside of Monsanto with its customers, with
4 the communities, with regulatory agencies,
5 both local and federal, and with university
6 laboratories that were interested in PCBs and
7 the environment.

8 Q Was your job limited to PCBs?

9 A Yes.

10 Q Were you with any particular division?

11 Were you with the chemicals division or
12 another division?

13 A At that time I was with the part of
14 Monsanto referred to as the organic chemicals
15 division.

16 Q Who was your immediate supervisor?

17 A Howard Bergen, B-E-R-G-E-N.

18 Q What was his title?

19 A He was the business director of the
20 functional fluids business group.

21 Q Do you know an individual by the name
22 of Paul Hodges?

23 A Yes.

24 Q Did you work with Mr. Hodges in this
25 position as manager of environmental control?

1 A I worked with him, yes.

2 Q Did he have responsibilities similar
3 to your own during this time period?

4 A No.

5 Q Was he involved in pollution control?

6 A Yes.

7 Q What were his responsibilities at that
8 time, to the best of your recollection?

9 A He was to work and advise the plant,
10 work with and advise the plants in matters
11 relating to making the chemicals and impact on
12 the environment at the plant sites.

13 Q He was in an advisory capacity?

14 A It was what we used to call a staff
15 position. It was advisory, yes.

16 Q Did you also work with the plants in
17 that regard?

18 A Certainly.

19 Q Is this the position that you assumed
20 in 1970, was that a position that was
21 specifically created at that time?

22 A Yes.

23 Q Why was that position created?

24 A In the late '60s, there were a few
25 laboratories throughout the world that were

1 able to detect PCBs in environmental samples.
2 This was totally new to Monsanto as a maker of
3 these PCBs, and it was determined that there
4 was a lot here that we didn't know about, had
5 a lot of learning to do and had some decisions
6 to make.

7 And within Monsanto there were two
8 business groups involved. The functional
9 fluids group that we mentioned earlier with
10 Mr. Bergen in charge, and there was another
11 group referred to as the plasticizer group.
12 Each of these groups had marketing teams,
13 research teams, manufacturing teams, and it
14 became difficult to keep abreast of everything
15 that was developing regarding PCBs in the
16 environment. So it was decided that an
17 individual was needed to, as I said earlier,
18 let the left hand know what the right is
19 doing.

20 And also the issue was developing so
21 rapidly that it required someone to help
22 communicate with the interested parties
23 outside of Monsanto, the regulatory agencies
24 and the laboratories, the customers, so it was
25 decided by top management to create this

1 position, and I was asked to do that job.

2 Q In 1970 when you took that job, do you
3 know how many domestic manufacturers of PCBs
4 there were?

5 A Well, certainly Monsanto for sure. I
6 had indications that other companies had
7 attempted and were making on occasion some
8 PCBs. I could never establish for sure that
9 the amount of PCBs produced was too
10 significant. So it became one of -- if
11 anything, Monsanto made 99 percent of the
12 material.

13 Q That's in the U.S.?

14 A In the U.S., yes. Now, this does not
15 account for any imported material, which was
16 difficult to track.

17 Q There were foreign producers of PCBs?

18 A Yes.

19 Q Do you know who the most significant
20 foreign producers were?

21 A I think I do. Bayer, B-A-Y-E-R, in
22 Germany, Rhone Poulance in France, Flix in
23 Spain, Caffaro, C-A-F-F-A-R-O, in Italy,
24 Konagafuchi in Japan. And there were
25 producers in Czechoslovakia, Russia.

1 Q Do you know what Monsanto's market
2 share worldwide was at that time?

3 A No, I don't.

4 Q Were PCBs a profitable product for
5 Monsanto?

6 A They were profitable, yes.

7 Q You indicated that one of the events
8 that led to the creation of this position was
9 the ability to detect PCBs in environmental
10 media in the late '60s; is that correct?

11 A That is correct.

12 Q Did that ability lead to concerns,
13 public concerns, regarding the safety or
14 environmental risks of PCBs?

15 A Well, it raised questions that ran
16 along the lines of now that we see this
17 material in environmental samples, what if
18 anything is it doing to the environment?

19 Q Were there studies in the late '60s
20 that you are aware of that suggested that PCBs
21 were having a detrimental impact on the
22 environment?

23 A In the late '60s, not at that time,
24 no.

25 Q Did such studies become available

1 subsequently?

2 A Can you help me with such studies?

3 Q Studies suggesting that PCBs were

4 having a detrimental impact on the

5 environment?

6 A There were animal studies made in the

7 laboratories that indicated that the higher

8 chlorinated of the commercial mixtures at the

9 high dose used in the studies did affect the

10 test animals.

11 Q In what way?

12 A There was evidence of an effect on

13 livers of these test animals. There was some

14 evidence that the reproduction process was

15 being affected in terms of the size of the

16 pups that were born and the numbers in the

17 litter. There was also a study that indicated

18 that chickens that were fed PCBs were having

19 reproduction problems as it reflected in the

20 eggs having thin shells and not hatching.

21 Q Do you recall a study coming out of

22 California raising issues regarding the

23 bioaccumulation of PCBs in the environment or

24 the environmental persistence of PCBs as a

25 potential problem?

1 A I do recall a study by

2 Dr. Riseborough, the pelicans.

3 Q Where was he out of?

4 A Berkeley. University of California,

5 Berkeley.

6 Q How do you spell that?

7 A R-I-S-E-B-O-R-O-U-G-H.

8 Q When was that study?

9 A In the late '60s. I think he

10 published it in either '68 or '69.

11 Q Are you aware of any reaction within

12 Monsanto to this study by Dr. Riseborough?

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

15 A Well, I'm aware of the fact that

16 Monsanto knew of this study. I personally

17 visited with Dr. Riseborough and his mentor,

18 Professor Alcott, in early 1970.

19 I don't know how else to answer your

20 question. We were aware of it, and we tried

21 to get as much as we could out of it. And

22 what was puzzling in all of that is that DDT

23 was involved also, and it was hard to really

24 get a crystal clear picture.

25 Q (By Mr. Ricci) Was the publication of

1 that study a factor that led to the creation
2 of the position that you assumed in '70?

3 A I can't answer that. I don't know.

4 Q Sounds as if that was one of the first
5 things you looked into once you took that
6 position; is that correct?

7 MR. NASSIF: Object to the form of the
8 question.

9 A Well, it was one of the early things
10 that I looked into amongst many other pieces
11 of information.

12 Q (By Mr. Ricci) The position that you
13 held as manager of environmental control you
14 held until February of '76, understanding that
15 the title changed over time?

16 A Yes. There was a title change, but
17 also by 1976, in addition to the PCBs, I had
18 other products that I was assigned starting in
19 about '73.

20 Q What other products were you assigned?

21 A There were so many changes through the
22 two decades that have passed, I'm having a
23 hard time zeroing in on them.

24 Q Give it your best shot.

25 A Some of the products that I mentioned

1 earlier like maleic anhydride and phthalic
2 anhydride, muriatic acid, caustic chlorine,
3 the products that the plants that I worked in
4 made. They were part of the group.

5 Q What were your responsibilities with
6 respect to these other products that were
7 assigned to you over the years?

8 A Well, in a broad way they related to
9 communications to the customer, proper
10 labeling, adequacy of containers, the proper
11 kinds of vehicles in which they were
12 transported, assurances that any analyses that
13 were made were accurately done and that the
14 products met the specifications that were
15 established. That about covers it.

16 Q So by February of '76, you have a
17 number of products that you are responsible
18 for in that area besides PCBs?

19 A Correct.

20 Q What position did you then take in
21 February of '76?

22 A I still had the same type of job. I
23 kept the products assigned to me as of
24 February '76, but the PCB issue was
25 transferred to another individual.

1 Q Who was that?

2 A J.C. Weber.

3 Q Why did that happen?

4 A Well, through the years Monsanto was
5 undergoing several organizational changes. In
6 '76, the company had designated the operating
7 units as companies within the corporation.

8 The company to which I was assigned was
9 responsible for a given set of products. The
10 PCBs were not in that group. Mr. Weber had
11 represented the group in which PCBs were
12 included. So after a period in which we
13 shared, sort of wore the hat on both heads, I
14 transferred the situation or the issue to him.

15 Q Were you involved in the decision by
16 Monsanto to discontinue the manufacture of
17 PCBs?

18 MR. NASSIF: Object to the form of the
19 question.

20 A I was tuned in. I was present when a
21 decision was made, yes.

22 Q (By Mr. Ricci) When was that decision
23 made?

24 A Early '76. January is when I was
25 first tuned into that decision.

1 Q So the decision was made prior to the
2 time that responsibility for PCB was
3 transferred to Mr. Weber?

4 A Correct.

5 Q Why did Monsanto decide to quit
6 manufacturing PCBs?

7 A Well, from the very beginning in 1970
8 when they phased out of PCB uses in sales, the
9 intent was to get out of the PCB business as
10 long as no high risks were taken. In other
11 words, were there acceptable replacement
12 materials that would do the jobs that PCBs
13 did?

14 And by 1976, the only use remaining
15 was the use in electrical equipment. And we
16 had had some indications in '76 and actually
17 in '75 that the electrical equipment
18 manufacturers were almost there in terms of
19 finding replacement material either in
20 material itself or a combination of material
21 plus design changes that the day was coming
22 when PCBs could be withdrawn without creating
23 any major problems.

24 So in answer to your question, a
25 shorter way would be one part of the plan was

1 to get out when it was responsible to do so.

2 Q When was the plan to get out first
3 developed?

4 A There was no single day. It was an
5 evolving thought process. And it was shared
6 with top management at Monsanto starting in
7 early '70 when the first phases were
8 implemented, the first phase of withdrawing
9 from most of the uses.

10 Q You took the position as manager of
11 environmental control in January of '70?

12 A Yes.

13 Q At that time had a decision been made
14 by Monsanto to begin phasing out uses of PCBs?

15 A Not yet.

16 Q But early in that year a decision was
17 made to begin phasing out PCB uses?

18 A Yes. It was finally approved in May.

19 Q What was finally approved?

20 A The withdraw from PCB businesses.

21 Q Which businesses was the withdraw from
22 approved in May of 1970?

23 A Well, the use in paints, in inks, in
24 caulking, the carbonless copy paper, the
25 beginning of the phase out in hydraulic fluids

1 and the beginning of the phase out in heat
2 transfer applications.

3 Q Why did Monsanto decide in May of 1970
4 that it wanted to start phasing out its PCB
5 businesses?

6 A There was enough evidence that PCBs
7 were getting into the environment. And since
8 this was perceived to be a man-made chemical,
9 and since it was perceived that there were
10 alternative materials to do the job almost as
11 well, if not as well, that the responsible
12 thing to do was to terminate the sales to
13 those uses that could easily be done without
14 any effect on safety or the environment or any
15 of those undesirable effects.

16 Q So between January of '70 and May of
17 '70, Monsanto basically considered the issue
18 and came to the conclusion to begin phasing
19 out the businesses?

20 MR. NASSIF: Objection. Asked and
21 answered.

22 A Yes.

23 Q (By Mr. Ricci) Were the PCB uses that
24 were phased out at all a function of the risk
25 that those businesses presented for release of

1 PCBs into the environment?

2 A Certainly.

3 Q Is it fair -- let me withdraw that.

4 Did Monsanto feel in May of 1970 that the use

5 of PCBs in paints and inks and caulking and

6 carbonless paper, hydraulic fluids, and heat

7 transfer fluids presented a greater

8 possibility of releases into the environment

9 than the uses that were not phased out?

10 A Yes.

11 Q And it was Monsanto's goal to reduce

12 the extent to which its PCBs were going to be

13 released into the environment?

14 MR. NASSIF: I object to the form of

15 the question.

16 A I'm having a little difficulty with

17 the word extent. It is the perceived ease

18 with which some of those uses could lend entry

19 into the environment. Like the yellow or

20 white line on your highway. It is in the

21 environment the minute it is applied, so

22 that's the kind of thinking that went on.

23 Whereas, the heat transfer application

24 was perceived to be a closed system if it is

25 properly run and maintained, but at the same

1 time it was perceived that we better get out
2 of the food uses such as heating the oil to
3 fry the potato chips in. So that was the
4 beginning of the program, food use first and
5 then later the others. I don't know how else
6 to explain that except that it was dependent
7 on the benefits versus the risks of
8 environmental damage.

9 Q I think you used the phrase closed
10 application?

11 A Yes.

12 Q Explain the distinction between an
13 open application and a closed application.

14 MR. NASSIF: Object. Asked and
15 answered.

16 A Well, I would suggest let me give some
17 examples that occur to me. The presence of
18 PCBs inside a steel tank that makes the body
19 of an electrical transformer is perceived to
20 be a closed system, whereas the presence of
21 PCBs in the varnish that's used to paint the
22 walls of this conference room is perceived to
23 be an open system, open to the environment.
24 Or the use of PCBs in the carbonless copy
25 paper that is thrown into the trash basket

1 eventually, that's considered an open system,
2 easy entry into the environment.

3 Q So the open systems were the systems
4 that presented easier entrance into the
5 environment. And the closed system is a more
6 circuitous potential for entry into the
7 environment?

8 A I don't know about circuitous. In one
9 there is no way to control, like the
10 carbonless copy paper even under the best of
11 intentions. Whereas, a well run heat transfer
12 system can be controlled.

13 Q Now, in February of '76 when this
14 division occurred that resulted in your
15 relinquishing responsibility for PCBs, did you
16 maintain the same job title?

17 A Yes.

18 Q And how long did you hold that
19 position?

20 A Until about -- it was 1977 as best I
21 recall. About September or so of 1977.

22 Q And what position did you take then?

23 A I was then appointed as director of
24 environmental operations of the Monsanto
25 intermediate chemicals company.

1 Q Director of environmental operations?

2 A Yes.

3 Q For Monsanto intermediate?

4 A Intermediate chemicals.

5 Q How long did you hold that position?

6 A About 1983 roughly.

7 Q What were your duties and

8 responsibilities in that position?

9 A I was responsible for monitoring,

10 guiding the plants assigned to that operating

11 company as it related to the manufacture of

12 the chemicals at those plants, the shipping of

13 the products to the various customers and for

14 the workplace safety and health of the

15 workers.

16 Q Was the Krummrich plant included in

17 the plants that you were responsible for?

18 A Yes.

19 Q Did part of your responsibilities in

20 that position include interfacing with

21 governmental agencies on environmental issues?

22 A It included interfacing with federal

23 agencies, not the local or state.

24 Q Who was responsible for dealing with

25 local and state environmental issues during

1 that time period?

2 A The plants in that locality are state.

3 Q Was there a position by this time in

4 the plants that encompassed responsibility for

5 environmental issues?

6 A There were individuals assigned to

7 that. I don't know if there was any one

8 position and one title. It varied with each

9 plant. The plant manager made the decision on

10 how he would manage that part of his

11 responsibilities.

12 Q As director of environmental

13 operations, did you have people at the plant

14 level who reported to you?

15 A No.

16 Q Did you have your own staff?

17 A Yes.

18 Q Did your staff deal with people at the

19 plant level?

20 A Yes.

21 Q Was there direct reporting

22 responsibility from the plant level to your

23 staff?

24 A Well, there was a communication

25 responsibility. I'm accustomed to the use of

1 the world reporting as indicating not only do
2 you communicate but the one individual has
3 responsibility for salary administration and
4 hiring and firing. That didn't occur. It was
5 a communication responsibility.

6 Q And who did you report to?

7 A I reported to a general manager of
8 technology in the chemical intermediate
9 company.

10 Q What was his name?

11 A Miron Dymytrysyn.

12 Q Did you have any involvement in any
13 environmental issues involving the Krummrich
14 plant during the time that you were director
15 of environmental operations?

16 A My involvement was really one of
17 communications. I would rely on my staff to
18 keep me posted of any, I'm going to call them
19 problem areas in terms of what are the issues?
20 Who is addressing them? Are the resources
21 available? Is it getting enough attention?
22 Those kind of communications would occur.

23 Q Did you have one individual on your
24 staff who was responsible for the Krummrich
25 plant, or was there some other way that

1 authority was divided?

2 A There was always one individual, but
3 the individual would change through the years.

4 Q Do you recall which individuals during
5 the time from '77 to '83 had responsibility
6 for the Krummrich plant, individuals on your
7 staff?

8 A Help me with which field. The
9 product, the industrial hygiene employee, or
10 the environmental impact?

11 Q Let's start with environmental impact.

12 A Environmental impact, starting in '77
13 Mike Pierle was the first one. And he was
14 eventually in about '79 replaced by Mike
15 Weisher. And he was eventually -- let me
16 think now. Eventually he was replaced by
17 another Mike, Mike Foresman.

18 Q When you became director of
19 environmental operations, did you replace
20 somebody who had that position?

21 A No. That was a new position.

22 Q Do you recall any specific
23 environmental issues relating to the Krummrich
24 plant that you dealt with during the time that
25 you were director of environmental operations?

1 MR. NASSIF: Object as vague.

2 A I'm having a difficult time because
3 there is always something in the environmental
4 field going on all the time depending on what
5 happens at the plant, what products you are
6 making, what are the local authorities
7 requesting, so there is always some kind of
8 issue bubbling, if you will.

9 Q My question really is whether you
10 remember any specific issues that affected or
11 impacted the Krummrich plant during the time
12 that you were director of environmental
13 operations?

14 MR. NASSIF: Same objection.

15 A I don't know if it is responsive. For
16 example, when the plant wanted to install an
17 incinerator, they had to communicate with the
18 authorities in the Illinois EPA, perform the
19 necessary testing and what have you that the
20 agency requested, and eventually it resulted
21 in getting the permit. That's the kind of
22 activity that my staff would monitor and
23 report back.

24 Q Did they install an incinerator at
25 Krummrich during the time that you were

1 director of environmental operations?

2 A No. It was before, but that's an
3 example of the kind of activity that I in my
4 mind defined as environmental issue. Let me
5 think. I know that we were concerned about
6 losses -- well, let me think the timing here
7 again. '76, '77, nothing comes to mind in '77
8 and after. I just don't remember anything
9 outstanding.

10 Q You held the position of director of
11 environmental operations until '83; is that
12 correct?

13 A I was director of environmental
14 operations for the intermediate chemicals
15 company.

16 Q Until '83?

17 A Until '83.

18 Q What was the next position that you
19 held with Monsanto?

20 A It was the same title but it was for
21 the Monsanto industrial chemicals company.

22 Q Industrial chemicals?

23 A Industrial chemicals.

24 Q And when did you assume that position?

25 A Sometime in 1983. I think it was the

1 summer of '83. I'm not positive.

2 Q How long did you hold that position?

3 A Until the end of '85.

4 Q Was the Krummrich plant within your
5 jurisdiction as director of environmental
6 operations for Monsanto industrial chemicals?

7 A Yes.

8 Q Was intermediate chemicals a division
9 of industrial chemicals?

10 A No. It was an operating unit on its
11 own at the time.

12 Q Was the Krummrich plant shifted from
13 intermediate chemicals to industrial chemicals
14 or was this another reorganization?

15 A It was a reorganization, and the unit
16 that used to be called intermediate chemicals
17 was disbanded so to speak, no longer existed.
18 And the plants that used to be in the
19 intermediate chemicals unit were transferred
20 to other existing units.

21 Q So industrial chemicals was a unit
22 that was in existence when you were director
23 of environmental operations for intermediate
24 chemicals?

25 A That is right.

1 Q Did you replace somebody as director
2 of environmental operations for industrial
3 chemicals?

4 A Yes.

5 Q Who?

6 A Clayton Callis.

7 Q Did your duties and responsibilities
8 as director of environmental operations for
9 industrial chemicals change at all in terms of
10 the nature of your duties?

11 A The nature did not change, no. The
12 different set of plants, some of which were in
13 both units, and additional chemicals were
14 involved.

15 Q Was the Krummrich plant -- let me try
16 again. Were all the products manufactured at
17 the Krummrich plant within intermediate
18 chemicals and then within industrial
19 chemicals?

20 A No.

21 Q So there were other operating
22 companies that also had jurisdiction over some
23 of the products manufactured at Krummrich?

24 A Yes.

25 Q Which chemicals were you responsible

1 for or fell within your group as director for
2 environmental operations for intermediate
3 chemicals?

4 MR. NASSIF: Which chemicals? From
5 the Krummrich plant or all over?

6 Q (By Mr. Ricci) Krummrich.

7 A Again, I cannot recall all of them,
8 but many of those we have discussed today, the
9 phenol, the chlorinated phenols.

10 Q Chlorinated benzenes?

11 A Chlorinated benzenes, the benzyl
12 chloride, all of the chemicals we discussed
13 today are still included.

14 Those that were not included we have
15 not mentioned so far today, and they included
16 -- and I forget the exact chemicals, but they
17 were considered to belong to the agriculture
18 chemicals company. They were manufactured at
19 the Krummrich plant.

20 Q Were the chemicals that fell within
21 intermediate -- were the chemicals from the
22 Krummrich plant that fell within intermediate
23 chemicals the same chemicals that then shifted
24 to industrial chemicals?

25 A Yes.

1 Q How long were you the manager, or I'm
2 sorry, the director of environmental
3 operations for industrial chemicals?

4 MR. NASSIF: Asked and answered. He
5 said the end of '85.

6 MR. RICCI: Thank you.

7 Q (By Mr. Ricci) What was the next
8 position that you held?

9 A Another reorganization. I was then
10 made manager occupational health in Monsanto
11 chemical company.

12 Q And how long did you hold that
13 position?

14 A Until I retired at the end of '86.

15 Q Going back to the position of director
16 of environmental operations for intermediate
17 chemicals, I had asked you whether your
18 responsibility included interfacing with
19 governmental agencies. And I think you
20 replied that it did with respect to the
21 federal government but not with respect to
22 state and local governments. Do you recall
23 that?

24 A That is correct.

25 Q Did you nevertheless have oversight

1 responsibility for the plant dealings with
2 state and local government agencies on
3 environmental issues?

4 MR. NASSIF: Objection. Asked and
5 answered.

6 A Can you help me with oversight?

7 Q (By Mr. Ricci) To the extent that
8 state or local environmental issues were
9 presented at the plant level, did you or your
10 department have any responsibility in helping
11 the plants work through those issues?

12 A We were available to assist them if
13 they should run into any kinds of
14 difficulties.

15 And by difficulties I'm talking about
16 do they need people like another chemist or an
17 engineer or do they need funding for some
18 activity or to back them up in terms of what
19 is going on in other states and how are the
20 other plants coping? So the communications
21 function as well as an ability to be able to
22 go to their bosses to ask for more funding,
23 more people, whatever it took to respond.

24 Q And would that be true as well in
25 industrial chemicals when you were director of

1 environmental operations for industrial
2 chemicals?

3 A Yes.

4 Q Did you have authority to authorize
5 expenditures at any level for environmental
6 projects at the plants?

7 A No.

8 Q Where did that authority resign?

9 A Well, it depended on the amount of
10 money that was being requested. I have
11 forgotten the ground rules that existed at the
12 time, but the plant manager was able to
13 approve up to a certain level. And if he
14 exceeded that level, he then went to the
15 director of manufacturing who was his boss.
16 And again, if that exceeded, he would go to
17 the vice president in charge of the operating
18 company and on up the ladder.

19 Q You did not have a rung on that ladder
20 though?

21 A No, sir. All I could do was speak in
22 support of a project that I believed in and
23 would go in and put my two cents worth in, so
24 to speak.

25 Q During the time that you were director

1 of environmental operations for intermediate
2 chemicals, who was the plant manager at
3 Krummrich?

4 A Intermediate, Jerry Bratsch.

5 Q Do you recall dealing with Mr. Bratsch
6 on any specific environmental issues during
7 that time period?

8 MR. NASSIF: Objection. He has
9 already testified he doesn't recall any
10 specific environmental issues at the Krummrich
11 facility.

12 A I do not.

13 Q (By Mr. Ricci) You can answer the
14 question.

15 A I do not.

16 Q And who was the plant manager during
17 the time that you were director of
18 environmental operations?

19 A For intermediates?

20 Q Yes. I'm sorry. For industrial
21 chemical?

22 A Industrial, I believe by that time it
23 was Robert Flint.

24 Q He was the plant manager at Krummrich?

25 A Yes. Now, I may have my years off a

1 bit, but that's the sequence.

2 Q Do you recall dealing with Mr. Flint
3 on any environmental issues during that time
4 period?

5 MR. NASSIF: Objection. Asked and
6 answered.

7 A I do not.

8 Q (By Mr. Ricci) Are there any other
9 plant managers -- let me rephrase that. Do
10 you recall any other plant managers for the
11 Krummrich plant besides Mr. Flint and
12 Mr. Bratsch for the periods September '77
13 through December of '85?

14 A Mr. Molloy was involved in there, but
15 I don't recall just what years, Jack Molloy.
16 I know he was there in '86. He was probably
17 there in '85. He might have been there in
18 '84, the latter part of my involvement with
19 Monsanto.

20 Q Do you recall dealing with Mr. Molloy
21 on any environmental issues?

22 MR. NASSIF: Objection. Asked and
23 answered.

24 A Nothing stands out in my mind.

25 Q (By Mr. Ricci) What were your duties

1 and responsibilities as manager of
2 occupational health for Monsanto Chemical
3 Company?

4 A I was to serve as the Monsanto
5 Chemical Company representative in working
6 with the corporate industrial hygienists who
7 in turn were available for advice and counsel
8 to the chemical plants assigned to the
9 chemical company. And this is about 20 or 30
10 plants throughout the country.

11 Q Were your responsibilities exclusively
12 related to issues of industrial hygiene,
13 worker safety, that kind of thing?

14 A Yes.

15 Q And then you retired?

16 A Yes.

17 Q Have you ever had your deposition
18 taken before?

19 A Yes.

20 Q How many times?

21 A I have never kept a record, but since
22 1973 it has been at least a couple dozen,
23 maybe approaching 30 depositions.

24 Q Have you ever testified in Court?

25 A Yes.

1 Q How many occasions?

2 A About six or eight times.

3 Q Over what period of time?

4 MR. NASSIF: Objection. Asked and
5 answered.

6 MR. RICCI: He didn't answer that
7 because I didn't ask it.

8 MR. NASSIF: He said since 1973.

9 MR. RICCI: That was to the question
10 how many times he had been deposed.

11 A As I remember, the earliest trial was
12 about '73 or '74, also somewhere in that
13 period of time.

14 Q (By Mr. Ricci) And when was the most
15 recent?

16 A This past August.

17 Q With respect to the 30 or so times
18 that you have been deposed, do you know if you
19 have been designated as an expert witness in
20 any of those cases?

21 A I don't recall ever being offered as
22 an expert, no.

23 Q And similarly with respect to the
24 times that you have testified in Court, do you
25 know if you have been designated as an expert

1 witness?

2 A I have not.

3 Q In any of the cases -- well, let me

4 ask you this. Were you -- for the six to

5 eight times that you have testified in Court,

6 were you also deposed in those cases?

7 A Not in every case, no.

8 Q So there have been times when you have

9 testified in Court when you haven't been

10 deposed?

11 A That is correct.

12 Q And obviously there have been times

13 when you have been deposed that you haven't

14 ended up testifying in Court?

15 A That is correct.

16 Q With respect to the 30 or so times

17 that you have been deposed, have any of those

18 cases related to issues involving the

19 Krummrich plant?

20 A No.

21 Q In any of the instances where you have

22 testified in Court, have any of those cases

23 involved the Krummrich plant?

24 A No.

25 Q In any of the instances where you have

1 been deposed, did any of those cases involve
2 PCBs?

3 A Yes.

4 Q Approximately how many?

5 A All of them.

6 Q How about the six to eight times that
7 you have testified at trial? Have those all
8 also involved PCBs?

9 A Yes.

10 Q Did any of the cases where you have
11 been deposed relate to recovery of costs for
12 cleanup of PCBs, environmental cleanup of
13 PCBs?

14 A Yes.

15 Q Can you tell me how many?

16 A The reason I'm hesitating is I have a
17 little difficulty relating cleanup with
18 replacement of equipment voluntary by the
19 owner of the equipment and then seeking
20 reimbursement for that cost. I don't know
21 that that's a cleanup or whether it comes
22 under some other description.

23 Q Let me try it from a different
24 direction. When you first became manager of
25 environmental control back in '70, not when

1 you first became that -- not when you first
2 assumed that position, but during the time
3 that you held that position, did Monsanto
4 develop a program to take PCB-containing
5 materials back from its customers?

6 A There was a program for some of the
7 PCB materials being returned for disposal by
8 Monsanto, yes.

9 Q Have any of these cases that you have
10 testified in either by deposition or trial
11 testimony involved that program?

12 A No.

13 Q Have you testified in any cases
14 regarding environmental cleanup of PCBs which
15 I will define as dealing with PCBs in water,
16 soil or sediments as opposed to equipment?

17 A Yes.

18 Q Approximately how many?

19 A I recall one.

20 Q What was that case about?

21 A This was a situation where hydraulic
22 fluids containing PCBs were found in some soil
23 in a drainage ditch from a customer's plant.
24 The customer was in a position where he had to
25 clean up because the authorities requested

1 that, and this customer then tried to get

2 Monsanto to reimburse them for those costs.

3 Q What was the nature of your testimony?

4 A Sort of generally about PCBs, the

5 environment, the kinds of labels. Very broad

6 kind of testimony.

7 Q Did that case go to trial?

8 A Yes.

9 Q And you testified at the trial?

10 A Yes.

11 Q Have you ever testified regarding the

12 persistence of PCBs in the environment?

13 A Yes.

14 Q How many occasions?

15 A I would suggest just virtually every

16 deposition touches on that subject.

17 Q What's your understanding as to the

18 persistence of PCBs into the environment?

19 A They are quite persistent.

20 Q Meaning what?

21 A They don't disappear.

22 Q Ever?

23 A Well, ever is an awfully long time.

24 It is dependent really on some other factors

25 like concentration, the presence of bacteria,

1 the presence of light, the presence of any
2 other chemicals, moisture and so on. But for
3 just generally high concentrations, they can
4 be found there generations later.

5 Q Are there particular chemicals that
6 you are aware of that can facilitate the
7 breakdown or degradation of PCBs in the
8 environment?

9 A I'm not aware of any.

10 Q Have you ever looked into that
11 question?

12 A Have I personally looked into it?

13 Q Yes.

14 A I have asked around at different
15 laboratories that were involved. I do know
16 that some work has been done in it. I have
17 read that there are some promising hints that
18 it is possible, but that's as far as I have
19 gotten.

20 Q Did Monsanto produce PCBs any place
21 besides Krummrich and Anniston?

22 A Yes.

23 Q Where else?

24 A In Newport, Wales, in the United
25 Kingdom. And they had a joint venture in

1 Japan with the Mitsubishi Company.

2 Q Production was in Japan?

3 A Yes.

4 Q Did those plants employ basically the

5 same manufacturing process as was employed in

6 Krummrich?

7 A Basically, yes.

8 Q Were all of the finished aroclor

9 products liquids?

10 A No.

11 Q Which were not liquid?

12 A When you said aroclor, that covered

13 the terphenyls also.

14 Q Okay. Let's focus on the PCBs.

15 A The PCBs?

16 Q Right.

17 A Aroclor 1268 and 72 were solids.

18 Q What were those produced for?

19 A They were used in addition as

20 additions to primarily plastic materials, and

21 they served the primary purpose of making them

22 fire retardant.

23 Q Were they solid or were they soft?

24 A They were solid. As so, they look

25 like table salt. They were ground up in the

1 machinery and bagged.

2 MR. RICCI: Let's go off the record.

3 (Discussion off the record)

4 Q (By Mr. Ricci) Mr. Papageorge, are
5 you familiar with a body of water known as
6 Dead Creek?

7 A Yes.

8 Q When did you first become familiar
9 with Dead Creek?

10 A As I recall, I heard the expression
11 Dead Creek when I was working at the Krummrich
12 plant. That's my first exposure to the
13 terminology.

14 Q That was in?

15 A '64.

16 Q '64, '65 around there?

17 A Yes, '64. That was my first contact.

18 Q What was the nature of your contact or
19 familiarity with Dead Creek at that time?

20 A I don't recall anything unique about
21 it except other features of the area.

22 Q Did you understand it to be in close
23 proximity to the Krummrich plant?

24 A Nearby. Just how far I don't know. I
25 didn't go look at it.

1 Q Do you have any understanding as to
2 whether Dead Creek was in any way connected to
3 the Monsanto sewer system or the Village of
4 Sauget sewer system?

5 A No. I knew nothing about the
6 connection.

7 Q When you went to work at the Krummrich
8 plant in '64 or '65, was the village in which
9 the plant is located known as Monsanto or
10 Sauget?

11 A Sauget.

12 Q When was the next time you heard the
13 term Dead Creek?

14 A Sometime in the '70s. Let me think a
15 minute. It might have been the '80s. The
16 date slips me. Anyway, I recall hearing about
17 a dog that had been in that -- in an area
18 called Dead Creek that had lost its fur and
19 had sores on its body and eventually died.
20 That's roughly the second time I heard the
21 expression Dead Creek.

22 Q Do you recall what position you held
23 when you heard the tale of the dog?

24 A I was a director of environmental
25 operations. The chemical -- let me think --

1 chemical intermediate company.

2 Q So it was sometime between '77 and

3 '83?

4 A Yes. Yes, about 1980.

5 Q Did you learn of that incident in your

6 official capacity? Was it reported to you by

7 someone on your staff, for instance?

8 A Yes.

9 Q How was it recounted to you?

10 A Oh, I don't recall the exact scenario.

11 Q Let me be more specific. Was it

12 recounted to you as an environmental issue

13 that Monsanto should be concerned about?

14 A Well, I don't know the word concern

15 was used, but since it appeared to be an

16 exposure to some kind of chemicals and it was

17 fairly near our plant, that there should be

18 some study made or at least look into it. And

19 the plant was already involved in looking into

20 it to some degree.

21 Q Before the incident with the dog, the

22 plant had been involved in --

23 A No, no. After they heard of the dog's

24 demise, the message got to the plant. And I

25 don't know how that happened. The plant

1 people started taking some kind of actions.

2 Q Did the plant start taking those
3 actions before you were advised of the
4 incident?

5 A Almost simultaneously the report came
6 back to my staff member and the plant was
7 already organizing or doing something. What
8 they were doing I don't recall at the moment.

9 Q Who was the staff member who reported
10 it to you?

11 A Either Mike Weisher or Mike Foresman.
12 One of the two Mikes.

13 Q Did you or your department take any
14 steps in response to this incident?

15 A My staff member made it a point to go
16 to the plant and get closer to the source of
17 his information. They were tuned in as much
18 as was appropriate in terms of what is it the
19 home office can do to help kind of thing and
20 yet get out of the way so they could do their
21 job, which is typical of the kinds of support
22 we try to give.

23 Q Can you tell me where this
24 investigation went, where it led to or whether
25 it was resolved in any way?

1 A As I remember, there were some
2 analyses made, and the end result, as I
3 recall, was that the analyses did not indicate
4 that the plant chemicals were involved, so the
5 plant really was in no position to do anything
6 else.

7 Q Do you know what the analysis or
8 investigation consisted of?

9 A Other than samples were taken and
10 analyzed, I don't know any of the details.

11 Q Do you know whether the IEPA was in
12 any way involved in the investigation that
13 ensued from the dog dying?

14 A The Illinois EPA was involved. I
15 don't know the degree of involvement or type.

16 Q When was the next time that you heard
17 anything about Dead Creek?

18 A There were reports relating to that
19 incident over a period of time, so I don't
20 know what you mean by next time.

21 Q I'm talking about not related to that
22 particular incident.

23 A Not related, I don't think I heard of
24 Dead Creek mentioned as it related to any
25 other matter.

1 Q During the time that you worked at the
2 Krummrich facility in the '60s, did you ever
3 hear any talk or reference regarding Dead
4 Creek as a receptacle of Monsanto waste?

5 A No.

6 (Plaintiff Deposition Exhibit Number 2
7 marked for identification.)

8 Q (By Mr. Ricci) Mr. Papageorge, let me
9 show you a document that's been marked as
10 Exhibit 2 to your deposition.

11 For the record, this is a document
12 with Bates No. CER 010901 through 902, M4317
13 through M4318. And I would ask you to take a
14 look at that.

15 A I have read the article.

16 Q This is a January 23, 1969, memo from
17 Mr. Hodges to Mr. Wright and Mr. Buckley. And
18 the document shows you as being copied. Do
19 you see that?

20 A I do.

21 Q Did you receive a copy of this
22 document in January of 1969?

23 A I don't recall receiving it, but I do
24 see my name as listed as a recipient of a
25 carbon copy.

1 Q Do you have any reason to believe that
2 you did not receive it?

3 A No more so than I did receive it. I
4 just don't recall it.

5 Q In January of 1969, you were the plant
6 manager at Anniston, correct?

7 A That is correct.

8 Q Who is Mr. Wright?

9 A Mr. Wright was the plant environmental
10 engineer.

11 Q And do you know what Mr. Hodges'
12 position was in January of '69?

13 A Yes. He was the environmental manager
14 reporting at the organic chemicals division
15 level back at the corporate offices.

16 Q Were the Anniston and Krummrich plants
17 within the organic chemicals division?

18 A Yes.

19 Q Do you recall Mr. Hodges having any
20 involvement with the environmental issues
21 relating to PCBs during this time period?

22 A Yes.

23 Q And did you deal with Mr. Hodges at
24 all during this time period with respect to
25 PCBs in the environment?

1 A Did I personally?

2 Q Yes.

3 A No.

4 Q You don't recall having any contacts
5 with Mr. Hodges?

6 A Well, I had contacts with him on other
7 matters when he would visit the plant and so
8 on, but I didn't have anything specific with
9 PCBs.

10 Q Could you review quickly the first
11 sentence of the first paragraph of this memo.

12 A I have read it.

13 Q Mr. Hodges refers to a likelihood that
14 attention will be focused on the presence of
15 aroclors in natural waters. Do you know what
16 led to his conclusion that such a likelihood
17 existed?

18 A I believe I do.

19 Q And what is that?

20 A By this time, January '69, the ability
21 to analyze for PCBs in water at very low
22 levels was fairly well established by Monsanto
23 and a few other laboratories throughout the
24 world. The interpretation of that kind of
25 information was such that this skill would be

1 learned by others. And as more samples were
2 studied, the chances were that the PCBs would
3 be found widely spread. That's the thinking
4 that occurred back in '69.

5 Q Was Monsanto one of the first to
6 develop the ability to analyze low level PCBs
7 in environmental media?

8 A It was amongst the first. Of course,
9 the very first were those researchers in
10 Sweden. Shortly after that, the Monsanto
11 chemists and Dr. Riseborough, who we talked
12 about earlier, and at least one or two other
13 laboratories throughout the world were
14 developing this expertise, so Monsanto was
15 amongst that first group of half a dozen or
16 so.

17 Q Did Monsanto share its abilities in
18 this regard with any of those outside of
19 Monsanto who were trying to develop the
20 technology?

21 A Yes.

22 Q Mr. Hodges states that, "We should
23 begin to protect ourselves."

24 Do you know what he is referring to
25 there when he refers to protecting ourselves?

1 A No. I would have to put myself in his
2 head. You would have to ask him.

3 Q Do you recall any discussions during
4 this time period in which the concept of
5 Monsanto protecting itself came up in the
6 context of PCBs?

7 A Not to my knowledge, no. Not to me.

8 Q In the second paragraph under the
9 heading No. 1, there is a reference to
10 collecting and freezing samples from the
11 entrance to Snow Creek at Anniston. Do you
12 see that?

13 A Yes.

14 Q Do you know what that refers to?

15 A I believe I do.

16 Q What is that?

17 A Snow Creek is a natural ditch that ran
18 -- that runs alongside the Anniston plant
19 boundary. In fact, a little bit is within the
20 plant fence. During the times of heavy
21 rainfalls, as an example, water will wash
22 across the plant and flow into this creek.
23 This rainfall water would, of course, pick up
24 anything that had been spilled on the ground
25 or the pavement or the roadways. And these

1 materials that the water would pick up would
2 be, of course, present in that water. And
3 that's the purpose of the sample.

4 Q Mr. Hodges referred to the term
5 outfall in that sentence. Do you see that?

6 A I do see that, yes.

7 Q What do you understand the term
8 outfall to mean?

9 A I would equate that to effluent or
10 material leaving the site.

11 Q Was it your understanding that
12 Anniston plant had an outfall to Snow Creek?

13 A The whole plant would drain into Snow
14 Creek.

15 Q During rain storms?

16 A Yes. Yes.

17 Q The plant's process discharges did not
18 go to Snow Creek; is that correct?

19 A No. No, not to my knowledge.

20 Q If you wanted to sample the Anniston
21 plant's discharge to Snow Creek, would you
22 have to do so during a rain event?

23 A Yes. Most of the year it is a dry
24 creek.

25 Q Do you recall doing any such sampling

1 in response to this memo? Not you personally
2 but you the company?

3 A I recall sampling taking place. I do
4 not recall whether it is in response to this
5 memo or subsequent to this memo. All I
6 remember is that the sampler was put in place.

7 Q To sample the waters of Snow Creek?

8 A To sample the water, yes, sir.

9 Q Can you turn over to the second page
10 of the Exhibit 2, please. In the first
11 sentence Mr. Hodges discusses a method of
12 proceeding in the event of discovery of the
13 sewerage of large amounts of aroclors with a
14 low cost when there is a low cost disposal
15 alternative. Do you see that?

16 MR. NASSIF: You mean the part that
17 says in case you discover sewerage?

18 Q (By Mr. Ricci) Right. In case you
19 discover sewerage of large amounts with a low
20 cost alternate disposal method, proceed with
21 the cleanup. Do you see that?

22 A I find that sentence to me confusing.
23 I don't know what it is trying to tell me.

24 Q You don't have any recollection of --
25 let me ask it a different way. Do you have

1 any recollection of discovering any sewerings
2 of large amounts of aroclors at the Anniston
3 plant?

4 A No.

5 Q Did you have any contact with anyone
6 at the Krummrich plant regarding what they
7 were doing to follow the suggestions in this
8 memo?

9 A I personally, no.

10 Q Do you know if Mr. Wright did?

11 A I do not.

12 (Plaintiff Deposition Exhibit Number 3
13 marked for identification.)

14 Q (By Mr. Ricci) Mr. Papageorge, let me
15 show you a document that's been marked as
16 Exhibit 3 to your deposition. This is a
17 document with Bates No. CER 011119, M4535.

18 A I have read the exhibit.

19 Q This is a May 12, 1969, memo from
20 Mr. Hodges to a Mr. Kuhn. It has Bates
21 No. CER 011119 through 123, M4535 through
22 M4539. You are shown as being copied on this
23 document; is that correct?

24 A That is correct.

25 Q Do you know who Mr. Kuhn is?

1 A At that time Mr. Kuhn was the manager
2 of manufacturing for the organic chemicals
3 division.

4 Q You reported to Mr. Kuhn as plant
5 manager?

6 A No. I reported to the director of
7 manufacturing who is not listed here.

8 Q Was Mr. Kuhn above the director of
9 manufacturing in the chain of command?

10 A No.

11 Q Outside of that chain of command? He
12 was not in that chain of command?

13 A He was a staff man over off to the
14 side here reporting to Mr. Hosmer.

15 Q On the second page of the memo under
16 the heading "Work to Minimize Losses at W. G.
17 Krummrich," subparagraph A, "Notes on Aroclors
18 Production Department," paragraph one there is
19 a discussion there of some improvements. In
20 that paragraph, there is a reference to catch
21 pots. Do you know what the catch pots are?

22 A Yes. Those are in essence wide spaces
23 in the line that received the condensate that
24 the mist demisters remove and dribble on down
25 to this pot, and that in turn would accumulate

1 the material, and that material would be
2 returned to the process.

3 Q Mr. Hodges states, "With the recent
4 years improvements in chlorinator off-gas
5 cooling plus Brink mist eliminators, there is
6 no longer any free aroclor in the HCL off-gas
7 which comes out in catch pots. At one time
8 this was considerable."

9 A Yes.

10 Q Was the -- now, you just testified
11 that the catch pots received the condensate
12 from the condensers; is that correct?

13 A Yes. Actually it is the system which
14 cools the gases coming off the chlorinator,
15 and it goes through a condenser and these mist
16 eliminators.

17 Q Right.

18 A I forgot your question.

19 Q Let me ask it again, or a different
20 one. The condensate that comes out of the
21 condensers goes to the catch pot?

22 A Yes.

23 Q And what about the liquid that's
24 removed by the mist eliminator? Does that go
25 to the catch pot, too?

1 A Also, yes.

2 Q Now, Mr. Hodges states that there is
3 no longer any free aroclor in the HCL off-gas
4 which comes out in catch pots. Do you know
5 what he is referring to there?

6 A Not at the moment. I would have to
7 see the flow sheet.

8 Q Did you have catch pots down in
9 Anniston, too?

10 A Yes. There were -- it is common
11 features in many gas systems, so there are
12 wide spaces in the line to trap liquids.

13 Q He says the catch pots never require
14 draining?

15 A The implication there is that the
16 improvements they made are effective to the
17 point where at the end of the system they
18 don't find any more liquid. It is all
19 returned before that point.

20 Q When you say the end of the system,
21 what are you referring to?

22 A I'm not real sure the sequence of
23 where these gases all go, but eventually you
24 end up with, if nothing else, air venting into
25 the atmosphere. I would have to see the flow

1 sheet.

2 Q Did you ever have to drain your catch
3 pots in Anniston?

4 A I don't remember.

5 Q Flip over to page 3 of Exhibit 3, if
6 you could.

7 A I have it.

8 Q Under Roman Numeral III, subsection A,
9 paragraph 1, there is a reference to free
10 globules of aroclors in Snow Creek. Do you
11 see that?

12 A I see that.

13 Q Do you have any recollection of
14 globules of aroclor in Snow Creek?

15 A I do not.

16 Q Do you have any understanding of what
17 the terms free globules of aroclors refers to?

18 A Well, I have my understanding. I
19 don't know whether this is the author's
20 intent, but to me that means that looking down
21 in that dry creek bed, he sees areas that look
22 to him like what we described earlier, motor
23 oil that just stayed put. They don't move
24 along. They don't soak into the soil. They
25 just sit there.

1 That's the way I visualize -- that's
2 what I visualize he was looking at, and he
3 interpreted that or the person who reported
4 this interpreted that as being aroclor. You
5 notice the small A there.

6 Q Right.

7 A Instead of the expression PCB, they
8 use aroclor.

9 Q You never saw that?

10 A I didn't see it, no.

11 Q Now, he also states, "We do not know
12 what problem exists in Choccolocco Creek and
13 the Coosa River." I believe you testified
14 earlier that the village waste treatment plant
15 in Anniston discharged into the Choccolocco
16 Creek?

17 A That's my recollection, yes, sir.

18 Q Do you recall what the Coosa River was
19 or is?

20 A That's the river, and the creek flows
21 into the river.

22 Q Choccolocco Creek flows into the Coosa
23 River?

24 A Yes.

25 Q Does Snow Creek flow into one of those

1 bodies?

2 A In the Choccolocco Creek.

3 Q Can you flip over to the next page,

4 please, page 4 of Exhibit 3.

5 A I have it.

6 Q Under the heading "Work to Reduce

7 Sewering," there is a discussion of a catch

8 tank being installed in the vapor line near

9 the HCL absorber. Do you see that?

10 A I see that.

11 Q Can you tell me what the purpose of

12 that catch tank was? Let me back up. Do you

13 have any recollection of the installation of

14 this catch tank?

15 A I do. And I recall earlier we

16 referred to the fact that there was a stream

17 that contained acidic material that went to a

18 limestone creek.

19 Q Right.

20 A To me this is referring to that same

21 stream. And it is being handled in a

22 different way this time. They are trapping it

23 in a tank, and they are taking it to a

24 landfill instead of running it through this

25 limestone bed.

1 Q They are taking the aroclors from the
2 tank; is that correct?

3 A Yes. The aroclors that were present
4 in that tank, correct.

5 Q Why were those aroclors not returned
6 to production?

7 A They were of such a nature in terms of
8 amounts and quality that it would have upset
9 the whole operation. It just wasn't worth the
10 effort.

11 Q What was it about the quality of the
12 materials that made them unsuitable for return
13 to production?

14 A They needed a lot of refining. They
15 had a lot of unknown chemicals in them. They
16 just didn't check out at high purity. And the
17 amounts were so small that it was hardly worth
18 the effort.

19 Q Did these aroclors have different
20 constituents than the materials that were
21 captured or removed from the HCL stream from
22 the condensers and the mist eliminator?

23 A Help me with constituents.

24 Q Well, you indicated that these
25 aroclors were not suitable for return to

1 production, and I believe that you testified
2 earlier that the materials that were removed
3 by the condenser and the mist eliminator were
4 returned to production; is that correct?

5 A Yes. Yes.

6 Q I'm trying to find out how these
7 aroclors were different than the aroclors or
8 the materials that were removed by the mist
9 eliminator and the condenser.

10 A I don't recall all the chemical
11 details, but I do recall that these were
12 highly colored, almost black. The analytical
13 methods at the time did not give us the
14 information regarding exactly what kinds of
15 chemicals were in there, but then again the
16 amounts were so small that it was perceived to
17 be unwise to introduce this highly
18 contaminated liquid stream, which was very
19 small compared to the billions of pounds made,
20 that you are better off just burying it.

21 Q There is a statement that a coalescer
22 is being installed to capture aroclor globules
23 in the crude muriatic acid. Do you see that?

24 A I see that.

25 Q Are we referring here to the same

1 stream that ended up going to the limestone

2 neutralization ditch?

3 A Yes.

4 Q And that's the crude muriatic acid?

5 A Yes.

6 Q That muriatic acid was not used in

7 production?

8 A No. Was not used.

9 Q What is a coalescer?

10 A There were several designs. It is

11 really sort of a strainer that, well,

12 coalesces all these droplets of oil or PCBs.

13 Sort of filters them out in a way.

14 Q And those were also landfilled?

15 A Yes.

16 Q For the same reason as the aroclors

17 removed from the catch tank?

18 A That's right.

19 Q Now, paragraph two indicates that no

20 spent aroclor from the -- or indicates that

21 the spent aroclor from the P2S5 operation had

22 been drummed for hauling to landfill for at

23 least the past several years.

24 And I believe that's consistent with

25 your prior testimony as to how the Anniston

1 plant handled the spent aroclors from the heat
2 exchanger?

3 A That is correct.

4 Q On the next page, paragraph five, it
5 says, "Tank car cleaning -- this is not a
6 problem at Anniston. No heels are drained to
7 the sewer." Do you see that?

8 A Yes, I do.

9 Q What does the term heel refer to?

10 A With every shipment in a tank car,
11 there is always a little bit of liquid left in
12 the bottom of the car. That amount of
13 material is called the heel. It is usually
14 the material that clings to the walls of the
15 vessel as the material is being pumped out.
16 And once the pumping is finished, the pipe
17 lines are sealed off with the valves, and all
18 and the material continues to flow and
19 accumulates at the bottom.

20 Q And does that occur with respect to
21 both -- you refer to tank cars and I assume
22 you mean railcars?

23 A That's what this is talking about,
24 tank car cleaning. This is railcars, but it
25 is true of any tank whether it is fixed or on

1 wheels.

2 Q Did they do tank car cleaning at

3 Anniston?

4 A On a rare occasion when they found the

5 tank car for some reason highly contaminated

6 with something, a customer used it to haul

7 something else in it, then they would clean

8 it, yes.

9 Q How was it that that cleaning did not

10 result in any sewer discharge?

11 A They drum off the washings and take it

12 to the landfill.

13 Q Was that sort of standard operating

14 procedure at Anniston?

15 A Yes.

16 Q Why was that?

17 A Oh, I don't know when it was

18 established. That was the practice when I got

19 there.

20 Q That was the practice when you got

21 there?

22 A Yes, sir.

23 Q And you continued that practice?

24 A Yes, sir.

25 Q Did you ever consider changing it to

1 discharge that stuff to the sewer?

2 A No way.

3 Q Why is that?

4 A It was working so well the way we were

5 doing it. Why do that?

6 Q Would there be less materials

7 handling, for instance, if you just drained it

8 to the sewer?

9 A Not that much less.

10 Q Did you feel that it was a more

11 environmentally sound practice to drum it off

12 and landfill it than to drain it to the

13 sewers?

14 A You are asking me to recall my

15 personal thoughts then. I would guess that I

16 found that the practice was working so well

17 and the amounts really are not great, about

18 ten drums at the most, and the trucks were

19 going over there all day long anyway, and I

20 just decided that this was going quite well.

21 Q The last sentence of this memo is,

22 "Comments from recipients of this letter are

23 invited." Do you recall having any comments

24 on this memo?

25 A I do not recall, no.

1 (Plaintiff Deposition Exhibit Number 4
2 marked for identification.)

3 Q (By Mr. Ricci) Mr. Papageorge, you
4 have just taken a document that's been marked
5 as Exhibit 4 to your deposition. And it is a
6 document with Bates No. CER 013356, M6771.

7 You are welcome to read the whole
8 document. My questions will relate to page 2,
9 Roman Numeral II-A, if you want to save a
10 little time.

11 A I have read Roman Numeral II-A.

12 Q This is an August 21, 1969, memo from
13 Mr. Hodges to a Mr. Hosmer, and you are copied
14 on this memo; is that correct?

15 A That is correct.

16 Q Now, I understand that at the time of
17 this memo you were plant manager at Anniston,
18 correct?

19 A Correct.

20 Q In the paragraph that I just referred
21 you to, there is a discussion of phenol losses
22 to the sewers from the Krummrich plant. Do
23 you see that?

24 A I do.

25 Q My question is whether that paragraph

1 refreshes your recollection at all as to the
2 nature or amount of phenol losses to the
3 sewers at the Krummrich plant during the time
4 that you were working at the Krummrich plant?

5 A It does not, no.

6 (Plaintiff Deposition Exhibit Number 5
7 marked for identification.)

8 Q (By Mr. Ricci) Mr. Papageorge, let me
9 show you a document that's been marked as
10 Exhibit 5 to your deposition.

11 It is a document with Bates No. CER
12 101865 and 866, M4281 and M4282, and ask you
13 to take a look at it.

14 A I have read it.

15 Q This is a February 11, 1970, memo from
16 Mr. Pierle to a number of individuals. And
17 you also are copied on the document; is that
18 correct?

19 A That is correct.

20 Q Now, in February of 1970, you had
21 taken the position of manager of environmental
22 control?

23 A I had.

24 Q And in that position, you did have
25 some involvement with the control of aroclor

1 losses to the sewers from the Krummrich plant;

2 is that correct?

3 A Yes.

4 Q Do you have any recollection of the

5 issues discussed in this memo?

6 A In a general sort of way. I don't

7 recall the specifics.

8 Q Do you recall that the blow tank at

9 the Krummrich plant was determined to be a

10 major source of losses of aroclors to the

11 sewers?

12 A Not really at this point in time.

13 Q Do you recall that at the Krummrich

14 plant prior to the time of this memo the gas

15 coming off of the blow tank was being

16 discharged to the sewer?

17 A I don't think the gas was. I think

18 the gas can't be discharged to the sewer.

19 Some liquid component separated from that gas.

20 Q Do you recall any discharge to the

21 sewer emanating from the blow tank?

22 A Yes.

23 Q And at the Krummrich plant?

24 A Yes.

25 Q And what do you recall what that

1 discharge entailed?

2 A Well, I don't recall that it had some
3 PCBs in it.

4 Q Is it your recollection that this gas
5 coming off of the blow tank was drowned or
6 scrubbed to the sewer?

7 A Yes.

8 Q And --

9 A Not the gas itself. The scrubable
10 components in that gas ended up in the sewer.

11 Q That was not the practice that was
12 followed in the blow tank at the Anniston
13 plant; is that correct?

14 A They had a different system.

15 Q And the system at the Anniston plant
16 resulted in the gas from the blow tank going
17 into muriatic acid production; is that
18 correct?

19 A Yes.

20 Q Do you know why the Krummrich plant
21 dealt with the gas coming off of the blow tank
22 differently than the Anniston plant did?

23 A I do not.

24 Q Do you recall the changes that were
25 installed or made at the Krummrich plant to

1 remove aroclors from the discharge to the
2 sewer emanating from the blow tank?
3 A I don't recall the specifics. I do
4 recall it as being part of an overall program
5 to keep the PCBs out of the environment, but
6 not the details.

7 Q Now, at the Anniston plant, the blow
8 tank was not a source of PCBs into the
9 environment; is that correct?

10 A That is correct.
11 (Plaintiff Deposition Exhibit Number 6
12 marked for identification.)

13 Q (By Mr. Ricci) Mr. Papageorge, let me
14 show you a document that's been identified as
15 Exhibit 6 to your deposition.

16 This is a document with Bates No. CER
17 013939 and 940, M2904 and M2905, and ask you
18 to take a look at that.

19 A I have read the document.

20 Q This is a March 17, 1970, memo from an
21 E. S. Tucker to Mr. Pierle. Do you see that?

22 A It is.

23 Q Who is E. S. Tucker?

24 A He is the research chemist at
25 Monsanto's general offices who was the lead

1 individual in developing PCB analytical
2 methodology and supervised the team that did
3 this kind of analysis.

4 Q Had the analysis for PCBs in the
5 environment been perfected by this point, or
6 were they still working on it?

7 A It was certainly perfected from the
8 initial attempts, but the improvements
9 continued through this period and even later.

10 Q The second page of the memo refers to
11 water and sediment sample results. And the
12 results are in concentrations of A-1242 and
13 A-1260. Do you understand A-1242 to be
14 aroclor 1242?

15 A I do.

16 Q And A-1260 to be aroclor 1260?

17 A Yes.

18 Q Do you know why Mr. Tucker is sampling
19 only for these two aroclors or testing only
20 for those two aroclors?

21 A I don't think that the test is aimed
22 at any specific one. This is what the
23 instrument is telling him. This is the result
24 of his analysis, and he interprets the result
25 as representing these two aroclors.

1 Q So would it be your understanding that
2 he is looking for the whole family of
3 aroclors, and this is all that he found?

4 A Whatever fingerprint that the graph
5 shows, he will take it and interpret it as
6 being one of the aroclors.

7 (Plaintiff Deposition Exhibit Number 7
8 marked for identification.)

9 Q (By Mr. Ricci) Mr. Papageorge, let me
10 show you a document that's been marked as
11 Exhibit 7 to your deposition.

12 A I have scanned the exhibit.

13 Q This is an April 17, 1970, memo from
14 an R. E. Keller to yourself. Who was R. E.
15 Keller?

16 A Dr. Keller was head of the analytical
17 research function to whom Dr. Tucker reported.

18 Q There is a statement in the second
19 paragraph, "PCBs typical of our aroclor
20 products have been found in," and then it
21 gives a list of places where it was found.
22 What kinds of PCBs were typical of Monsanto's
23 aroclor products?

24 A What he is saying is that what his
25 analytical procedure was showing him was a

1 graph or a pattern similar to those that
2 Monsanto's products would create in the same
3 instrument under the same procedure. And he
4 reported that presence as equivalent to an
5 aroclor product of one of the series.

6 Q Do you know whether any of the other
7 manufacturers of PCB-containing products were
8 making the equivalent of aroclor 1242 or 1248
9 or 1254 or 1260?

10 A They had roughly the equivalent. The
11 percentages may not be exactly like
12 Monsanto's, but they were close. Instead of,
13 say, 42 percent, say 40 percent, they would
14 call it 50, aroclor 50, for example. It is a
15 competitive product.

16 Q Who was the manufacturer of that?

17 A Konagafuchi in Japan.

18 Q So if -- let me rephrase that.
19 Aroclor 1250 then would not be an aroclor
20 typical of Monsanto's products? Is that a
21 fair statement?

22 A I don't know.

23 MR. NASSIF: You mean based on an
24 analytical technique or just based in the
25 marketplace?

1 Q (By Mr. Ricci) Based upon an
2 analytical technique.

3 A Analytical technique, the analytical
4 chemist would look at the results of this test
5 and compare it to a standard, and he picks the
6 one that's the closest. It may not be
7 identical, but he is going to say this is
8 typical, like he did here, typical of aroclor
9 1254. It does not say it is exactly A1254.
10 It is typical of it.

11 Q How do you develop a standard?

12 A You run a known sample fresh off the
13 shelf of aroclor 1254 through the instrument,
14 and you get your what I'm calling a
15 fingerprint. That's the standard. And then
16 you run the unknown through and you compare
17 the unknown with the standard. And you pick
18 the one that's the closest.

19 Q What kind of analytical device was in
20 use at this time?

21 A That's the latest, the electron
22 capture/chromatography.

23 Q Do you know how Monsanto went about
24 collecting the various media that were
25 analyzed and reported on in this memo?

1 A You mean the mechanical procedure?

2 Q Not necessarily the mechanics of the
3 procedure but the procedure itself. There is
4 a wide range of media that are sampled here
5 including non-Monsanto areas. And I'm just
6 wondering if you had any involvement in
7 collecting those samples?

8 A I had some involvement. Monsanto,
9 either my office, Dr. Tucker's office, or
10 Dr. Keller would get inquiries from
11 laboratories interested in this methodology.
12 They would get Monsanto's procedures. And
13 because of that contact, they would also be in
14 a position of sending Monsanto samples so that
15 the two laboratories could conduct analyses
16 and compare the results, see how close we were
17 to each other. As a result of that sample
18 sharing, they appeared on this list.

19 Q On the second page, the first page of
20 the attachment, there is a line for Monsanto
21 US, W. G. Krummrich, Sauget, Illinois. Do you
22 see that?

23 A Yes.

24 Q I would like to just go across that
25 line, and perhaps you can assist me in

1 interpreting the data presented. The next
2 line is associated waterways, or the next
3 column, I'm sorry, is associated waterways.
4 And in that line it is listed as Mississippi
5 River.

6 Is it your understanding from that
7 that this document is reporting on samples
8 that were taken from the Mississippi River in
9 the vicinity of the Krummrich plant?

10 A No. I interpret that as samples of
11 material that could, if it gets into the
12 environment, end up in that river.

13 Q Okay. In the next column, the heading
14 is "Matrix," and number of samples analyzed.
15 And on the line for the Krummrich plant, the
16 first line is water and the second line is
17 sediment. Where did the water and sediment
18 that was sampled as part of this report come
19 from?

20 A Don't know.

21 Q Did you know at the time?

22 A No.

23 Q Did anyone know?

24 A Oh, I'm sure.

25 Q Somebody must have known obviously.

1 Would Dr. Keller have known?

2 A Not necessarily.

3 Q Was there any reason why in this

4 report the source of the water and sediments

5 were not identified?

6 A Well, this report was in response to

7 my question to Dr. Keller regarding what

8 samples have we looked at and how widespread

9 is the presence of PCBs? So this document,

10 the purpose of this document was to give me a

11 feel for the locations, not so much for the

12 specific spot where the sample was taken.

13 Q So for purposes of this report, you

14 weren't really concerned with whether this was

15 water from the river or water from the sewer

16 or water from the sewage treatment plant. You

17 were just concerned about the general vicinity

18 of the location?

19 A Of this plant and what body of water

20 might be affected.

21 Q Now, in the column under the heading

22 "PCBs Found Most Typical of Aroclor," and then

23 it lists four different aroclors, do you see

24 that?

25 A I do.

1 Q If there is -- what do the Xs under
2 those various aroclor columns in the line for
3 the Krummrich plant indicate?

4 A It indicates that -- let's take the
5 water row -- of those 59 water samples, some
6 of them, we don't know how many, produced a
7 graph from the instrument that was typical of
8 aroclor 1242. Some of them were typical of
9 1248, some of them typical of 1254 and some of
10 them typical of 1260. It doesn't tell you
11 which and how many.

12 Q And then in the next column, PCB
13 levels, there is a reference in that same line
14 to ppb/ppm. What does that indicate?

15 A That tells me that what they found
16 when they quantified the amount of PCB in
17 those samples. It ranged from the parts per
18 billion types of numbers up to the parts per
19 million types of numbers.

20 Q And if you go down to the next line
21 for sediment, on the Krummrich line, again
22 there is an X under each of the aroclor
23 columns indicating that at least some of the
24 samples found resulted in graphs typical of
25 those aroclors?

1 A Yes.

2 Q Is that correct?

3 A Yes.

4 Q And then under the PCB levels column,

5 there is an indication ppb percent. What does

6 that mean?

7 A That means that some of the samples

8 measured down into the parts per billion

9 range. And some of them were as high as a

10 percent range.

11 Q Did it raise any particular concerns

12 with you that you were seeing sediment samples

13 in the percent range of PCBs?

14 A No. I would expect the sediment to

15 have percent range depending on where they

16 caught that sample.

17 Q And, again, you don't know if that

18 sediment sample, those sediment samples were

19 taken from the plant off-site of the plant?

20 You don't have any indication at all as to

21 where the samples were taken from?

22 A Not from this report, no.

23 MR. NASSIF: Objection. Asked and

24 answered.

25 Q (By Mr. Ricci) Go up to the Anniston

1 line right above there.

2 A I see it.

3 Q There is one sediment sample under the

4 Anniston heading. Is it your understanding

5 from this chart that that sample was taken

6 from the Choccolocco Creek?

7 A I'm sorry. I lost you there.

8 Q I'm sorry. Let me rephrase the

9 question. There is a line -- never mind. I

10 will withdraw it. Let me go back for one

11 second to the Anniston heading. There are

12 samples of air, water, sediment and fish. Do

13 you see that?

14 A I do.

15 Q You can't tell from this chart where

16 the sediment samples for Anniston were taken;

17 is that correct?

18 A I cannot.

19 Q On the page with Bates No. CER 011454,

20 there are samples from the State of Ohio

21 Department of Agriculture?

22 A Yes.

23 Q Do you know how you came to get

24 samples from that governmental agency?

25 A Yes, sir.

1 Q How is that?

2 A Dr. Hill, who was the head of the
3 Department of Agriculture in the State of
4 Ohio, had called Monsanto reporting the
5 presence of PCBs in some milk samples that his
6 laboratory had analyzed. And as a result of
7 that contact, there was this exchange of
8 methodologies between the labs and samples.
9 And this reflects Monsanto's analysis of
10 Dr. Hill's samples.

11 Q Were the results of these analyses --
12 was Dr. Hill advised of the results of these
13 analyses?

14 A Oh, yes, certainly.
15 (Plaintiff Deposition Exhibit Number 8
16 marked for identification.)

17 Q (By Mr. Ricci) Mr. Papageorge, let me
18 show you a document that's been marked as
19 Exhibit 8 to your deposition.

20 This is a document with Bates No. CER
21 012905 to 906, M6320 to M6321.

22 I have a very quick question with
23 respect to this document that relates to the
24 second paragraph on the first page, although
25 you are welcome to review as much of the

1 document as you would like.

2 A I have read that paragraph.

3 Q This is a memo from Mr. McCutchan to

4 yourself, dated June 10, 1970. Who was

5 Mr. McCutchan, first of all?

6 A He was a Krummrich plant employee in

7 the environmental team, on the environmental

8 team at the plant.

9 Q In this memo he is reporting on some

10 sampling results. And he states that all

11 results are in ppm 1242. Do you see that?

12 A I do.

13 Q What do you understand that to mean?

14 A That means that the analytical chemist

15 when he tested these samples looked at the

16 chart or graph that was produced by the

17 equipment and found that it resembled the

18 chart or graph that he would have gotten from

19 aroclor 1242 under the same test conditions.

20 Q Is it correct then that the only

21 aroclor that was identified in these samples

22 was 1242?

23 A That's what this report indicates,

24 yes.

25 Q Was it curious to you that you were

1 seeing 1242 much more frequently than you were

2 seeing the other aroclors?

3 A No, because 1242 was the material

4 produced in the greater quantities.

5 Q Was that true at both Anniston and

6 Krummrich?

7 A Yes.

8 Q Were there particular uses of 1242 or

9 was it used -- let me ask a better question.

10 What were the uses of 1242 that you were aware

11 of?

12 A There were many. In fact, virtually

13 all the uses used 1242. Capacitors were big

14 users, electrical capacitors. It was also

15 used in some transformers. It was used in the

16 carbonless paper. It was used in lacquers and

17 paints. All these uses we referred to

18 earlier, the caulking, the adhesives, the

19 inks. So it was a very popular mixture.

20 Q The samples that were referred to in

21 this document are Mississippi River sediment

22 samples; is that correct?

23 A Yes.

24 Q Why were you taking Mississippi River

25 sediment samples?

1 A It is part of our attempt to find out
2 how much of the environment has been affected.
3 And since the river runs right by the plant
4 and the PCBs were produced in the plant for
5 decades, we just thought that this was a good
6 place to analyze, see what's out there.

7 Q Was it your belief at this point that
8 the Krummrich plant was the source of the PCBs
9 that were identified in these sediment
10 samples?

11 A Yes.

12 Q Why is that?

13 A Well, proximity, type of chemical. It
14 is just speculation, of course, as to whether
15 it came from the plant or there were other
16 contributors upstream that would move the
17 material on down, but it was interpreted as
18 being from that source.

19 Q From Krummrich?

20 A Krummrich, for decades, not just
21 yesterday kind of thing.

22 Q What was the route by which the
23 discharge from the Krummrich plant got to the
24 river?

25 A Don't know. I would be speculating.

1 Q Do you know whether the village waste
2 water treatment plant discharged to the
3 Mississippi River?

4 A It discharged in the Mississippi.

5 Q Do you know when that treatment plant
6 was constructed?

7 A No, I don't.

8 Q Do you know where the Sauget sewers
9 flowed prior to the construction of the waste
10 water treatment plant?

11 A I do not.

12 (Plaintiff Deposition Exhibit Number 9
13 marked for identification.)

14 Q (By Mr. Ricci) Mr. Papageorge, let me
15 show you a document that's been marked as
16 Exhibit 9 to your deposition.

17 This is a document with Bates No. CER
18 013376 and 377, M6791 and M6792, and I'd ask
19 you to take a look at it.

20 MR. NASSIF: Let me see it, Bill.

21 A I have scanned the exhibit.

22 Q (By Mr. Ricci) This is a June 22,
23 1970, memo from Mr. Hodges to Mr. Hosmer; is
24 that correct?

25 A That is correct.

1 Q You appear to be copied on this memo.

2 Do you know why you are copied on it?

3 A I do not, no.

4 Q At the top just over --

5 A Let me correct my answer.

6 Q I'm sorry.

7 A I read the second page. There is a
8 reference to PCBs at Anniston. That would be
9 the reason I would be included.

10 Q You did not have any responsibility
11 for any of the other issues discussed in this
12 memo?

13 A That is correct.

14 Q At the top just over from Mr. Hosmer's
15 name there is a reference, "Confidential, FYI
16 and discard." Do you see that?

17 A I do.

18 Q Why was that notation put on this
19 document?

20 A You would have to ask Mr. Hodges. I
21 just don't know why he did that.

22 Q Was that a common reference for
23 documents in the company?

24 A No.

25 Q There is a handwritten arrow pointing

1 to your name handwritten. Do you see that?

2 A I do.

3 Q Do you recognize that handwriting?

4 A Yes, I do.

5 Q Whose is that?

6 A Mr. Bergen whose name is underlined

7 there.

8 Q Do you know why Mr. Bergen put that

9 notation on this document?

10 A Well, obviously he wanted me to see

11 it. And he sent me a copy. I don't know why

12 he felt I had to have two copies.

13 Q To get the paper off his desk maybe?

14 A I don't know.

15 Q In the second paragraph under the

16 heading "WGK Plant," there is a discussion of

17 waste flow bypassing the waste treatment

18 plant. Do you see that?

19 A I do.

20 Q And the memo attributes that to high

21 river levels and failure of the Corps of

22 Engineers' flood pumping station to operate.

23 Did you have any familiarity with the

24 conditions at the waste water treatment plant

25 that could result in bypassing?

1 A I did not.

2 Q Did you have any knowledge or
3 familiarity with the Corps pumping station?

4 A No.

5 Q Turn over to the next page, please.

6 Under the Anniston heading, there is a
7 statement, "The executive secretary of the
8 Alabama Water Improvement Commission was
9 briefed on the PCB problem." Do you see that?

10 A Yes.

11 Q What was the Alabama Water Improvement
12 Commission?

13 A That's the state's agency that
14 concerns itself with the water of Alabama.

15 Q And the executive secretary of that
16 commission would be a state government
17 employee?

18 A Yes.

19 Q Were you involved in this briefing
20 session that's referred to in this memo?

21 A No.

22 Q Were you aware of it?

23 A Yes.

24 Q Do you know how it came about?

25 A Well, you mean the details of

1 arranging the meeting or just the idea of
2 conducting such a briefing?

3 Q The idea of conducting such a
4 briefing.

5 A I had personally encouraged the plant
6 manager to make his contacts and keep open and
7 above-board discussions ongoing as we moved
8 into this PCB environmental issue, and that's
9 one step that he took.

10 Q Do you know what steps were taken at
11 the Krummrich plant to comply with your
12 feelings on that point?

13 A There were similar steps made keeping
14 in touch with the Illinois agencies, yes.

15 Q Did you have any involvement in any
16 communications with Illinois agencies
17 regarding PCB discharges from the Krummrich
18 plant during this time period, mid 1970?

19 A No.

20 Q But you know they occurred?

21 A Yes.

22 Q Who had those contacts?

23 A Somebody at the plant. I don't know
24 if it is the plant manager himself or his
25 environmental team or collectively.

1 Q Was there any document or report that
2 you are aware of that would memorialize any
3 such contacts?

4 A I don't remember any. I don't
5 remember any.

6 Q The statement in this memo is that,
7 "The executive secretary of the Alabama Water
8 Improvement Commission was briefed on the PCB
9 problem." Do you know what the PCB problem as
10 it is referred to in this memo entails?

11 A Presence in the environment.
12 (Plaintiff Deposition Exhibit Number 10
13 marked for identification.)

14 Q (By Mr. Ricci) Mr. Papageorge, let me
15 show you a document that's been marked as
16 Exhibit 10 to your deposition.

17 This is a document with Bates No. CER
18 013947 through 952, M2912 through M2917. And
19 I'm asking you to take a look at it.

20 A I have scanned the exhibit.

21 Q This is a June 23, 1970, report from
22 Mr. Pierle. And you are shown as receiving a
23 copy of this document; is that correct?

24 A That is correct.

25 Q And you received this document in your

1 capacity as manager of environmental control?

2 A Yes.

3 Q The document refers to results of

4 aroclor sampling in various areas in the

5 vicinity of the Krummrich plant and on the

6 plant; is that correct?

7 A That is correct.

8 Q Now, do you understand aroclor as it

9 is referred to in this document to be PCBs?

10 A Yes.

11 Q As opposed to terphenyls or something

12 else?

13 A That is correct.

14 Q If you examine pages 3 and 4 of the

15 document, there is recounting of the results

16 of river sediment sampling. Do you see that?

17 A I see the reference to river sediment.

18 You used the word recounting. I don't have

19 the other numbers in front of me.

20 Q I didn't mean recounting as in

21 counting again. I mean recounting as in

22 setting forth.

23 A Oh, okay.

24 Q And I will be happy to rephrase the

25 question so that it is clear on the record.

1 On pages 3 and 4 of this report,
2 Mr. Pierle sets forth the results of various
3 PCB samplings that occurred in Mississippi
4 River sediment; is that correct?

5 A That's correct.

6 Q Did these results support the belief
7 that you expressed earlier that the Krummrich
8 plant was the source of the PCBs that you were
9 finding in the Mississippi River sediment?

10 A Yes. Primary source through the
11 village system.

12 Q Were these sampling results ever
13 reported to the State of Illinois or any other
14 government agency?

15 A Don't know about this particular set.
16 Information was shared, but I don't know which
17 set of data was shared and when.

18 Q During this time period, let's say the
19 year 1970, do you know whether any information
20 was shared with the State of Illinois
21 regarding the aroclor levels that you were
22 finding in the Mississippi River sediments?

23 A I do not know. More accurately, I
24 don't recall.

25 Q What's the earliest recollection that

1 you have of Monsanto providing the State of
2 Illinois with the results of sampling of
3 Mississippi River sediments for PCBs?

4 A I don't have any date that I recall.

5 I do know the data was shared, but just when I
6 don't know.

7 Q Do you know if the data was shared in
8 writing or in person?

9 A I'm certain it was shared in person.

10 I do not recall anything in writing. That
11 doesn't mean it didn't happen. I didn't see
12 any. I don't recall any.

13 Q Why are you certain that it occurred
14 in person?

15 A Because I was assured at some point in
16 time in the early '70s that these discussions
17 were ongoing with the Illinois EPA. This is
18 just by reporting as normally done.

19 MR. RICCI: Could you read that last
20 answer back, please.

21 (The requested portion of the
22 record read by the reporter)

23 Q (By Mr. Ricci) Who gave you those
24 assurances that you referred to in your last
25 answer?

1 A From my staff guy, one of the Mikes
2 that we talked about earlier. Wait a minute.
3 No, that's 1970. Let me think. I can't
4 recall any specific person. I just don't
5 remember the person anymore.

6 Q And in that answer previous to this
7 last one, you indicated that this was in the
8 early '70s that you recall?

9 A Yes.

10 Q This reporting or your learning of
11 this reporting to the IEPA?

12 A Correct.

13 Q But you don't recall whether it was in
14 '70 or '71 or '72?

15 A That is correct.

16 Q Monsanto made significant strides in
17 reducing the volume of aroclors that it was
18 discharging into the sewers from, say, '70 to
19 '71; is that correct?

20 A Well, I know they made strides. I
21 don't know if they were -- yes, I believe by
22 '71 they had achieved that target that I had
23 established.

24 Q Do you know if the reporting that was
25 done to the State of Illinois was of the PCB

1 levels that had been found in the river
2 sediments or the PCB levels that the plant was
3 currently discharging?

4 A As I recall, it was both.

5 Q And your recollection is based upon
6 these assurances that you got from somebody
7 that you can't remember?

8 A That is correct, yes.

9 Q Did you have a staff in the position
10 that you held in the early '70s as manager of
11 environmental control?

12 A I did not.

13 Q Did you have any resources available
14 to you to get things done if you felt that a
15 sample should be taken or a process should be
16 looked at?

17 A It would be the plant people. I would
18 contact them either by phone or in person.

19 Q You could go directly to the plant
20 people and get them to do things for you?

21 A And make my requests, yes.

22 Q In this memo that's identified as
23 Exhibit 10, Mr. Pierle states that it can be
24 concluded from the data that aroclors present
25 in high concentrations along the river bank --

1 do you see that?

2 A I do see it.

3 Q Did Monsanto ever take any steps to in

4 any way address these high concentrations of

5 PCBs along the river bank?

6 A Can you help me with the addressing

7 them? Did we sample them and we were aware of

8 the numbers?

9 Q Did you do anything to clean them up

10 or assure that they were not having

11 environmental impact on biota in the river?

12 A There was no evidence of any effect on

13 the biota. Nothing was done to remove them.

14 Q In your position as manager of

15 environmental control, was it one of your

16 duties to determine whether, at least in your

17 view, some remedial type activity should be

18 taken in response to PCBs you were finding?

19 A If harm was being detected.

20 Otherwise, it is a case of if there is no harm

21 evident, don't disturb it. You might create

22 more problems.

23 Q What steps did Monsanto take to

24 determine whether these high concentrations

25 along the river bank were causing any harm?

1 A Well, it varied. First of all, you
2 study the solubility of the material. And
3 based on that knowledge, we conducted -- or
4 Monsanto had conducted some fish studies to
5 determine the effect on fish. And these
6 studies indicated, yes, there was a buildup of
7 PCBs in the fish, but there was no evidence of
8 harm either reproductively or sicknesses or
9 ailments amongst the fish. The only effect
10 noted was the increase in PCBs in the fish
11 itself.

12 Q Were these fish studies from fish from
13 the Mississippi River?

14 A No. They were done in Massachusetts
15 at a professional laboratory, fish laboratory.

16 Q Are you aware of any studies by
17 Monsanto to determine whether the high
18 concentrations along the river bank of the
19 Mississippi River that Mr. Pierle is referring
20 to in Exhibit 10 were resulting in any harm to
21 any biota or any organisms?

22 MR. NASSIF: Wait a minute. By other
23 studies, you mean other than the studies he
24 just expressed?

25 MR. RICCI: I'm talking about studies

1 with respect to the concentrations that were
2 identified in this memo.

3 MR. NASSIF: Well, you don't know the
4 concentrations. I'm going to object to that
5 because the concentration studied in
6 Massachusetts wouldn't be the concentrations
7 that were in the Mississippi River.

8 Q (By Mr. Ricci) Do you understand the
9 question, Mr. Papageorge?

10 A I don't think I do because we are
11 talking in this exhibit about concentration of
12 PCBs in sediment. The fish studies are done
13 in concentration of PCBs in the water in which
14 the fish exist. That's two different things.

15 The fact that it is in the sediment
16 doesn't mean it will be in the water.

17 Q So that the study in Massachusetts
18 doesn't really determine or speak to whether
19 the high concentrations in these sediments
20 might be causing any environmental harm?

21 A No, because it is a matter of what's
22 in the water, not what's in the muck at the
23 bottom of the river.

24 Q Was it your view that the PCBs in the
25 muck in the bottom of the river couldn't cause

1 any environmental harm?

2 A There was no evidence that they could

3 because of their low solubility and

4 impossibility. They just sit there.

5 Q Do you know whether these samples that

6 are referred to in this memo were taken from

7 the bottom of the river or from the bank or,

8 you know, in areas that were submerged or

9 areas that weren't submerged?

10 A I cannot tell you specifically which

11 of these samples specifically were taken off

12 shore or from a boat. I do know they did it

13 both ways, but I don't know which samples go

14 with which procedure.

15 Q So some of the samples were taken from

16 the bank of the river?

17 A Yes. They walked down and waded into

18 the water and grabbed samples. Others they

19 took a boat out and reached down several feet

20 until they reached the sediment.

21 MR. RICCI: This would be a good time

22 to stop.

23 (Deposition adjourned)

24

25

1 COMES NOW THE WITNESS, WILLIAM B.
2 PAPGEORGE, and having read the foregoing
3 transcript of the deposition taken on the 20th
4 day of October, 1994, acknowledges by
5 signature hereto that it is a true and
6 accurate transcript of the testimony given on
7 the date hereinabove mentioned.

8 _____
9 William B. Papageorge

10
11 Subscribed and sworn to me before this ____
12 day of _____, 1994.
13 My Commission expires: _____

14
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16 _____
17 Notary Public

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1 State of Illinois

2 SS.

3 County of Madison

4 I, Tracey Balsitis, a Notary Public in and

5 for the State of Illinois, duly commissioned,

6 qualified and authorized to administer oaths

7 and to certify to depositions, do hereby

8 certify that pursuant to Notice in the civil

9 cause now pending and undetermined in the

10 United States District Court, Southern

11 District of Illinois, to be used in the trial

12 of said cause in said court, I was attended at

13 the offices of Coburn & Croft, in the City of

14 St. Louis, State of Missouri, by the aforesaid

15 witness; and by the aforesaid attorneys; on

16 the 20th day of October, 1994.

17 The said witness, being of sound mind and

18 being by me first carefully examined and duly

19 cautioned and sworn to testify the truth, the

20 whole truth, and nothing but the truth in the

21 case aforesaid, thereupon testified as is

22 shown in the foregoing transcript, said

23 testimony being by me reported in shorthand

24 and caused to be transcribed into typewriting,

25 and that the foregoing pages correctly set

1 forth the testimony of the aforementioned
2 witness, together with the questions
3 propounded by counsel and remarks and
4 objections of counsel thereto, and is in all
5 respects a full, true, correct and complete
6 transcript of the questions propounded to and
7 the answers given by said witness; that
8 signature of the deponent was not waived by
9 agreement of counsel.

10 I further certify that I am not of counsel
11 or attorney for either of the parties to said
12 suit, not related to nor interested in any of
13 the parties or their attorneys.

14 Witness my hand and notarial seal at St.
15 Louis, Missouri, this 4th day of November,
16 1994.

17 My Commission expires January 24, 1995.

18 -----

19 Notary Public in and for the

20 State of Illinois

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25</Transcript>
</TRN>