

IN THE MATTER OF:

Transwestern Pipeline Company
vs.
Monsanto Company, et al.

Cause No. BC 026959

Deposition of W.B. Papageorge
November 3, 1992

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1 SUPERIOR COURT
2 FOR THE STATE OF CALIFORNIA
3 FOR THE COUNTY OF LOS ANGELES
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7 TRANSWESTERN PIPELINE COMPANY,
8
9 Plaintiff,
10
11 vs. NO. BC 026959
12
13 MONSANTO COMPANY AND
14 DOES 1 THROUGH 200 INCLUSIVE,
15
16 Defendants.
17
18 Deposition of W.B. PAPAGEORGE,
19 taken on behalf of the Plaintiff, at the
20 offices of Bryan Cave, One Metropolitan
21 Square, in the City of St. Louis, State of
22 Missouri, on the 3rd day of November, 1992
23 before Ronald A. Gore, Registered
24 Professional Reporter and Notary Public.
25

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

8 EXAMINATION

9 QUESTIONS BY MR. TALLON:

10 Q: Good morning, Mr. Papageorge.

11 A: Good morning.

12 Q: We're going to spend some time
13 running through some issues related to the
14 case which is pending in California between
15 our client, Transwestern Pipeline Company,
16 and Monsanto. And I'd like to start off
17 just briefly by asking you, you were
18 employed by Monsanto between 1951 and 1986?

19 A: That is correct.

20 Q: You retired from Monsanto's service
21 in 1986?

22 A: I did.

23 Q: Since 1986 you have appeared on
24 behalf of Monsanto at depositions in civil
25 cases?

1 A: I have.

2 Q: You have appeared on behalf of
3 Monsanto at trials in civil cases, correct?

4 A: I have.

5 Q: And you're appearing on behalf of
6 Monsanto today?

7 A: Yes.

8 Q: Now, you have a bachelor of science
9 degree in chemical engineering from
10 Washington University?

11 A: I do.

12 Q: And you received that in 1943?

13 A: That is correct.

14 Q: You also hold a master's in
15 chemical engineering, correct?

16 A: That is correct.

17 Q: Also, conferred by Wash U, or
18 Washington University?

19 A: Yes.

20 Q: And you received that in 1947?

21 A: Yes.

22 Q: Now, you did some additional
23 graduate work in chemical engineering
24 between 1948 and 1950, is that right?

25 A: More accurately '51, also.

1 Q: Was that part of a process working
2 toward a Ph.D?

3 A: Yes.

4 Q: Did you complete your Ph.D work?

5 A: I did not.

6 Q: Did you get so far as to start a
7 dissertation?

8 A: No. That was the obstacle. I
9 relocated.

10 Q: And just briefly if you would, Mr.
11 Papageorge, describe the field of chemical
12 engineering as you studied it between 1943
13 and 1951?

14 A: Oh, I don't know that -- I'll
15 try. I never tried to do this before.
16 Chemical engineering is the field in which
17 mathematics and scientific principles,
18 majoring in chemical understanding,
19 chemical reactions and physical properties
20 of chemicals, are used to design processes
21 for the conversion of chemicals to more
22 useful types of chemicals, or to purify
23 existing materials to a quality that is
24 desired by the end user.

25 Q: Now, you are a registered

1 professional engineer?

2 A: I am.

3 Q: When did you first become
4 registered as a professional engineer?

5 A: As best I recall, 1963.

6 Q: And you have kept your registration
7 current through today?

8 A: Yes.

9 Q: As I understand it, you joined
10 Monsanto chemical company as a process
11 designer at the Queeny plant in 1951, is
12 that correct?

13 A: That is correct.

14 Q: Were you employed before you joined
15 Monsanto as a process designer?

16 A: I think I understand you, was I
17 employed as --

18 Q: Before --

19 A: As a process designer or --

20 Q: I'm sorry. Were you employed in
21 any capacity before you joined Monsanto in
22 1951?

23 A: Yes.

24 Q: As what?

25 A: Two types of assignments. I was a

1 research chemical engineer with the
2 Phillips Petroleum Company in Bartlesville,
3 Oklahoma for about two years. Then I was a
4 process engineer for the Phillips Petroleum
5 Company for another two years or so.

6 Q: Which two years were you a research
7 chemical engineer for Phillips?

8 A: '47, '48, maybe, as best I recall,
9 into 1949.

10 Q: And were you a process engineer for
11 Phillips between '48 or '49 and 1951?

12 A: Yes.

13 Q: And then you relocated to begin
14 work for Monsanto?

15 A: Yes.

16 Q: As I understand it, in 1954 you
17 became a production supervisor, also at the
18 Queeny plant?

19 A: '54? I believe, more correctly, I
20 would call that an assistant supervisor.

21 Q: Yet you were an assistant
22 supervisor at the Queeny plant, is that
23 right?

24 A: For a while, yes.

25 Q: Subsequently, you became a

1 maintenance supervisor?

2 A: No. I became the supervisor,
3 then. It was a step-wise process, you got
4 a promotion.

5 Q: You went from the position as
6 assistant supervisor to the position as
7 supervisor?

8 A: Yes.

9 Q: Of what?

10 A: Of a chemical manufacturing unit at
11 the John F Queeny plant of Monsanto Company
12 located in St. Louis.

13 Q: What unit was that that you
14 supervised?

15 A: This was a unit in which we refined
16 chemicals which eventually were used to
17 manufacture what Monsanto referred to as
18 rubber chemicals. These are chemicals
19 added to rubber formulations to give them
20 the desired properties.

21 Q: All right. And did you at a point
22 in your job history at Monsanto become a
23 maintenance supervisor at Queeny?

24 A: I did.

25 Q: And was that in 1957 or 1958?

1 A: Oh, as best I remember, about that
2 time, yes.

3 Q: In general terms, what were your
4 responsibilities as maintenance supervisor
5 at the Queeny plant?

6 A: As maintenance supervisor I
7 supervised a team of craftsmen, supervised
8 by -- depending on the work load, by two
9 or three foremen, and this team was given
10 the assignment of working throughout the
11 plant installing new facilities on a very
12 small scale. Like replacing a tank here, a
13 pump there, pipeline somewhere else,
14 electrical equipment, and the like.

15 Q: Were you, as maintenance
16 supervisor, responsible for the entire
17 Queeny plant or just portions of it or of
18 portions of the maintenance
19 responsibilities?

20 A: As maintenance supervisor I was
21 responsible for only a small part of the
22 total maintenance effort. And, as I
23 indicated, only for that part that dealt
24 with installing new facilities on a small
25 scale.

1 Q: Subsequently, as I understand it,
2 you became maintenance superintendent at
3 the Queeny plant?

4 A: That is correct.

5 Q: And that was approximately 1960?

6 A: Yes.

7 Q: And in that position you were
8 responsible for regular maintenance of the
9 overall plant?

10 A: I need some help with the word
11 regular.

12 Q: Why don't you tell me what your
13 responsibilities were.

14 A: I was responsible for all of the
15 activities assigned to the maintenance
16 department, which included not only the
17 repair facilities, but also included this
18 small group that I had initially, the
19 installation of the small projects, and I
20 was also responsible for the larger
21 projects that were contracted out to other
22 companies.

23 Q: And, subsequently, you changed
24 positions again and became superintendent
25 in plant technical services at the Queeny

1 plant, correct?

2 A: That is correct.

3 Q: And that was approximately 1963?

4 A: Close to that. I don't recall the
5 exact year.

6 Q: That's fine.

7 A: That's close.

8 Q: Now, is it the case that in that
9 position, in part you were responsible for
10 design of new systems and facilities to
11 help improve plant performance?

12 A: Yes. Performance of -- in many
13 categories: Quantity, quality, cost. And
14 only for a portion of the plant, not the
15 entire plant.

16 Q: Which portion?

17 A: It was a series of products that
18 -- I can't remember all of them. I
19 remember maleic anhydride. M-a-l-e-i-c,
20 anhydride, a-n-h-y-d-r-i-d-e. Phthalic
21 anhydride, p-h-t-h-a-l-i-c. Plasticizers.
22 I recall these rubber chemicals, I'm going
23 to call them intermediates. These are
24 chemicals that are used to eventually
25 become rubber chemicals. I'm sure there

1 were some others, I don't recall them all.

2 Q: The plasticizers to which you
3 referred were those plasticizers that were
4 composed in whole or in part of
5 polychlorinated biphenyls?

6 A: No.

7 Q: By the way, if I use the term PCBs,
8 would you understand that to mean
9 polychlorinated biphenyls, right?

10 A: Biphenols is an O-L, biphenyls is
11 the Y-L spelling.

12 Q: I'm referring to the Y-L spelling.

13 A: Okay. I'll understand it that way.

14 Q: Good. Thank you. During the
15 period that you were the superintendant in
16 plant technical services at Queeny, did you
17 have an opportunity to use chemicals or
18 components of chemicals that were based on
19 PCBs in air compressors?

20 A: There certainly were air
21 compressors involved with some of the
22 production units that my team was involved
23 with. However, I don't at the moment
24 recall any project that we undertook during
25 my period of involvement that involved the

1 specifications for a new compressor which
2 may have contained a PCB fluid. So, I
3 don't recall any involvement that wasn't
4 already in place.

5 Q: At the time you were superintendant
6 of plant technical services at Queeny, were
7 there already air compressors in place at
8 Queeny that used Pydrauls?

9 A: Certainly.

10 Q: And were there heat exchange
11 systems in use at Queeny when you were
12 superintendent in plant technical services
13 that used PCBs as a medium for heat
14 transfer?

15 A: Yes.

16 Q: And were there electrical
17 transformers at Queeny by that time that
18 also used PCBs in the electrical
19 transformer itself?

20 A: Yes.

21 Q: And just touching on an answer you
22 gave a moment ago, I take it that all of
23 those systems had been in place before you
24 became superintendent in plant technical
25 services?

1 A: Some were certainly in place.
2 Others were being put in place by other
3 teams of engineers similar to my team. Of
4 course, some were installed by outside
5 contractors as well.

6 Q: In 1963, when you were
7 superintendant of plant technical services
8 at Queeny, were Aroclors manufactured at
9 the Queeny plant?

10 A: No.

11 Q: Were PCBs used in manufacturing
12 processes at the Queeny plant?

13 A: There were some blending activities
14 where PCBs were an ingredient along with
15 other materials.

16 Q: Which processes are you referring
17 to, Mr. Papageorge?

18 A: The process is blending itself.
19 The products are the Pydraul series.

20 Q: The Pydraul series of Monsanto
21 products were blended at the Queeny plant
22 in 1963?

23 A: Some of them, yes.

24 Q: Some of them. Are you able to say
25 with any specificity which Pydraul products

1 were blended at Queeny in 1963?

2 A: Not with specificity, because
3 Pydrauls at that time were blended at
4 either Anniston, Krummrich or Queeny,
5 depending on the availability of the mixing
6 tanks and the drumming facilities. So,
7 it's conceivable that at some time or other
8 all of the Pydrauls were blended at all of
9 these sites.

10 Q: In general, are you able to state
11 the uses to which Pydraul products were
12 put, or the uses for which they were sold
13 by Monsanto?

14 A: I can recall a few of them.

15 Q: Could you tell me, please?

16 A: I don't know whether it will be all
17 inclusive.

18 Q: That's fine.

19 A: The major use was in high pressure,
20 high temperature hydraulic industrial
21 systems, such as in the metal diecasting
22 industry. At least one of the Pydrauls was
23 used in air compressors as a lubricant.
24 There were other hydraulic system
25 applications in addition to the diecasting

1 of varying nature. I'm having a hard time
2 thinking of specifics. For example, the
3 hydraulic systems in use around high
4 temperature applications, such as cooking
5 various kinds of foods, they would use the
6 fire resistant hydraulic fluid to move
7 conveyor belts, equipment. At the moment,
8 I can't think of other better examples.
9 So, there were many miscellaneous uses.

10 Q: The air compressor lubricant that
11 you referred to a moment ago, is that
12 Pydraul AC?

13 A: That's the principal one, yes, sir.

14 Q: While you served as superintendent
15 in plant technical services at Queeny, did
16 you attend safety programs sponsored by
17 Monsanto, at least annually?

18 A: Certainly.

19 Q: And as part of those safety
20 programs you were furnished with
21 information that included education about
22 chemicals that workers were exposed to at
23 the Queeny plant?

24 A: I was furnished information of
25 chemicals, yes. Chemicals that I and my

1 team would likely be exposed to, not all
2 the chemicals at the plant.

3 Q: And included in the information
4 that you received concerning chemicals that
5 your workers would be exposed to was
6 information regarding PCBs, correct?

7 A: Yes. If it was applicable, yes.
8 Not all workers would be exposed to PCBs.

9 Q: At the safety programs that you
10 attended in that time period, is it the
11 case that Jack Garrett from the medical
12 department was usually in attendance?

13 A: Not usually.

14 Q: Do you recollect that Jack Garrett
15 from the medical department was represented
16 at one or more of the safety programs you
17 attended in that era?

18 A: Yes. Mr. Garrett made at least one
19 trip a year to the plant.

20 Q: Do you have a recollection today,
21 Mr. Papageorge, of Mr. Garrett having
22 specifically furnished information at one
23 of these safety programs that you attended
24 relating to PCBs?

25 A: That was 30 years ago. I just --

1 it doesn't stand out any more than the
2 other chemicals that Mr. Garrett would talk
3 to us about.

4 Q: Do you recollect that either from
5 Mr. Garrett or another source at these
6 annual safety programs you learned that
7 PCBs were a skin and eye irritant?

8 A: Yes.

9 Q: And do you recall being informed
10 during the course of one or more of these
11 safety programs that if you got PCB
12 materials on your skin you should wash it
13 off fairly quickly?

14 A: Your question implies that I first
15 heard of PCBs and skin irritation at these
16 annual meetings, and that Mr. Garrett is
17 the only individual that would have relayed
18 that information to me. I don't recall it
19 being exactly like that. The plant itself
20 had individuals who were responsible for
21 the safety of the employees at the plant.
22 Mr. Garrett was the corporate man who was
23 supportive and would be sort of the --
24 coaching that team. I don't personally
25 recall who was the one to inform me of this

1 skin irritation. But I do know that I was
2 aware of it. It might have been the plant
3 doctor, for all I know. I can't remember
4 specifically.

5 Q: Was there also a plant safety
6 officer at that time?

7 A: Yes, there was a plant safety
8 manager. I forget the exact wording of the
9 title.

10 Q: Just to be clear, your answer
11 suggested that before 1963 you were aware
12 that if you got PCB material on your skin
13 you should wash it off fairly quickly, is
14 that the case?

15 A: Well, I was aware of PCB and skin
16 irritation for several reasons. One is the
17 use in the plant by operating personnel.
18 And later when I was with the maintenance
19 team, the individuals who repaired the
20 compressors or the transformers or the heat
21 transfer systems, they, too, were coached
22 as to what PCBs could do to their skin. I
23 do not remember the reference to quickly
24 washing off. The instructions were when
25 things are under control, for example, you

1 stop the spray of the spill or you've
2 temporarily corrected the situation that
3 created this exposure, then you can go over
4 and wash your hands, and it's highly
5 recommended. Of course, even better, wear
6 the proper gloves so your hand doesn't get
7 exposed.

8 Q: And to what do you refer when you
9 refer to wearing proper gloves?

10 A: I'm referring to a glove that's
11 available that goes beyond the wrist,
12 halfway to the elbow. It's got a good cuff
13 on it and is covered with a material that
14 is fairly resistant to PCBs. We never did
15 find one that was totally resistant, but at
16 least it was resistant enough so it could
17 be used for a respectable period of time
18 before it was discarded. As I remember,
19 neoprene was an example of the material
20 that was acceptable.

21 Q: And, to your best recollection,
22 when were you first aware that workers
23 coming in contact with PCBs should wear
24 such gloves?

25 A: About 1954 or so.

1 Q: Did you find that natural rubber
2 gloves were not resistant to PCBs?

3 A: Yes.

4 Q: And can you state with any degree
5 of accuracy when you first became aware of
6 that fact?

7 A: I don't remember any specific time,
8 because we used the resistant materials and
9 the problem was never brought to my
10 attention until -- I don't remember the
11 dates -- until someone wore shoes or
12 overshoes made from a rubber other than
13 neoprene. And when I saw those, I could
14 see that they were swollen and distorted
15 and had been affected by the PCB.

16 Q: Do you recall seeing those shoes
17 when you were working at the Queeny plant
18 or later at Anniston, or do you recall
19 when?

20 A: I saw them at the Queeny plant and
21 at Anniston later, yes.

22 Q: Do you recall being told at any
23 annual safety program or at another
24 period -- or any other period, excuse me,
25 in your work at the Queeny plant that your

1 workers should avoid breathing hot PCBs
2 used in the manufacturing process because
3 of irritation to the respiratory system?

4 A: Yes.

5 Q: And did you issue, or was it a
6 program to issue masks of any sort to your
7 workers to help prevent inhalation of hot
8 PCB materials, vapors?

9 A: The workers were issued and had
10 available respirators that were issued to
11 them, but not specific to PCBs. They dealt
12 with so many other chemicals, so they were
13 generally issued an all-purpose kind of
14 respirator and were taught how to use them
15 and under what conditions to use them, and
16 it was up to their judgment as to when they
17 used them.

18 Q: Was it your understanding that use
19 of the respirators was encouraged or
20 required when employees were in contact
21 with hot PCB vapors?

22 A: It was encouraged, and strongly
23 encouraged for those situations that would
24 lead to what we call prolonged exposure,
25 not the instantaneous walking through a

1 cloud of fumes, for example, but where the
2 exposure was long enough -- and this
3 varied from person to person -- where it
4 became an irritant and the individual can
5 feel it's taking an effect and can withdraw
6 and put on a respirator and go back to do
7 what he was doing. So, there was no
8 specific concentration, let's say, of PCBs,
9 or period of time, because individuals do
10 vary. It was left up to the judgment of
11 the individual as to when he became
12 uncomfortable, to go get relief.

13 Q: Was this period of exposure that
14 you defined as meeting the criteria for
15 prolonged exposure greater than five
16 minutes, greater than ten minutes?

17 A: I never had such a time period in
18 mind. Because, as I said, it varies.

19 Q: And just to be clear, we've been
20 talking -- I've been asking about the time
21 from and after 1963 when you became
22 superintendent in technical plant services
23 at the Queeny plant. To your knowledge,
24 were these respirators in use by these
25 workers coming in contact with hot PCB

1 vapors before 1963?

2 A: Oh, yes.

3 Q: And, to your knowledge, were
4 workers at the Queeny plant advised to wear
5 proper gloves when coming into contact with
6 PCB liquids before 1963?

7 A: Yes.

8 Q: Do you know how much, or how long
9 before 1963 workers were advised to use
10 those gloves, proper gloves, as you used
11 the term?

12 A: At the Queeny plant? I'm trying to
13 recall what date PCBs first were present in
14 the Queeny plant, and I don't know that I
15 ever knew that. But I do know that the
16 instructions relating to covering of hands
17 and respiratory protection were associated
18 with PCBs from the 1930's when Monsanto
19 became involved with PCBs, manufacturing
20 and using. I have no reason to believe
21 that that information didn't precede the
22 introduction of the product in a piece of
23 equipment or at a plant.

24 Q: A moment ago in one of your answers
25 you referred to the occasion where your

1 workers would have to wear the proper
2 gloves, and you referred to stopping a
3 spray or a spill. Were there sprays or
4 spills of PCB materials during the period
5 that you had maintenance responsibility or
6 superintendent responsibility at the Queeny
7 plant?

8 A: On occasion, yes.

9 Q: And what kinds of sprays or spills
10 do you recall today, Mr. Papageorge?

11 A: Oh, I recall material spraying out
12 of a pump. I recall material that was
13 under pressure in a pipeline, and it was
14 leaking out of a flanged connection. I
15 recall a stream of PCBs coming out of a
16 faulty valve that could not be closed
17 tightly. Those are examples of the kinds
18 of things that happened.

19 Q: When you referred to a pump
20 spraying, are you referring to a hose
21 failure, or something else?

22 A: You may be familiar, pumps have a
23 shaft that drives an impeller, and around
24 that shaft is a device called a packing
25 gland or a seal, this keeps the liquid in

1 the pump when the shaft spins inside of
2 that device. On occasion these seals or
3 packing glands do wear out, and give
4 opportunity for the liquid to back up,
5 follow the shaft and come out of that
6 faulty seal and spray into the work area.

7 Q: When you referred a moment ago to
8 PCB materials under pressure in a pipeline
9 and leaking through a flanged connection,
10 what kind of pipeline are you referring to?

11 A: Well, an example may well be a part
12 of the heat transfer system which uses PCBs
13 as the heat medium, it's heated one place
14 and the heat is used in another and it's
15 transferred through a pipeline. On
16 occasion these pipelines are flanged, which
17 means they have metal plates with a
18 material in between called a gasket. On
19 occasion that gasket fails, and liquid will
20 spew out of it.

21 Q: Spew out of it meaning it blows out
22 of the pipeline at whatever pressure is
23 being applied to it inside the pipeline?

24 A: Certainly.

25 Q: Mr. Papageorge, you've referred to

1 the concept of heat transfer systems, and
2 so have I. But since we probably will
3 discuss that concept more than once during
4 the course of this deposition, I wonder if
5 there is some general common definition
6 that you can give to a heat transfer system
7 so that I am sure that we're talking about
8 the same thing?

9 A: I'll try.

10 Q: Thank you.

11 A: A heat transfer system that I have
12 in mind when I speak about the PCB type is
13 a system where PCB liquids are heated in
14 one location to very high temperatures,
15 using either an oil or a gas source of
16 heat. That hot or very hot fluid is then
17 pumped to another location where the
18 process requires high temperatures, such as
19 cooking varnish or heating some chemicals,
20 distilling them. These systems give the
21 opportunity to provide high temperature
22 without the risks that high pressure steam
23 would give, because steam under high
24 pressure, under failure, can give
25 problems. I don't know how else to

1 describe these systems.

2 Q: As I understand your description,
3 the heat from the PCBs radiates through the
4 pipeline or pipe in which the PCBs is
5 contained and carries heat that way to
6 whatever application they're being used in,
7 is that right?

8 A: That's close. You said pipeline.
9 Sometimes the hot fluid is introduced into
10 coils inside a vessel or a tank. Sometimes
11 that hot fluid is introduced into an outer
12 jacket where the tank has -- it's a tank
13 within a tank, and the hot material is in
14 the outer, annular space.

15 Q: All right. Thank you. During the
16 period that you were a superintendent in
17 the plant technical services department at
18 Queeny, did you have occasion to speak with
19 Dr. Emmet Kelly from the Monsanto medical
20 department?

21 A: Not at that time, no.

22 Q: During the period that you served
23 as superintendant, did Dr. Kelly ever
24 participate in the safety programs that you
25 attended?

1 A: No.

2 Q: Did you ever have a discussion with
3 Dr. Emmet Kelly in which he indicated to
4 you that exposure to PCBs could cause a
5 skin condition known as chloracne?

6 A: At what point in time?

7 Q: That's going to be the next
8 question. First of all, I was wondering if
9 you recall having had such a discussion
10 with Dr. Kelly, and then I was going to ask
11 you when, to the best of your recollection,
12 if you had a recollection, such a
13 conversation occurred?

14 A: I do recall such a discussion with
15 Dr. Kelly, and it occurred while I was at
16 Anniston, Alabama in the early '60's or --
17 I'm sorry, the late '60's.

18 Q: Under what circumstances did that
19 conversation with Dr. Kelly occur, as best
20 you recall today?

21 A: At that time I was plant manager of
22 the Anniston plant. As plant manager, I
23 had responsibility for the industrial
24 hygiene practices at that plant. I, of
25 course, had a safety supervisor to assist

1 me, who also acted as plant industrial
2 hygienist. And I also had a physician, a
3 plant physician. Dr. Kelly made it a point
4 to, at least once a year, visit the plant
5 and spend a day with us, at which he really
6 made an inspection of the medical records
7 and saw that the programs that Monsanto
8 required were in place and were being
9 conducted appropriately. And he would then
10 take time to sit down with either me alone
11 or with the safety supervisor and the
12 doctor, depending on the availability of
13 all three of us, and conduct what I would
14 call tutorials on the kinds of things that
15 one can expect by being exposed not only to
16 PCBs, but all the other chemicals in the
17 plant. And I do recall the reference to
18 chloracne and PCBs at that plant during
19 those years.

20 Q: Do you recollect whether the
21 reference to chloracne came up in response
22 to some specific complaint or whether it
23 was simply general information that Dr.
24 Kelly was passing along?

25 A: I would suggest that there was no

1 specific situation. It was general as it
2 applied to that particular group of
3 products.

4 Q: Do you recollect from the same
5 period any other information provided to
6 you and to your group by Dr. Kelly
7 regarding issues that may arise as a result
8 of exposure to PCBs?

9 A: It's very hard to recall exactly
10 when and from whom I gained information
11 regarding PCB and effects on exposure. The
12 discussions would usually -- I'm thinking
13 now of Dr. Kelly's kind of tutorial, he
14 would try to teach us to look for what I'm
15 going to call early warning symptoms, and
16 during that discussion he would say if you
17 don't pay attention to these symptoms, you
18 could eventually end up with such things as
19 chloracne. When I mention early warning, I
20 do recall very vividly two that worked for
21 me, at least I relied on them a lot. A
22 symptom that is associated with, I'm going
23 to call it prolonged exposure to vapors,
24 was a situation where the employee would
25 complain about symptoms like a severe chest

1 cold, discomfort, difficult breathing,
2 rawness in the upper chest. That was a
3 good sign. That's what the plant doctor
4 would look for. The other symptom that
5 would serve as an early warning, and it had
6 to do with skin exposure, this was
7 reddening of the skin, and in the more
8 severe cases it would look like a severe
9 case of chapped hands, even to the point
10 where the skin would crack and blood might
11 ooze through. If those two symptoms were
12 recognized and corrective action taken,
13 then Dr. Kelly would say you won't see what
14 he called the systemic effects, which
15 included chloracne. That's how the subject
16 of chloracne would come up.

17 Q: How did you understand the term
18 systemic effects as used by Dr. Kelly in
19 these discussions?

20 A: Well, I understood it as, in
21 laymen's terms, the medical effects noted
22 on a -- effects noted on a person that are
23 not necessarily related to the exact area
24 of exposure. An example would be chloracne
25 behind the ears when the exposure might

1 well have been on the hands. That's what I
2 understand about systemic symptoms.

3 Q: Systemic indicating that
4 contamination is internal, or contaminated
5 a system of the body, such as the endocrine
6 system?

7 A: It certainly has to do something
8 with the body system and its ability to
9 cope with that particular chemical.

10 Q: Did you understand Dr. Kelly to say
11 that any particular system or systems were
12 implicated in prolonged exposure to PCBs?

13 A: Yes.

14 Q: Which?

15 A: He mentioned that the liver was the
16 part of the body that was, in essence,
17 designed to cope with such things as
18 chemicals of this type.

19 (Recess).

20 MR. TALLON: Mr. Papageorge, we
21 were talking a moment ago about discussions
22 that you recollect having had with Dr.
23 Emmet Kelly, which you believe took place
24 when you were the plant manager at
25 Anniston, is that right?

1 A: That is correct.

2 Q: You became plant manager at
3 Anniston in 1965?

4 A: Yes.

5 Q: And you held that position until
6 when?

7 A: The end of 1969.

8 Q: And that's when you moved to St.
9 Louis?

10 A: Yes.

11 Q: I want to refer back, now, to the
12 time when you were still superintendent in
13 plant technical services in the plant
14 technical services department at the John
15 F. Queeny plant. While you held that
16 position, did you examine written materials
17 available in the plant medical library to
18 understand some of the chemicals that your
19 staff was working with?

20 A: On occasion, yes.

21 Q: At the end of 1963, Mr. Papageorge,
22 did you become the general superintendent
23 of warehousing, distribution and utilities
24 at the Queeny plant?

25 A: Yes.

1 Q: And, in general, what did your
2 responsibilities in that position include?

3 A: In general, I supplied the services
4 to the units that made chemicals that
5 included such things as electricity and
6 steam and water. That was the utilities
7 part. The delivery of their raw materials,
8 receipt and delivery, and also the picking
9 up of their produced material and shipping
10 it, warehousing and shipping it. And,
11 also, the trash collection service, picking
12 up all the refuse that was created.

13 Q: Did the trash collection service
14 include picking up spilled chemical
15 materials?

16 A: Yes.

17 Q: Did your warehousing
18 responsibilities include storage of PCB
19 products?

20 A: Yes.

21 Q: During the period that you held the
22 position as general superintendant, did you
23 store any unblended Aroclors at Queeny?

24 A: Yes.

25 Q: Which, if you recall?

1 A: Well, Aroclor 1242. Aroclor 1248.
2 I believe that reflects the PCB storage
3 types.

4 Q: The Aroclor 1242 and 1248 that you
5 had responsibility for warehousing, that
6 was not manufactured at the Queeny plant,
7 correct?

8 A: That is correct.

9 Q: Those two materials, Aroclor 1242
10 and 1248, were used in manufacturing
11 processes at the Queeny plant, correct?

12 A: No. They were used in making
13 blended products.

14 Q: And those products included the
15 Pydraul series of products to which you
16 referred earlier?

17 A: Yes.

18 Q: Did you have responsibility for
19 warehousing or storing finished Pydraul
20 products while you held the position of
21 general superintendent?

22 A: Yes.

23 Q: The Aroclors 1242 and 1248, they
24 were received at Queeny from either the
25 Krummrich or the Anniston plant, is that

1 right?

2 A: That is correct.

3 Q: Could it have been either, or was
4 it one of those two or both?

5 A: Both.

6 Q: Was Aroclor 1242 and 1248 made at
7 both Krummrich and Anniston in 1963?

8 A: Yes.

9 Q: Did you receive blended PCBs for
10 use, for example, in air compressors at the
11 Queeny plant from Krummrich or Anniston in
12 1963?

13 A: Would you help me with blended
14 PCBs? I'm not familiar with that
15 expression.

16 Q: Well, okay. I meant to say blended
17 Aroclors. But, more particularly, did you
18 receive products that were composed of
19 different mixtures of Aroclors for use at
20 the Queeny plant from either Krummrich or
21 Anniston?

22 A: The trademark Aroclor with a number
23 designates a particular product that was
24 produced, and that's the material that was
25 shipped from either Anniston or Krummrich

1 to the Queeny plant. I don't know how else
2 to respond to your question.

3 Q: While you were general
4 superintendent at the Queeny plant, did you
5 use -- or did the plant use PCB materials
6 in heat transfer systems?

7 A: Yes.

8 Q: And what PCB materials were used in
9 heat transfer systems during that period?

10 A: As best I recall, they used a
11 product referred to as Therminol FR1 and
12 Therminol FR2.

13 Q: And were those Therminol products
14 manufactured at the Queeny plant or were
15 they shipped into Queeny from another
16 plant?

17 A: They were shipped into the Queeny
18 plant from the other plants.

19 Q: From which other plant or plants?

20 A: Either Anniston or Krummrich plant.

21 Q: And at the Queeny plant, when you
22 were general superintendent of warehousing,
23 distribution and utilities, the plant used
24 Pydrauls in certain air compressors,
25 correct?

1 A: Yes.

2 Q: Were those Pydrauls blended at
3 Queeny or received at Queeny from other
4 Monsanto plants?

5 A: At what period of time?

6 Q: While you were general
7 superintendant.

8 A: They were blended at the Queeny
9 plant.

10 Q: The Aroclors 1242 and 1248 that you
11 had responsibility for warehousing and
12 receiving from other Monsanto plants, those
13 were packaged in steel containers when they
14 arrived at Queeny?

15 A: No.

16 Q: What were they packaged in?

17 A: They arrived in a tank car,
18 railroad tank car.

19 Q: And how were the materials
20 transferred from the tank car to more
21 usable containers, if you recall?

22 A: It's a system of pipes and pumps
23 and tanks.

24 Q: Do you recollect any spillage or
25 leakage ever occurring in the course of

1 transferring those materials from the
2 railroad car?

3 A: Yes, there were occasions when
4 there would be an upset.

5 Q: While you were general
6 superintendent of warehousing, distribution
7 and utilities at the Queeny plant, did you
8 have any responsibility for directing the
9 cleanup of spilled Aroclors or spilled
10 blended Aroclors?

11 A: Yes.

12 Q: Did you have a special team
13 detailed for that purpose, or no?

14 A: No.

15 Q: When the spills occurred, was the
16 spillage collected and placed in a steel
17 container?

18 A: The spills that occurred occurred
19 out on a crushed rock lot where the
20 railroad spur was, so the contaminated
21 crushed rock would be shoveled into steel
22 drums and set off on the side until the
23 trash service, pickup service would arrive,
24 and it would then be eventually sent to a
25 landfill.

1 Q: With respect to spillage that
2 occurred inside the plant, were materials
3 such as -- absorbing mediums, such as
4 sawdust or commercial products used to
5 collect the spillage, the PCB spillage?

6 A: If that occurred, that's what would
7 be done. They would use such things as
8 sawdust or clay, some absorbent material.

9 Q: Do you recall that, in fact, spills
10 of PCB products did occur and that they
11 were absorbed in sawdust or clay or some
12 other commercial product?

13 MR. PREUSS: Inside the plant?

14 MR. TALLON: Yes.

15 A: What I would call spills, and those
16 that I recall were generally small ones
17 that required, really, just a rag, wipe it
18 up with a rag and put that rag in the
19 proper kind of drum for disposal. I don't
20 recall any spill inside the blending
21 facility large enough to warrant bringing
22 in any special absorbent materials.

23 Q: With respect to the contaminated
24 gravel that you referred to earlier, or in
25 the case of the rag that you referred to

1 just a moment ago, is it your understanding
2 that those waste materials would be
3 transported to a landfill for burial?

4 A: Yes.

5 Q: And was there such a landfill at
6 the Krummrich plant?

7 A: Yes.

8 Q: Is that where the waste materials
9 from the Queeny plant went?

10 A: Yes.

11 Q: Do you know whether PCB materials
12 from the Queeny plant were disposed of in
13 this period of time in limestone pits?

14 A: I don't recall any reference to
15 limestone pits for disposal.

16 Q: I just want to show you a document
17 which is not dated at the time that you
18 were general superintendent, but I simply
19 want to ask whether it refreshes your
20 recollection. For purposes of this
21 deposition, we're going to mark this
22 document as Exhibit 1080. And it's a
23 memorandum dated February 2, 1971, and it
24 has a number at the bottom which is 0007201
25 and, indeed, has been marked as Papageorge

1 Exhibit 63 at some other deposition.

2 (Deposition Exhibit Number
3 1080 mark'd for identification).

4 A: I have reviewed the document.

5 Q: The specific issue that I was
6 interested in, Mr. Papageorge, was the
7 reference in the third full paragraph to
8 the parts per billion level in certain
9 limestone pits, and my question to you is
10 whether review of that paragraph or any
11 portion of this document refreshes your
12 recollection that PCB materials were ever
13 disposed of in limestone pits, whether
14 those pits were at Queeny, Anniston or
15 elsewhere?

16 MR. PREUSS: Your original question
17 was directed to Queeny during the time
18 table he was superintendent, right?

19 MR. TALLON: Understood.

20 A: If I understand your question, this
21 refers to the disposal of PCB wastes in
22 limestone pits.

23 Q: Yes. That's correct.

24 A: This memorandum does not address
25 that subject.

1 Q: What do you understand this
2 memorandum to address?

3 A: This memorandum addresses waste
4 water from the Anniston plant, and the
5 amount of PCBs that are detected in that
6 water. And the third paragraph gives those
7 levels of 100 to 300 parts per billion
8 level.

9 Q: Did waste waters -- during the
10 period that you had any responsibility
11 either at Anniston or in your subsequent
12 position in St. Louis, did you have any
13 knowledge of waste waters from the Anniston
14 plant flowing through it or being contained
15 in limestone pits?

16 A: Yes.

17 Q: And what information do you have
18 with respect to the runoff or flow of waste
19 waters into or through limestone pits?

20 A: The Anniston plant had deliberately
21 designed pits in which crushed limestone
22 was dumped. The water coming out of the
23 PCB operation is acidic, it's too acid to
24 release to the municipal sewerage system.
25 It is directed through this crushed

1 limestone to neutralize, to take the
2 acidity out of it, and from there it flowed
3 into the Anniston municipal sewerage
4 system. This limestone pit was not
5 intended to be a PCB disposal site, it's
6 part of the pre-treatment of the water that
7 left the plant.

8 Q: Are you referring in your answer to
9 one pit or more than one pit?

10 A: As I recall, there were two pits,
11 one in use and the other being cleaned out,
12 as required.

13 Q: And, to your knowledge, when did
14 those pits come into use at the Anniston
15 plant?

16 A: In the 1930's.

17 Q: Again, I'm now going back to the
18 period where you served as general
19 superintendant of warehousing, distribution
20 and utilities at the Queeny plant. As I
21 understand it, chemical wastes were treated
22 differently at that time than trash, is
23 that right?

24 A: Well, if we both have the same
25 definition of trash. Trash included such

1 things as office waste paper baskets and so
2 on. Yes, chemicals that were created as a
3 result of the activities in the plant were
4 segregated from lumber and paper and earth,
5 and so on, that did not contain these
6 chemicals.

7 Q: And the lumber and earth and other
8 materials not containing chemicals were
9 segregated from the chemicals which you
10 perceived as having potential for creating
11 some health problems?

12 A: Well, certainly, that was one of
13 the considerations for segregating them.

14 Q: And PCBs went into the chemical
15 waste as opposed to the trash waste,
16 correct?

17 A: Any material that contained PCBs
18 went into the chemical waste, yes.

19 Q: That is to say that the PCBs went
20 into the category that you would describe
21 as having a potential for human health
22 problems, correct?

23 A: Well, the potential for human
24 health problems is present for all the
25 industrial chemicals that were sent to this

1 same landfill. It's a matter of how much
2 and under what conditions and the like.
3 The material that was sent to the chemical
4 landfill was what I would describe as
5 industrial chemicals of all kinds, just
6 thousands of them.

7 Q: And those PCBs and such other
8 industrial chemicals were in the category
9 that you referred to a moment ago as having
10 the potential for human health problems,
11 right?

12 A: Yes. The same as many, many
13 materials. Gasoline being one of them.

14 Q: Now, in 1964 you became general
15 superintendant of manufacturing at the
16 Krummrich plant?

17 A: Yes.

18 Q: And, in general terms, Mr.
19 Papageorge, would you describe your
20 responsibilities, please?

21 A: I was one of half a dozen or so
22 general superintendants of manufacturing
23 assigned a given set of products, which the
24 operating units assigned to me would
25 produce.

1 Q: And during that period you did not
2 have responsibility for any PCB products,
3 is that right?

4 A: Not the production thereof, no.

5 Q: Did you have any responsibility for
6 the use of the products?

7 A: Yes.

8 Q: What responsibility was that?

9 A: My operating team operated
10 compressors that had PCB fluids in them,
11 and they operated the transfer systems that
12 contained PCB materials.

13 Q: Did you have responsibility for
14 chlorophenols in your job as general
15 superintendant in manufacturing at the
16 Krummrich plant?

17 A: I did.

18 Q: And for phenols?

19 A: Phenol, yes.

20 Q: Are chlorophenols and phenols
21 chlorinated hydrocarbons?

22 A: The phenols themselves are not
23 chlorinated hydrocarbons. The chlorophenol
24 is a chlorinated hydrocarbon.

25 Q: Is it your understanding that

1 polychlorinated biphenyls are chlorinated
2 hydrocarbons?

3 A: Yes.

4 Q: Are there other compounds that are
5 within the group of compounds or chemicals
6 called chlorinated hydrocarbons?

7 A: Oh, yes. Must be hundreds of them.

8 Q: So, chlorinated hydrocarbons is not
9 specific to PCBs?

10 A: That's correct.

11 Q: You also had responsibility for
12 products such as rubber adhesives and
13 sodium sulfate?

14 A: I would more correctly call that
15 rubber additives. These are chemicals
16 added to rubber products to give them
17 desired properties. I also had sodium
18 sulfate, yes.

19 Q: In 1965, I believe, you became the
20 plant manager at the Anniston plant?

21 A: I did.

22 Q: And that was in Anniston, Alabama?

23 A: Yes.

24 Q: You had in that position complete
25 responsibility for the operations of the

1 plant?

2 A: Yes.

3 Q: And some of the operations of the
4 Anniston plant included production of PCBs?

5 A: Yes.

6 Q: The PCBs produced at Anniston at
7 the time you were plant manager included
8 all of the Aroclors?

9 A: I hesitate, because the word
10 Aroclor covered PCBs as well as other
11 products. So, the PCBs referred to as
12 Aroclors were manufactured at Anniston, all
13 of them were.

14 Q: And that would include Aroclor
15 1242?

16 A: Yes.

17 Q: 1248?

18 A: Yes.

19 Q: 1254?

20 A: Yes.

21 Q: 1260?

22 A: Yes.

23 Q: Were those unblended Aroclors sold
24 to customers?

25 A: I have a little problem with the

1 word unblended. These are, to start with,
2 mixtures.

3 Q: What do you mean by that?

4 A: Chemical mixtures. The PCB that
5 was sold commercially was never a pure
6 chemical as the chemist in the laboratory
7 might describe it. In the family of PCBs
8 there are, as I remember, 209 different
9 types, varying from one chlorine to 10
10 chlorines per molecule. And the position
11 of the chlorines varied, so by the time you
12 calculate all the possibilities, there are
13 209 of them. The commercial mixtures that
14 were made contained various amounts of
15 these 209 different chemicals. So, you
16 see, Aroclor in itself, in a way, was a
17 blend to start with.

18 Q: I see.

19 A: Naturally occurring blend, as it
20 was used, in the pot.

21 Q: So, in the case of Aroclor 1242,
22 the 42 in that product referred to the fact
23 that that product was 42 percent chlorine
24 by weight?

25 A: Yes.

1 Q: And the Aroclor 1242 was composed
2 of a number of different isomers, is that
3 right?

4 A: Yes.

5 Q: And there were isomers that were
6 higher weight than 4 chlorines on the
7 biphenyl rings?

8 A: Yes.

9 Q: That was a part, but not a part
10 that was a result of the manufacturing
11 process, correct?

12 A: Correct.

13 Q: And in the Aroclor 1242 there could
14 be more highly chlorinated biphenyls, such
15 as having 5 chlorines attached to the
16 biphenyl rings?

17 A: There were some fives, yes.

18 Q: And the chlorine atoms could attach
19 to various parts of the biphenyl ring so
20 that there were a number of different
21 configurations for a five, or
22 pentachlorobiphenyl?

23 A: That was possible, yes.

24 Q: The fact that the different
25 Aroclors contained different isomers was,

1 in fact, desirable, was it not?

2 A: Yes, in a way.

3 Q: It was also unavoidable?

4 A: True.

5 Q: While you were plant manager at
6 Anniston, I understand that you came to
7 some understanding of the applications in
8 which the Aroclor products were used,
9 correct?

10 A: That is correct.

11 Q: And as I understand it, at that
12 time you learned that Aroclors 1221 and
13 1242 were used in electrical capacitors,
14 right?

15 A: Yes.

16 Q: And that Aroclors 1242, 1248, 1254
17 and 1260 were used in transformers,
18 correct?

19 A: Correct.

20 Q: And that Aroclors 1242 and 1248
21 were used as hydraulic fluids, correct?

22 A: As an ingredient in hydraulic
23 fluids, yes.

24 Q: Was a preferred use of Aroclor 1242
25 as an ingredient in hydraulic fluids?

1 A: I don't know that it was so much a
2 preferred use. It was found to give the
3 desired properties of the end mixture.

4 Q: What do you mean by the desired
5 properties of the end mixture, Mr.
6 Papageorge?

7 A: Well, this refers to fire
8 resistance, primarily with reference to the
9 PCB. The stability, it won't break down
10 under use. The lubricating properties,
11 lubricity. And it gives the proper
12 viscosity, the weight of it, the specific
13 gravity. These are the things that the
14 chemist looks for when he takes a sample
15 and looks at it to see if it meets the
16 specifications required.

17 Q: While you were the plant manager at
18 Anniston, did you come to learn that
19 Aroclors 1242, 1248 and 1254 were used as
20 heat transfer fluids or in heat transfer
21 fluids?

22 A: Yes.

23 Q: And did you come to learn that all
24 of the Aroclors that were PCBs were used in
25 plasticizers?

1 A: Yes.

2 Q: And did you learn that NCR used an
3 Aroclor 1242 in ink?

4 A: I knew NCR used 1242 in a
5 formulation to make the coating that was
6 applied to paper for reproduction purposes.

7 Q: You're referring to carbonless
8 carbon paper?

9 A: Yes.

10 Q: Were Aroclors also used in
11 printer's ink?

12 A: I understand in some instances,
13 yes.

14 Q: By the way, when you -- at any
15 time when you were working at Queeny as
16 opposed to Anniston or Krummrich, which we
17 have also discussed, were you aware of any
18 manufacture at the Queeny plant of a
19 product called OS-81?

20 A: Yes.

21 Q: And did you have any responsibility
22 for the development -- excuse me, for the
23 production or manufacture of OS-81?

24 A: No.

25 Q: During the time that you had any

1 position at the Queeny plant, did you --
2 were you aware of the manufacture at the
3 Queeny plant of a product called MCS-153?

4 A: I was.

5 Q: And during the time that you were
6 at the Queeny plant, did you have any
7 awareness of the manufacture of a product
8 called Turbinol 153?

9 A: Yes. Let me think. No. No. The
10 term Turbinol was not in use while I was at
11 the Queeny plant.

12 Q: And you're aware that the term
13 Turbinol did come into use later?

14 A: Yes.

15 Q: While you were at the Krummrich or
16 Anniston plants, did you have any
17 responsibilities for the -- any
18 responsibilities with respect to the
19 manufacture or sale of either OS-81 or
20 MCS-153?

21 A: No.

22 Q: Were those products that were
23 manufactured at the Queeny plant
24 exclusively, so far as you know?

25 A: Yes.

1 Q: And so far as you know, was
2 Turbinol 153 also manufactured exclusively
3 at the Queeny plant?

4 A: As far as I know, yes, sir.

5 Q: While you were at the Queeny plant,
6 and by this question I mean to exclude
7 knowledge that you acquired later, did you
8 learn to whom MCS-153 was sold?

9 A: In what period of time?

10 Q: While you were at the Queeny
11 plant.

12 A: Oh, no.

13 Q: And did you have any knowledge,
14 while you were working at the Queeny plant,
15 now, of the use to which MCS-153 was put by
16 the ultimate consumer?

17 A: At that time, no.

18 Q: And if I asked you the same
19 question with respect to OS-81, would your
20 answer be the same?

21 A: It would.

22 Q: During the time you were plant
23 manager at Anniston, Mr. Papageorge, you
24 had access to the plant medical library?

25 A: Certainly. What there was of it.

1 It was not as extensive as the St. Louis
2 library.

3 Q: During the period that you served
4 as plant manager for Anniston, were you
5 aware of guidelines issued by the American
6 Conference of Governmental Industrial
7 Hygienists?

8 A: Certainly.

9 Q: And were you aware of any specific
10 discussion in those guidelines of Aroclor
11 products?

12 A: Yes.

13 Q: And have you ever reviewed
14 documentation related to threshold limit
15 values -- excuse me, not ever, but while
16 you were at Anniston, did you review
17 documentation of threshold limit values?

18 A: Can you help me with
19 documentation? I'm aware of the acceptance
20 by the ACGIH of exposure levels that were
21 determined from some studies made. And
22 this is documented, as I remember, in a
23 brochure or little pamphlet, about four
24 pages or thereabouts, as best I remember.
25 If you call that documentation, I would say

1 yes.

2 Q: Okay. Let me show you another
3 document which we'll mark as Exhibit 1081,
4 and ask you if you saw this particular
5 document during the period that you served
6 as plant manager at Anniston?.

7 (Deposition Exhibit Number
8 1081 mark'd for identification).

9 MR. TALLON: For the record, while
10 the witness is reviewing the document, I'll
11 note that this document was previously
12 marked as Deposition Exhibit 640, and it is
13 not -- it is an excerpt from another
14 document. And I'm referring, Mr.
15 Papageorge, to the passage which appears on
16 the bottom of the first page and carries
17 over to the top of the second.

18 A: I have reviewed the document.

19 Q: Do you recollect having seen that
20 document during the period that you served
21 as plant manager at Anniston?

22 A: I do not recall this format, this
23 particular document.

24 Q: Do you recollect whether you saw
25 documents that had information that is

1 either the same as or similar to the
2 information described under the -- rather,
3 in the paragraph that begins on the bottom
4 of the first page of that exhibit and
5 carries over to the top of the second?

6 A: When you say similar information, I
7 have seen -- I had seen some of the
8 reference documents which contained some of
9 this information.

10 Q: By the reference documents, are you
11 referring to the five studies which are
12 listed as references on the top of page 2
13 of this exhibit?

14 MR. PREUSS: Five references. Be
15 more accurate. Whether they're studies or
16 not is an open question.

17 MR. TALLON: Five references.
18 Right.

19 A: I am referring to three of the
20 five. I only recognize references 1, 2 and
21 5. I don't recall references 3 and 4.

22 Q: Do you recollect when you saw any
23 of references 1, 2 and 5 for the first
24 time?

25 A: Sometime about 1965, shortly after

1 I arrived at the plant.

2 Q: Do you recall a particular reason
3 or the circumstances under which you first
4 came to see the references to which you
5 have just referred?

6 A: Part of my approach to learning
7 more about the materials at the plant.
8 It's part of an overall self-teaching
9 course, in a way.

10 Q: All right. Thank you. When you
11 were plant manager at Anniston, did you
12 come to understand the manufacturing
13 process through which PCBs were
14 manufactured?

15 A: Yes.

16 Q: And is it the case that that
17 process starts with biphenyl? Let me put
18 it this way --

19 A: You could say it starts with
20 chlorine, too, so I don't know quite how to
21 answer.

22 Q: One of the necessary ingredients in
23 order to make PCB products is biphenyl?

24 A: Correct.

25 Q: In the manufacturing process as it

1 starts, what does the biphenyl look like?

2 A: Let me attempt it this way.

3 Biphenyl at room temperature looks to me
4 like white candle wax. At the
5 manufacturing site, since the biphenyl is
6 manufactured under hot conditions, it is
7 not permitted, really, to solidify because
8 it would have to be reheated again for
9 use. So when you say what form is it in,
10 it looks like a clear mineral oil. It's a
11 clear liquid. And it's hot.

12 Q: What is the process or what was the
13 process used while you were plant manager
14 at Anniston to take that biphenyl and make
15 it into a PCB?

16 A: It's placed in a heated tank in the
17 presence of some iron, we throw in some
18 iron filings or iron oxide, and then bubble
19 chlorine gas through this mass as
20 agitated. And, from experience, it is
21 known that after so many hours of this
22 chlorination step the desired type of PCB
23 mixture is achieved. And the chlorine
24 source is shut off. The contents of the
25 tank then is, I want to use the word

1 neutralized, which means the acidity is
2 reduced, then the contents are transferred
3 over to a distillation unit where heat is
4 applied and the desirable part of the batch
5 of that material is boiled over as vapors.
6 These vapors are cooled. They, of course,
7 condense into a liquid and that's the
8 liquid that is referred to as Aroclor with
9 some number.

10 Q: You indicated that after so many
11 hours the chlorine source would be shut off
12 as the desired mixture was achieved. So,
13 for example, in order to make Aroclor 1242
14 the heated biphenyl would be exposed to the
15 chlorine gas source for longer than it
16 would take to manufacture Aroclor 1242?

17 A: Generally, yes.

18 Q: While you were plant manager at
19 Anniston did you become familiar with the
20 standard manufacturing process?

21 A: Certainly.

22 Q: And why was that?

23 A: Well, it was expected of me to know
24 how the chemicals that I was responsible
25 for are manufactured. And the document

1 that covers this is called the standard
2 manufacturing process.

3 Q: And that standard manufacturing
4 process document includes a description of
5 the actual mechanics of manufacture, is
6 that correct?

7 A: Yes. Part of its contents, yes.

8 Q: As best you recall today, what
9 other information is included within the
10 standard manufacturing process?

11 A: I've forgotten all the sections in
12 the document. I do recall a safety and
13 handling section. I think that I recall
14 sections on the -- that relate to the
15 storage, transfer to drums and tank cars or
16 trucks. That's the handling after
17 manufacture, and labeling thereof. I'm
18 sure there are other sections, I just can't
19 recall them all now.

20 Q: Let me show you a document which
21 we'll mark as the next exhibit in order,
22 titled "Monsanto Company Organic Chemicals
23 Division Standard Manufacturing Process for
24 Aroclors, Department 246". And for
25 purposes of identification, this is a thick

1 document that has a series of production
2 numbers, starting with Tran 009192 and runs
3 on through Tran 009324. We'll have that
4 marked, then take a moment to have you look
5 at it, Mr. Papageorge.

6 (Deposition Exhibit Number
7 1082 mark'd for identification).

8 **A:** I have scanned the document.

9 **MR. TALLON:** Having scanned it, can
10 you identify it for the record?

11 **A:** This is a copy of the standard
12 manufacturing process for the manufacture
13 of Aroclors at the Krummrich plant of
14 Monsanto Company, and it's dated December
15 17, 1962, and with it are amendments. The
16 amendments -- there appear to be two sets,
17 one at the front of the packet, and others
18 at the back. On my quick reading, as best
19 I can determine, the amendments up front
20 are amendments to a version of this process
21 manual dated July '64. I note that in the
22 back of the packet there are amendments
23 referring to versions of this process
24 manual in the '50's and '60's. My quick
25 review indicates that's what this material

1 consists of.

2 Q: Did you have the same or a similar
3 standard manufacturing process manual
4 available to you when you were plant
5 manager at Anniston?

6 A: Yes.

7 Q: Was it the same or a similar one?

8 A: Similar. It was different because
9 the equipment was different.

10 Q: Were the differences in terms of
11 the chemistry of biphenyl chlorination
12 materially different?

13 A: The chemistry was identical.

14 Q: In the manufacturing process at
15 Anniston, at Krummrich and elsewhere, the
16 process of manufacturing PCBs resulted in
17 many isomers being formed, is that right?

18 A: Certainly.

19 Q: Is it your understanding, Mr.
20 Papageorge, that having different isomers
21 present in each Aroclor made the Aroclor
22 product more stable?

23 A: I do not have such an
24 understanding, no.

25 Q: Do you disagree that having many

1 isomers present in a PCB product makes it a
2 stable product?

3 A: No.

4 Q: Do you see any relationship between
5 the number of isomers in a PCB and its
6 stability?

7 A: No.

8 Q: Did the standard manufacturing
9 process manual that you had at Anniston
10 have a safety and toxicity data section
11 such as Appendix J to the exhibit you have
12 before you?

13 A: Similar to, yes.

14 Q: I wonder if you could turn for a
15 moment -- to the number on the bottom of
16 the page in the lower right-hand corner may
17 be the easiest one to use, it's page 9291.

18 A: I have it.

19 Q: The discussion of safety and
20 toxicity data, just for sake of
21 completeness, actually appears to begin two
22 pages prior, 9289, but I'm particularly
23 interested in knowing whether you recall if
24 the material following the caption "Other
25 hazards" at the top of page 9291 was in the

1 standard manufacturing process manual that
2 you had available to you at Anniston when
3 you were plant manager there?

4 A: I cannot speak for the exact words,
5 but the thought was in that document. I
6 don't recall exactly the form it took, and
7 what part of the document it appeared in.
8 If I could see --

9 Q: The exact one?

10 A: It would really help my
11 recollection.

12 Q: Do you recall whether the standard
13 manufacturing process manual that you had
14 available to you while you were plant
15 manager at Anniston noted that Aroclors can
16 cause dermatitis?

17 A: The best I can recall, some
18 documents did. Now, I don't recall -- I
19 just can't remember how it appears in the
20 standard manufacturing process document.

21 Q: Regardless of the passage or
22 section of the standard manufacturing
23 process in which safety and toxicity data
24 was reflected in that standard
25 manufacturing process manual available to

1 you at Anniston, was the information that
2 Aroclors can cause dermatitis reflected in
3 the standard manufacturing process
4 available to you at Anniston?

5 A: Yes.

6 Q: Was the information that systemic
7 poisoning from the fumes available in the
8 standard manufacturing process manual that
9 was available to you at Anniston?

10 A: I remember the reference to
11 chloracne.

12 Q: Is that --

13 A: I don't remember the use of the
14 word systemic in the document we're talking
15 about, but that doesn't mean it didn't
16 exist. Again, if I could just see the
17 document it would certainly help.

18 Q: If I had it, I'd sure give it to
19 you. Do you recall that the standard
20 manufacturing process manual that you had
21 available to you at Anniston noted that a
22 hazard of Aroclors included yellow atrophy
23 of the liver?

24 A: I recall a reference to liver
25 damage. I, at the moment, don't recall the

1 reference yellow atrophy.

2 Q: To the best of your knowledge,
3 would there be different safety and
4 toxicity data available to the plant
5 manager at Krummrich who was your
6 contemporary while you were plant manager
7 at Anniston?

8 A: To the best of my understanding,
9 the health and safety data came out of
10 Monsanto's corporate medical department.

11 Q: Suggesting to you that it would be
12 the same in each case?

13 A: It would suggest that the basic
14 information on which these documents were
15 based came from the same source. It may
16 vary depending on the author, which
17 individual in the medical department sat
18 down and put it on paper. So, different
19 words might be used, but the intent was to
20 convey the same kind of thinking.

21 Q: When you were plant manager at
22 Anniston, what was meant by the reference
23 department 246?

24 A: That's the designation of the
25 PCB-producing unit at the Krummrich plant.

1 Q: And did you have a similar
2 designation for the PCB manufacturing unit
3 at Anniston?

4 A: We did, but at the plant we never
5 used the number, we just referred to it as
6 the Aroclor department. Being a smaller
7 plant, we didn't have to resort to this
8 kind of numbering system.

9 Q: This kind of numbering system
10 meaning a department reference?

11 A: Similar to the department 246 for
12 the Krummrich unit.

13 Q: Is it your understanding that the
14 standard manufacturing process manual was
15 different for each location or the same for
16 each location where it was used?

17 MR. PREUSS: Are you talking about
18 identical or the same type of information?

19 MR. TALLON: Same type of
20 information.

21 A: It's intended to contain the same
22 type of information, tailored to fit the
23 physical facilities and situation at the
24 plant.

25 Q: You indicated there were some

1 differences in the physical facilities
2 between Anniston and Krummrich, correct?

3 A: There were.

4 Q: The safety and toxicity data would
5 not be different, as I understand your
6 answer, is that right?

7 A: Let me think a bit on that. They
8 should be the same, since both plants made
9 the same end products, and used the same
10 starting materials. Yes, they should be
11 the same.

12 MR. PREUSS: Just for
13 clarification, your "same" is communicating
14 the same information as opposed to
15 identical words?

16 MR. TALLON: That's the term I
17 used.

18 MR. PREUSS: Okay.

19 A: Information, yes.

20 Q: Setting aside for a moment your
21 specific reference to the standard
22 manufacturing process, while you were plant
23 manager at Anniston did you come to
24 understand that exposure to Aroclors
25 included the hazard of systemic poisoning

1 from the fumes?

2 A: Certainly. I don't know which came
3 first, but it was supportive of discussions
4 of the type I had with Dr. Kelly and with
5 Dr. Francis at the plant.

6 Q: Dr. Francis was your plant medical
7 director?

8 A: Yes, sir.

9 Q: And while you were plant manager at
10 Anniston, did you also come to understand
11 that exposure to Aroclors could result in
12 yellow atrophy of the liver?

13 A: I understood that the liver could
14 be affected. I personally don't recall the
15 expression yellow atrophy at that point in
16 time.

17 Q: Do I take it from your answer that
18 at a later point in time you became
19 familiar, or at least had heard the term
20 yellow atrophy?

21 A: Yes, sir.

22 Q: And was that after -- did you
23 acquire that familiarity after you moved
24 back to St. Louis in late '69 or early '70?

25 A: Yes.

1 Q: By the way, was the standard
2 manufacturing process available to
3 customers of Monsanto?

4 A: No.

5 Q: In fact, it was confidential and
6 proprietary to Monsanto, correct?

7 A: Certainly.

8 Q: I had asked you a little while ago
9 a question that I'm not sure that I ever
10 focused on again, because we started
11 talking about something else. And the
12 question was whether there were customers
13 for Aroclors as opposed to blended products
14 such as Pydrauls, and you began to explain
15 to me that you had trouble with the term
16 blended Aroclors. But forgive me if you
17 answered this and I've forgotten, but while
18 you were plant manager at Anniston, were
19 there customers who bought Aroclors such as
20 Aroclor 1242 or Aroclor 1248?

21 A: Certainly, yes.

22 Q: And was that also true of
23 Krummrich?

24 A: Yes.

25 Q: And was that true of Queeny?

1 A: Yes.

2 Q: Or were all the products produced
3 by Queeny mixtures of different Aroclors?

4 A: The Queeny plant did not produce
5 any part that was sold and labeled as
6 Aroclor.

7 Q: But Krummrich and Anniston did?

8 A: Yes.

9 Q: And what's the difference between a
10 distilled Aroclor and a crude Aroclor, as
11 you remember it?

12 A: The crude Aroclor is that mass of
13 material that results from the chlorination
14 of biphenyl, and right at the -- when we
15 turn off the chlorine, that's the crude
16 material as it sits in that tank. The
17 refined material, I think that's the word
18 he --

19 Q: Distilled.

20 A: Distilled. Is material that is
21 produced when this crude material is
22 exposed to high temperature and pulled with
23 a vacuum to capture the vapors that result
24 from the high temperature. And as these
25 vapors are cooled, they, of course,

1 condense and they collect into a receiving
2 tank, and that's the distilled PCB mixture.

3 Q: In the Monsanto product
4 nomenclature, a distilled Aroclor was
5 identified with the prefix 12, such as
6 Aroclor 1242, correct?

7 A: That is correct.

8 Q: And a crude Aroclor was identified
9 with the prefix 11, such as 1142?

10 A: That is correct.

11 Q: Were there customers for crude
12 Aroclors?

13 A: Yes.

14 Q: Do you recall which Aroclors were
15 sold as crude Aroclors?

16 A: I think throughout the years they
17 were -- there were some requests for all
18 of them by some customers. It's a limited
19 market.

20 Q: And to the best of your knowledge,
21 to what use were those crude Aroclors put
22 by the customers for them?

23 A: The best of my knowledge, they were
24 applied to what we call plasticizer
25 applications in which color was not a

1 problem, such as black asphalt tile for
2 floors, where we didn't care if the color
3 of the PCB was brown or tan or so on.

4 Q: The distilled Aroclors had greater
5 clarity than the crude?

6 A: Yes.

7 Q: And during the period that you were
8 plant manager of the Anniston plant, were
9 there customers who bought all of the
10 Aroclors that were distilled, such as
11 Aroclor 1242 and 1248, 1254?

12 MR. PREUSS: Customers that bought
13 the whole line?

14 MR. TALLON: No. I mean customers
15 who bought any of those? And I'm
16 distinguishing the Aroclors from the
17 blended products such as a Pydraul or a
18 Therminol.

19 A: Certainly, there are customers who
20 ordered and did receive the Aroclors that
21 were made at the Anniston plant.

22 Q: As opposed to products including
23 different Aroclors?

24 A: That's right. When I speak of
25 Aroclors, I'm talking about the commercial

1 mixture of PCBs as produced. The other
2 products had their own trade names. The
3 term Aroclor did not apply to those
4 products.

5 Q: So, if you use the term Aroclor
6 1242, you would be referring to the
7 commercial mixture that could be sold as
8 such and was sold as such? -- --

9 A: Yes.

10 Q: If you're talking about Therminol,
11 you'd be talking about a specific trade
12 name product?

13 A: Yes.

14 Q: When you were plant manager at
15 Anniston, Mr. Papageorge, had you any
16 understanding of the stability of PCBs, the
17 characteristics which made the product
18 stable?

19 A: I did.

20 Q: And what was your understanding?

21 A: My understanding is that these
22 materials were very highly stable. In
23 fact, that they were the most stable
24 chemicals of that type known.

25 Q: Was that an understanding that you

1 acquired after you became plant manager at
2 Anniston?

3 A: Yes.

4 Q: Specifically referring to the
5 period when you were plant manager at
6 Anniston as opposed to later, did you have
7 an understanding as to whether or not PCBs
8 would degrade in the environment?

9 A: Well, my understanding was that
10 they -- being so stable, they would not
11 degrade.

12 Q: When you were plant manager at
13 Anniston, Mr. Papageorge, do you recollect
14 having entertained customers from
15 Westinghouse who undertook a plant visit?

16 A: I recall at least one such visit,
17 yes, sir.

18 Q: Was Westinghouse a customer for
19 Aroclors or PCB products that were
20 manufactured at Anniston?

21 A: Yes.

22 Q: And what did Westinghouse buy at
23 that time?

24 A: They bought a fluid for use in
25 their electrical equipment which was

1 designated by their trade name Inerteen,
2 and I've forgotten the numbers and letters
3 that go with that. And the ingredient that
4 the -- the PCB ingredient in that material
5 was Aroclor 1242.

6 Q: Did Westinghouse purchase any other
7 product from Monsanto at the time you
8 served as plant manager at Anniston?

9 A: Yes. They purchased several
10 mixtures which contained PCBs. And all of
11 them were prepared to Westinghouse
12 specifications and used the Westinghouse
13 trade name, Inerteen. Again, I've
14 forgotten the letter and number
15 designations that accompany that, and I've
16 personally forgotten the exact recipes that
17 apply to each of these.

18 Q: To the best of your recollection,
19 without specific reference to the exact
20 recipes, what other Aroclors were mixed in
21 the products produced for Westinghouse?

22 A: As best I remember, there were some
23 with Aroclor 1248 and some with Aroclor
24 1254.

25 Q: By the way, I just said in that

1 question, or suggested in that question
2 that Monsanto manufactured the product for
3 Westinghouse. Is that accurate? Did
4 Monsanto blend Inerteen for Westinghouse?

5 A: Yes.

6 Q: And then that product was sold by
7 Westinghouse with its trade name and label,
8 presumably?

9 A: I don't know that I would designate
10 Westinghouse's activity as selling the
11 product. They sold a device which
12 contained that product, and, in turn, they
13 were involved in a service type of business
14 where that product would be shipped to
15 their customer's plant to service the unit
16 that had been purchased from them. I don't
17 know that that was the common understanding
18 of selling a product to the marketplace.

19 Q: I think that's fair. Were the
20 Inerteen line of products patented, so far
21 as you know?

22 A: I do not -- I don't know.

23 Q: Do you have a recollection of
24 having discussed with any representatives
25 of Westinghouse issues of toxicology that

1 Westinghouse had encountered with their
2 workers?

3 MR. PREUSS: At any point in time?

4 MR. TALLON: While he was plant
5 manager at Anniston.

6 A: Can you help me with issues of
7 toxicology?

8 Q: For example, do you recall ever
9 having discussed with representatives of
10 Westinghouse during the period that you
11 were plant manager at Anniston dermatitis
12 issues that arose with respect to their
13 workers?

14 A: Yes.

15 Q: And do you recall that such
16 discussions occurred in or about 1967?

17 A: That's about the time it happened,
18 yes.

19 Q: And under what circumstances do you
20 recall that such discussions took place?

21 A: I recall that representatives of
22 Westinghouse visited the Anniston plant,
23 and we had meetings with these Westinghouse
24 individuals, and several Monsanto
25 employees, and the principal topic of

1 discussion was the safe handling of PCBs in
2 the workplace.

3 Q: By the way, did you participate in
4 those discussions?

5 A: Yes, sir.

6 Q: Westinghouse was a customer of your
7 plant, correct?

8 A: Yes.

9 Q: Who besides yourself do you
10 recollect having been present on behalf of
11 Monsanto?

12 A: Oh --

13 Q: Dr. Kelly?

14 A: No.

15 Q: Anyone from the medical department
16 in St. Louis?

17 A: Not in St. Louis, no. This was a
18 plant activity. The plant physician was
19 able to spend sometime with us and, of
20 course, the plant individual who was
21 concerned with industrial hygiene was
22 there, and the supervisor of the operating
23 unit who had hands-on knowledge of how they
24 coached their operators and what equipment
25 was available, and shared all that with the

1 Westinghouse people.

2 Q: Did the Westinghouse people who
3 were present describe specific problems
4 that they were encountering with their
5 workers, as you best recall?

6 A: As best I recall, they said on
7 occasion some of their workers had red skin
8 spots. And I recall that they attributed
9 that to the fact that the workers weren't
10 wearing the proper -- wearing their
11 gloves.

12 Q: And did the Monsanto
13 representatives furnish information to the
14 Westinghouse representatives on how best to
15 deal with this situation?

16 A: Certainly. We were able -- I
17 recall a table on which we had displayed
18 different kinds of gloves, and I do also
19 recall a jar of skin ointment that was
20 shown to them. We told them that this is
21 what we do, it may or may not fit your
22 needs.

23 Q: Was Westinghouse one of the
24 principal customers for the Anniston plant
25 during the period you were plant manager?

1 A: Yes, sir.

2 Q: Let me show you a document, Mr.
3 Papageorge, which we'll ask the court
4 reporter to mark as the next exhibit in
5 order. It's a one page document with
6 production number Tran 005541.

7 (Deposition Exhibit Number
8 1083 mark'd for identification).

9 MR. TALLON: Would you take a
10 moment and review that, please.

11 A: I've read it.

12 Q: Does that memorandum refer to the
13 Westinghouse visit or meeting to which you
14 have referred in your testimony?

15 A: It does.

16 Q: The memorandum which is from Mr.
17 Benignus to Gerald Miller at Anniston is
18 dated September 21, 1967. Do you, by the
19 way, have a recollection of having received
20 this memorandum?

21 A: I do.

22 Q: The memorandum specifically refers
23 to the best methods -- this is now in the
24 third paragraph -- the best methods for
25 handling Aroclor 1242 to avoid problems of

1 dermatitis and toxicology. Do you see
2 that?

3 A: I do.

4 Q: The red skin spots to which you
5 have referred in your testimony, is that
6 the dermatitis which is referred to in this
7 memo?

8 A: That's what I believe it to refer
9 to, yes.

10 Q: To your knowledge, were there other
11 issues related to toxicology raised by the
12 Westinghouse representatives or discussed
13 with them?

14 A: No. Nothing else was mentioned.

15 Q: Was there any discussion of
16 systemic complications arising from
17 exposure to Aroclors?

18 A: Well, the discussion included the
19 possibility if the material was abused,
20 that Monsanto was in a position to be able
21 to tell them we had never seen it, and the
22 Westinghouse people also chimed in and said
23 they hadn't seen anything like that,
24 either.

25 Q: What are you referring to as the

1 results of abusing the materials?

2 **A:** Well, it's the word I use to
3 describe improper handling, the ignoring of
4 what I have referred to earlier as the
5 early warning symptoms. Just improper
6 procedures that -- really, I guess, in a
7 way, the lack of common sense, almost,
8 where a person abuses his own body by
9 exposure after exposure. That's the kind
10 of thing that I was led to believe would
11 result in liver damage. But having never
12 seen it indicated to us we were doing what
13 we concluded to be the right thing.

14 **Q:** When you used the term improper
15 handling, what handling, or improper
16 handling methods were you thinking of?

17 **A:** The kinds of things we caution our
18 people about. Don't keep breathing fumes
19 if you notice that they're irritating you.
20 When you are working around this hot tank
21 of material and you open the lid, don't
22 poke your face right into it. And when the
23 valve handle is oily, put your gloves on,
24 or if you do get some on your hands,
25 eventually, when things are under control,

1 go over and wash your hands. The kind of
2 thing one does, I guess, even at home when
3 you clean the paint brush with paint
4 remover, you get the brush cleaned up, put
5 it away, then you go wash your hands. We
6 used to use the expression common sense a
7 lot, which the operators understood. And
8 keep in mind, the operators there are not
9 supervised around the clock, they're on
10 their own at night, on weekends, so we had
11 to rely on their common sense.

12 Q: When you referred to improper
13 procedures, were you referring to the kinds
14 of improper handling that you just
15 mentioned or were you referring to anything
16 else in addition to the kinds of improper
17 handling you just mentioned?

18 A: Oh, by improper handling I meant
19 ignoring the presence on your skin time and
20 time again, ignoring the fact that your
21 skin is red. That means you're doing
22 something wrong, correct your behavior. I
23 mentioned this breathing problem before, if
24 it's irritating you, that's telling you
25 something, either get away, button up the

1 system or if you have to, put on a
2 respirator and go in there and correct the
3 problem. That's the kinds of things I have
4 in mind when we talk about proper handling,
5 respect for the material.

6 Q: While you were plant manager at
7 Anniston, were there occasions where PCBs
8 spilled, either in the plant or immediately
9 outside the plant?

10 A: On occasion, yes.

11 Q: And on the occasions where such
12 spills occurred, were spills washed with
13 water?

14 A: Not when I was there. We practiced
15 the absorption treatment with sand, which
16 we found to be quite effective. Sand or
17 even soil, dirt. It was easily found and
18 readily available. And we picked up the
19 free flowing material in that fashion. For
20 very small spills, if I can call it that,
21 rags were useful. That's about it,
22 really. We didn't have any major
23 catastrophe where a full tank would dump
24 out there on the grounds.

25 Q: Did you also use sawdust or

1 absorbent clays?

2 A: Yes. When we had sawdust on hand,
3 we'd do that. And clays, yes. Clay is on
4 hand because it was part of the treatment.
5 Clay was used in the process to clean up
6 the PCBs. It was handy it was used. We
7 left it up to the fellows to use whatever
8 was handy and absorb the material.

9 Q: Did you or anyone working for you
10 advise against using water to clean up PCB
11 spills?

12 A: It wasn't so much advice against as
13 it was one of water and PCBs just don't
14 mix, and you're just not going to
15 accomplish much, you're going to spread
16 that spill over the whole pavement rather
17 than get rid of it.

18 Q: PCBs have limited solubility in
19 water?

20 A: Very much so, yes.

21 Q: And as I understand it, Aroclor
22 1242, for example, has a solubility limit
23 of 200 parts per billion in water?

24 A: In water at room temperature, yes,
25 sir.

1 Q: Do higher weighted Aroclors have
2 less or more solubility than 1242?

3 A: The higher the weight, the less the
4 solubility.

5 Q: And if PCBs and water are mixed
6 past the point of solubility, do the PCBs
7 sink to the bottom of the water?

8 A: They do.

9 Q: While you were plant manager at
10 Anniston, Anniston used a landfill for
11 disposal of chemical wastes, including
12 PCBs?

13 A: They did.

14 Q: And chemical wastes, including
15 PCBs, were placed in barrels or other
16 containers in a trench and then the trench
17 was backfilled?

18 A: Yes.

19 Q: Did you know of any methodology for
20 an analysis for the presence of dissolved
21 PCBs in water while you were plant manager
22 at Anniston?

23 A: There was none.

24 Q: By the time you went to St. Louis
25 in 1970, was there a method?

1 A: Yes.

2 Q: And by 1970 you could analyze for
3 the presence of dissolved PCBs in water in
4 the tens of parts per million?

5 A: Yes.

6 Q: Were any Aroclors sewerred,
7 s-e-w-e-r-e-d, at production plant outfalls
8 while you were plant manager at Anniston?

9 A: On occasion, the limestone pits
10 which overflowed into the sewer system
11 would carry some of the limestone sediment
12 which contained PCBs, and that did get into
13 the sewer system.

14 Q: Before you moved from Alabama to
15 St. Louis -- by the way, when did you move
16 from Alabama to St. Louis? Was that in '69
17 or in '70?

18 A: Well, I reported in St. Louis just
19 after the first of the year 1970, and I
20 wore two hats for a while. Finally settled
21 into St. Louis about the middle of -- or
22 end of January.

23 Q: While you were plant manager at
24 Anniston, that is to say, before you left
25 Alabama for St. Louis, did you undertake to

1 prevent sewerage of any PCBs that were
2 getting into the sewer system from overflow
3 of the limestone pits?

4 A: Well, yes. Before 1970 we
5 recognized that the pits were an upset at
6 times creating this situation. Although
7 the city sewerage handling system collected
8 all of this in their sediments, and that
9 was landfilled, so we felt that that was
10 acceptable, but we still didn't want the
11 accidental release into the system, so we
12 had those limestone pits enlarged for more
13 capacity, and we increased the frequency at
14 which they were, in essence, cleaned out.
15 We'd go in there with bulldozers and scrape
16 up the contaminated limestone and sediment
17 and bury it in the landfill and put in
18 fresh rock.

19 Q: Do you happen to recall, by any
20 chance, the size of the limestone pits
21 either before enlargement or after?

22 A: No, I don't. I remember only that
23 they were about doubled in size. I don't
24 recall the dimensions any more.

25 Q: Were the limestone pits earthen

1 pits filled with limestone or were they
2 lined with some material?

3 A: They were lined with a -- what was
4 defined as an impervious clay, so you'd get
5 very little, if any, penetration downward.

6 Q: Do you recall being asked to take
7 waste samples of plant outfalls to check
8 for PCB presence in 1969?

9 A: There was some -- 1969? Yes,
10 there was some requests coming out of the
11 St. Louis laboratory for water samples,
12 which was part of the analytical chemistry
13 development to see if the methodology that
14 was developed could apply to the real world
15 situation. And they asked for samples of
16 water, yes.

17 Q: Let me show you a document which is
18 a two page memorandum, dated January 23,
19 1969, bearing production numbers Tran
20 086143 and 144.

21 (Deposition Exhibit Number
22 1084 mark'd for identification).

23 A: I have reviewed the document.

24 MR. TALLON: Can you identify the
25 document for the record, Mr. Papageorge?

1 A: Yes. This is a Monsanto memorandum
2 authored by Paul Hodges, who was the
3 environmental manager in the general
4 offices of Monsanto, addressed to the
5 environmental representatives at Anniston
6 and Krummrich plant, suggesting that water
7 samples be taken of waste waters from each
8 plant and preserved for future analysis by
9 new methods being developed in Monsanto's
10 research department.

11 Q: Do you know if samples, water
12 samples were collected at Anniston?

13 A: Yes, they were.

14 Q: And were they sent on to St. Louis?

15 A: Eventually, yes.

16 Q: Did you personally take any action
17 as a consequence of this memorandum, or did
18 you direct that any action be taken?

19 A: Oh, I don't know that I -- I
20 confirmed that the recipients were aware of
21 this need and I checked with the individual
22 whose responsibility I felt it came under,
23 and he assured me that everything was in
24 order.

25 Q: There is a reference in the

1 paragraph numbered 3, which is on the
2 second page of this memorandum, and it
3 states "Anniston is drumming and hauling
4 their similar spent Aroclor to a dump". Do
5 you see that?

6 A: Yes.

7 Q: Is that an accurate statement?

8 A: Yes. This is to that landfill that
9 I referred to earlier.

10 Q: And where was the landfill?

11 A: On the Anniston property, within
12 the gate.

13 Q: Did you know, by the way, Mr.
14 Papageorge, what Mr. Hodges referred to in
15 the first sentence of this memorandum when
16 he referred to the attention now being
17 focused on the presence of Aroclors in
18 natural waters?

19 A: Yes. This was referring to reports
20 that Monsanto was receiving from several
21 laboratories that claimed they saw
22 something that resembled PCBs in their
23 samples.

24 Q: Did you have any understanding at
25 the time as to what detection methodology

1 those laboratories were using?

2 A: At that time did I have it?

3 Q: Yes.

4 A: No.

5 Q: Before you moved to St. Louis in
6 early 1970, did you have any understanding
7 of what methodology was used to detect the
8 presence of PCBs in water or any kind of
9 scientific sample?

10 A: When you added that last part it
11 changed the question. The presence in
12 water involved new technology of which I
13 was not aware at the time. The presence of
14 PCBs in other kinds of samples, as you say,
15 there was technology for determining, say,
16 PCBs, the amount of PCBs in paint or the
17 amount of PCBs in an adhesive. This means
18 amounts that are, say, in the percent
19 level, big quantities. So, there is two
20 different kinds of analyses that apply
21 here.

22 Q: What was the technology that was
23 not new that was used to detect PCBs in
24 paint, for example?

25 A: The most basic one was one of

1 converting all the chlorine that's in the
2 sample to a soluble chlorine. It's old
3 time chemistry, really. And determining by
4 the chlorine presence and some arithmetic
5 how much of that could relate to a PCB.

6 Q: Did this process have a name that
7 you can think of today?

8 A: I don't know that it had any
9 special name. Just analyzing for chlorine
10 content.

11 Q: And what is the new technology to
12 which you referred?

13 A: The new technology involved the use
14 of gas liquid chromatography verified by
15 mass spectrometry. These are sophisticated
16 instruments that were developed at about
17 the late '60's, I would suggest, or made
18 available generally in the late '60's, and
19 are able to detect material such as the
20 PCBs down to the parts per billion, parts
21 per trillion range. And they were also
22 able to identify the type of PCB.

23 Q: Gas chromatography was available to
24 the scientific community before the late
25 '60's, correct?

1 A: There were instruments that were
2 available, but I have an understanding that
3 depending on what point in time you're
4 looking at the capability of that
5 instrument to detect smaller and smaller
6 quantities of some of these chemicals
7 improved with time, so the instrument that
8 was called a GLC unit in the '50's was much
9 different than the one available in the
10 '60's.

11 Q: The gas liquid chromatography unit
12 was refined over time, as you understand
13 it?

14 A: Yes.

15 Q: But a gas liquid chromatography
16 machine was available starting in the
17 '50's, so far as you know?

18 A: There were devices like that
19 available. I have a personal understanding
20 they are were not universally used tools.
21 They were specialized tools, and not many
22 of them were available.

23 Q: Monsanto had gas chromatography
24 equipment available to it before the late
25 '60's, correct?

1 A: Yes.

2 Q: And more than available to it,
3 Monsanto had, or owned gas chromatography
4 equipment before the late '60's, right?

5 A: I understand that they had in their
6 research function, not at the plant level.
7 It did not become a daily tool for normal
8 production.

9 Q: Right. And do you know when,
10 approximately, or precisely, Monsanto
11 acquired the gas chromatography equipment
12 for the first time?

13 A: No, I don't.

14 Q: Would you say that it was in the
15 '60's?

16 A: Certainly the '60's, yes. I don't
17 know early or middle. '60's, yes, they had
18 something. But the unit used specifically
19 for PCB studies was not acquired, as I
20 understand it, until about 1967, or
21 thereabouts.

22 Q: You're referring to a machine or
23 machines that linked the gas liquid
24 chromatography with mass spectrometry?

25 A: Certainly that link was made. But

1 I am certain the individual pieces were
2 also of the latest model, and they were
3 paired off to support each other.

4 Q: And that was Scott Tucker's
5 specialty?

6 A: Yes. Amongst others, yes.

7 Q: When you used the term --
8 actually, what I think you said was the new
9 technology was gas liquid chromatography
10 verified by mass spectrometry. What did
11 you mean by the term verified?

12 A: The mass spec unit has the
13 capability of looking at a sample and by
14 the response and -- I'm not an instrument
15 designer, so I can't really explain how it
16 works. But the response of this instrument
17 to the sample gives an idea of how large
18 the molecule is as represented by the peaks
19 and valleys of the GLC chart. By the size
20 of the molecule one can then determine the
21 type of chemical that the instrument is
22 seeing or detecting. With that
23 information, one can determine the
24 difference between the different types of
25 PCBs, for example, or the difference

1 between a PCB and a DDT.

2 Q: Was this linked system sometimes
3 referred to as GC mass?

4 A: Yes. That's the -- yes, the short
5 term for it.

6 Q: By 1970 were you aware of any
7 laboratories world-wide using GC mass
8 technology to test for the presence of
9 PCBs?

10 MR. PREUSS: Up to 1970?

11 MR. TALLON: I certainly meant to
12 say in 1970. I may have said up to. By
13 1970.

14 A: By 1970 I was aware of a few
15 laboratories that had this capability.

16 Q: Did those laboratories include
17 laboratories in which Doctors Jensen and
18 Widmark worked in Sweden?

19 A: Yes.

20 Q: And did those laboratories include
21 the laboratory that Dr. Risebrough worked
22 in in California?

23 A: Dr. Risebrough had a GLC unit, but
24 at that time I don't think he had mass
25 spec. I could be wrong on that, but I'm

1 left with that impression.

2 Q: In 1970 was Dr. Risebrough, in your
3 view, capable of identifying PCBs through
4 GLC testing?

5 MR. PREUSS: Objection, no
6 foundation.

7 A: I think, in my opinion, Dr.
8 Risebrough was capable of detecting PCBs in
9 his samples at low levels. However, there
10 might have been a percentage of error
11 involved at that time that's higher than
12 what exists today.

13 Q: The percentage of error in 1970 was
14 higher than the percentage of error in
15 1992?

16 A: Yes, I believe that. This is not
17 to say that he was off on the wrong path,
18 but there were times when he was, himself,
19 skeptical of what his instrument was
20 telling him.

21 Q: Were you at all involved, Mr.
22 Papageorge, in the development of the
23 testing methodology employed by Monsanto
24 for PCB detection?

25 A: No.

1 Q: Do you know whether the testing
2 methodology developed by Monsanto was based
3 on the work done by Doctors Jensen and
4 Widmark?

5 A: That's my understanding.

6 (Recess).

7 MR. TALLON: Mr. Papageorge, do you
8 believe that by late 1968 a competent
9 scientist should have been able to
10 distinguish between PCBs and DDT?

11 A: You're asking for my belief at this
12 moment?

13 Q: Yes.

14 A: No, I don't believe that that was a
15 realistic expectation.

16 Q: Now, in the fall of 1969 you were
17 advised that -- or asked to assume the
18 position of manager, environmental control,
19 as of January 1, 1970?

20 A: More correctly, I was asked to take
21 on this assignment in December.

22 Q: In December 1969?

23 A: '69, correct.

24 Q: Was it a request or a direction?

25 A: In the business world, it's hard to

1 distinguish.

2 Q: Good point. And you were asked to
3 assume this position by Mr. Stratmeyer,
4 correct?

5 A: That is correct.

6 Q: He was your immediate supervisor?

7 A: At the time, yes.

8 Q: Where was he located at the time?

9 A: St. Louis.

10 Q: What was his title, as best you
11 recall today?

12 A: Director of manufacturing for the
13 operating unit that made PCBs, among other
14 chemicals.

15 Q: Did the other plant supervisors
16 report to Mr. Stratmeyer as well, Krummrich
17 and Queeny?

18 A: Yes.

19 Q: Did Mr. Stratmeyer tell you when he
20 first raised the issue with you in December
21 1969 why you particularly were being
22 invited to take on this position?

23 A: Well, it was suggested that since I
24 managed the plant where the product was
25 made, I certainly had some information that

1 related to these materials that others
2 didn't have, such as how they're made and
3 what they are and how do we ship them, and
4 who some of the customers were, and he just
5 -- in his thinking, he believed that, I
6 guess, in a way I could bring something to
7 the party, if I can use that expression.
8 It's my understanding there were others
9 that were interviewed for this assignment,
10 I was not the only person considered.

11 Q: Do you have a present understanding
12 of who or what body selected you personally
13 to assume this position?

14 A: As I understood it, it was a joint
15 decision by Mr. Bergen and Mr. Springgate.

16 Q: Mr. Springgate was in charge of
17 plasticizer products at that time?

18 A: That is correct.

19 Q: And Mr. Bergen was in charge of
20 other functional fluids?

21 A: Yes.

22 Q: And they were both in St. Louis?

23 A: Yes.

24 Q: Did you ever acquire any
25 understanding as to why Mr. Bergen -- why

1 Messrs. Bergen and Springgate had selected
2 you for this position?

3 A: No.

4 Q: Before you talked to Mr. Stratmeyer
5 with respect to his invitation to you to
6 take on this position, had you ever talked
7 with him about the issue of whether there
8 was an issue related to PCB products and
9 environmental or health hazards?

10 A: Yes.

11 Q: Do you recall talking to him in
12 early 1969 regarding some questions
13 involving the line of PCB products?

14 A: Yes.

15 Q: And what do you recall today he and
16 you having discussed on that subject in
17 early 1969?

18 A: It was really more near mid 1969,
19 as best I recall. And Mr. Stratmeyer,
20 during his monthly visit to the plant,
21 mentioned to me that he was informed that
22 there seemed to be an environmental problem
23 with the presence of PCBs, and he himself
24 didn't know much more than that, that he
25 would keep me informed as he gained more

1 information.

2 Q: Did Mr. Stratmeyer elaborate any
3 more than you have already described as to
4 the nature of the environmental problem?

5 A: I don't recall any specifics. It's
6 just a matter of PCBs being found in the
7 environment in environmental samples. That
8 was the extent of his knowledge, or his
9 understanding.

10 Q: When you spoke with Mr. Stratmeyer
11 in December 1969 about taking on the
12 position of manager, environmental control,
13 were you in your office in Anniston,
14 Alabama or did you go to St. Louis for
15 purposes of meeting with Mr. Stratmeyer?

16 A: I was in St. Louis in December on a
17 personal -- holiday visit, really,
18 Christmas week, and so on, and I took
19 advantage of the opportunity to arrange for
20 the interview with Mr. -- Messrs. Bergen
21 and Springgate in December. And before I
22 returned to Anniston near the end of the
23 month, Mr. Stratmeyer reached me and
24 informed me that the decision had been made
25 to offer me the assignment, would I accept

1 it, if so, when can I start. I told him
2 okay, if somebody thinks I can help you,
3 I'll take it, and I can start whenever
4 somebody relieves me of the plant
5 responsibilities.

6 Q: Before you traveled to St. Louis
7 for your Christmas holidays you were aware
8 that this position had been created and
9 that there was a search on to find someone
10 to fill it?

11 A: Yes. Mr. Stratmeyer informed me in
12 late November, is the best I recall,
13 November of '69.

14 Q: When Mr. Stratmeyer and you -- was
15 the discussion that you had with Mr.
16 Stratmeyer in November '69 the first time
17 that you learned that such a position had
18 been created?

19 A: Yes.

20 Q: At the time that Mr. Stratmeyer and
21 you spoke in late November 1969, what did
22 Mr. Stratmeyer tell you about the position
23 or about anything related to it?

24 A: Of course, I don't remember the
25 exact words.

1 Q: Naturally.

2 A: But, in essence, what he informed
3 me of is that these materials were being
4 found in the environment, they appear to be
5 found in fish and some wild birds, that
6 there are many laboratories are gaining the
7 expertise, we're getting a lot of
8 inquiries, we have two business groups
9 involved, and we'd like to have somebody
10 coordinate all this activity so we're
11 headed in the right direction and
12 definitely that the left hand knows what
13 the right is doing kind of situation.
14 Would you be interested? In essence, that
15 was the information he gave me.

16 Q: And you expressed interest?

17 A: My remark, as I said earlier, was
18 if somebody thinks I can help, I'll give it
19 a try.

20 Q: Between the time of that
21 conversation with Mr. Stratmeyer and the
22 time when you met with Messrs. Bergen and
23 Springgate in St. Louis in December, did
24 you have any contact with anyone else in
25 respect of the new position of manager,

1 environmental control?

2 A: No.

3 Q: So, the next time that you
4 discussed this with anyone was with Messrs.
5 Bergen and Springgate in St. Louis?

6 A: In December, yes.

7 Q: Did you meet with them separately?

8 A: Yes.

9 Q: And when you met with Mr. Bergen,
10 did he discuss the responsibilities that he
11 envisioned your taking on if you assumed
12 the position as manager, environmental
13 control?

14 A: Yes. He attempted to describe it
15 as best he could, considering the fast
16 moving situation that it was. I got the
17 impression, really, that this was all so
18 new that they weren't sure themselves
19 exactly what I would be involved with. But
20 the main responsibility was really one of
21 improving communications, dissemination of
22 information, both within Monsanto and
23 outside of Monsanto.

24 Q: Did Mr. Bergen advise you at that
25 time of the existence of something called

1 the ad hoc committee?

2 A: He didn't refer to it by that
3 name. He said we've got a few of our
4 people working on this trying to help us
5 out, but they need some kind of guidance,
6 and they're all so busy with other things
7 they're doing they really feel pressed for
8 time to give it the right kind of
9 attention. He did mention the existence of
10 a group. I was aware of it, yes.

11 Q: The group to which Mr. Bergen
12 referred you later came to understanding
13 was the ad hoc committee or an ad ad hoc
14 committee?

15 A: Well the group was a little bit
16 bigger than that. The ad hoc committee
17 represented a few key individuals from the
18 bigger group. The bigger group, really,
19 was Monsanto individuals in the two
20 business groups that were directly related
21 to the PCB products, a manufacturing guy, a
22 marketing guy a research guy.

23 Q: Did you later come to know who was
24 on the ad hoc committee?

25 A: Certainly.

1 Q: Who?

2 A: Elmer Wheeler.

3 Q: From the medical department?

4 A: Medical department. Bill Richard
5 and Martin Farrar, who represented the two
6 research functions of the two business
7 groups. And Paul Hodges, who was the
8 manager of environment for the operating
9 unit.

10 Q: Dr. Richard was from the research
11 group associated with the functional fluids
12 business?

13 A: Yes.

14 Q: I take it from your description of
15 this new job that it was deemed important
16 to put someone in charge of, among other
17 things, communication on a full-time basis
18 rather than having people try to do that
19 work in addition to their other work?

20 A: That was the principal intent, yes.

21 Q: Did Mr. Bergen describe what he
22 personally hoped that you might be able to
23 do if you filled the position, in addition
24 to improving communication?

25 A: Yes. His hope was that -- it was

1 really multi-faceted. One was, is there
2 any harm with the presence of PCBs in the
3 environment. If so, what do we do about
4 it? What other laboratories throughout the
5 world are working on this and what
6 information can we get from them? Let's
7 try to establish which of the PCBs are
8 being found. There was much confusion at
9 the time. Let's communicate what we know
10 with our customers. Let's push the
11 toxicity studies. By pushing, I meant to
12 speed up as much as you can. Although with
13 studies already in place, you have to wait
14 for the time to elapse to give you the
15 right information. Keep improving the
16 analytical method, that was another point
17 that he wanted done. Because even in 1970
18 there was still some skepticism relating to
19 analytical results and reproduceability,
20 the same sample would give different
21 answers depending on who looked at it and
22 what instrument he used and what procedures
23 were used. I believe that covers the main
24 features here at that point in time.

25 Q: Did either Mr. Bergen or Mr.

1 Springgate indicate to you that there was a
2 precipitating event or series of events
3 which had led to the creation of this new
4 position?

5 **A:** Precipitating event? I don't
6 recall any single event as precipitating
7 all this interest. It was a series of
8 reports. Dr. Risebrough's results and Dr.
9 Pecal up at Cornell University, I recall
10 that. There was some activity in Georgia
11 regarding the presence in milk. The Great
12 Lakes were being studied. That would
13 suggest that it was not any one incident,
14 but the sum total of all this scattered
15 information coming in with many question
16 marks that had to be answered.

17 **Q:** Was the creation of this new
18 position a directive of the corporate
19 management committee, so far as you know?

20 **A:** I would describe it as a
21 recommendation from the business groups to
22 corporate management, and corporate
23 management approved that recommendation.

24 **Q:** And by the use of the term
25 corporate management, are you referring

1 specifically to the corporate management
2 committee or another group or groups?

3 A: To the group of president and his
4 vice-presidents at that time called the
5 corporate management committee.

6 Q: And is it your understanding that
7 the recommendation was made by the business
8 groups through the ad hoc committee or
9 through some other method?

10 A: The ad hoc committee pulled
11 together a lot of information and presented
12 that to Mr. Springgate, Mr. Bergen and
13 their bosses. And after some discussion
14 the program was developed that was later
15 presented to this corporate management
16 committee in early November, as best I
17 recall.

18 Q: Let me show you a document which
19 we'll ask the court reporter to mark as the
20 next exhibit in order. It's a two page
21 document which doesn't have a production
22 number, but has been marked as an exhibit
23 in earlier depositions. In fact, it
24 appears to be Papageorge Exhibit 6. And
25 we'll ask you to take a look at that as

1 soon as the court reporter marks it.

2 (Deposition Exhibit Number
3 1085 mark'd for identification).

4 A: I've reviewed the document.

5 MR. TALLON: Can you identify that
6 document for the record, please, Mr.
7 Papageorge?

8 A: This is a copy of a Monsanto, I'm
9 going to call it a job description proposed
10 for the job which I eventually was
11 assigned.

12 Q: Do you know the source from which
13 this document emanated, that is to say, who
14 drafted it or what group drafted it?

15 A: I do not know.

16 Q: Does this document describe your
17 duties or the duties which you took on
18 starting in January of 1970?

19 A: It describes some of them.

20 Q: In other words, in addition to the
21 seven broad categories which are reflected
22 on this document, you, in the course of
23 your job performance, took on other duties
24 as well?

25 A: No. What I meant by my answer is

1 that, for example, duty number one, I was
2 not given overall responsibility of the
3 total management of the situation. That
4 was retained by Springgate and Bergen.
5 They're the ones that hire and fire and
6 assign, and that, to me, is total
7 management. Number two, I was able to
8 participate in. Parts of number three.
9 For example, I did not have budget
10 supervisory authority, but I had -- I did
11 participate in objective setting and
12 priorities and promoting programs. Numbers
13 four, five, six and seven, I was able to
14 participate in.

15 Q: Just to touch back on something you
16 said a moment ago, you said that you did
17 not assume overall responsibility for the
18 total management of the Aroclor pollution
19 problem. Did you assume overall
20 responsibility for the management of the
21 Aroclor pollution problem, reporting to
22 Messrs. Bergen and Springgate?

23 A: They retained the responsibility.
24 I was just a resource person to help them
25 fulfill that responsibility.

1 Q: You reported to Bergen and
2 Springgate?

3 A: Just Mr. Bergen.

4 Q: Who was in charge of the -- was he
5 functional fluids business director?

6 A: Yes.

7 Q: Did you have dotted line
8 responsibility to the plasticizer business
9 director, Mr. Springgate?

10 A: I believe I did. Although we bowed
11 out of that business so quickly that it
12 didn't amount to much.

13 Q: The position title on this document
14 is Aroclor toxicity project manager. Is
15 that the title you were given?

16 A: No.

17 Q: Have you ever seen a different
18 version of this same document with a
19 different title on it?

20 A: No, I have not. And I note that
21 this document, many of the blanks are not
22 filled, which indicates it was not
23 formalized.

24 Q: Have you ever seen a version of
25 this position description with those blanks

1 filled in?

2 A: No.

3 Q: Have you ever seen any other
4 written job description which is, I take
5 it, what this basically is? Have you ever
6 seen any other written job description for
7 you?

8 A: For me?

9 Q: In this position.

10 A: No.

11 Q: When you mentioned a moment ago
12 that you did not supervise budgeting, did
13 you have input on budgeting?

14 A: Certainly.

15 Q: And to be more precise, when I use
16 the term input, I mean, did you participate
17 in drafting budgets for the functional
18 fluids group as it pertained to your area
19 of responsibility?

20 A: Yes.

21 Q: Now, you held the position that you
22 assumed -- did you assume your new
23 position on January 1st?

24 A: That's the --

25 Q: That was the effective date?

1 A: That's the effective date, yes.

2 Q: You held that position through --

3 A: Through February of -- well, I was
4 involved with the PCB issue through
5 February of 1976.

6 Q: And did you change positions in
7 February 1976?

8 A: Through the period '71 through '76
9 I was changing positions, but the
10 responsibility for the PCB environmental
11 issue I retained. In 1976, which was
12 another of a series of Monsanto
13 organization changes, I was given an
14 entirely different set of products to
15 monitor and work with. In 1976 PCBs was
16 not part of that operating unit, and PCBs
17 at that time were transferred to another
18 person.

19 Q: Who was that?

20 A: Carl Weber.

21 Q: From the time that you -- from the
22 time of February 1976 through the time that
23 you retired, did you have any other
24 responsibilities in respect of PCBs?

25 A: Yes. I had two types.

1 Q: Which two?

2 A: Starting in 1977, as best I recall,
3 I was appointed as a director of
4 environmental operations for one of
5 Monsanto's operating units. That job
6 involved a lot of activity as it relates to
7 environmental pollution. PCBs, being one
8 of the chemicals of concern, would
9 certainly come under that. So, the plants
10 assigned to me had to make certain that
11 they were following the PCB practices that
12 were in place at the time. So, that was
13 the type of involvement I had. Part of
14 that assignment also involved the
15 industrial hygiene function, so, again,
16 PCBs, as it relates to employees, came
17 under that umbrella, specific to certain
18 plants within Monsanto. In about 1982 the
19 individual who was then assigned to the PCB
20 environmental issue was assigned to report
21 to me, so I was one step removed then from
22 the PCB issue, but I was involved in that
23 fashion.

24 Q: Just one other question while you
25 have that document before you, Mr.

1 Papageorge. Other than as you have
2 specifically indicated on the record, does
3 this position description describe your job
4 starting in January 1, 1970?

5 MR. PREUSS: Until '76?

6 MR. TALLON: Yes.

7 A: When you added 1976, as it relates
8 to PCBs, the items that I described earlier
9 as applying did apply. Through the years,
10 starting in about 1973, I was assigned
11 other Monsanto products, but retained the
12 PCB responsibility. Some of the activities
13 described in this document apply to other
14 chemicals as well. But I did not have a
15 document that specifically related to the
16 total assignment, which was changing.

17 Q: So far as PCBs were concerned, this
18 document reflected your responsibilities
19 from January 1, 1970 through February 1976?

20 A: Correct.

21 Q: When you met with Mr. Bergen at the
22 end of 1969 did you and Mr. Bergen discuss
23 the reports emanating from Doctors Jensen
24 and Widmark in Sweden?

25 A: Oh, yes.

1 Q: Had you any awareness of those
2 reports before you spoke with Mr. Bergen
3 about them?

4 A: No.

5 Q: And to the best of your
6 recollection, what do you recall Mr. Bergen
7 having said with respect to those reports?

8 A: He mentioned that the initial
9 reports came out of Sweden, and he
10 mentioned Dr. Jensen's work and Dr.
11 Widmark, and he described some of the
12 samples that he recalled being analyzed.
13 And he mentioned the fact that the higher
14 chlorinated types of PCBs were reported.
15 He also mentioned that there was still some
16 questions regarding the true identity of
17 the material. And he also mentioned that
18 Monsanto people had been in contact with
19 Doctors Widmark and Jensen, that Monsanto
20 had received copies of the procedures used
21 by that laboratory, and that Monsanto's
22 laboratory in St. Louis had taken those
23 procedures and worked with them and
24 modified them and had confirmed that, in
25 truth, these were PCBs, and they appeared

1 to be the higher chlorinated types. And
2 there was still some question in his mind
3 of why just these higher chlorinated ones,
4 since we sold quite a bit of the lower
5 chlorinated, what accounted for that
6 situation in which the lower chlorinated
7 materials were not being detected. He
8 indicated to me that the medical department
9 was active to answer the question of okay,
10 now that they're out there, what harm, if
11 any, are they doing. That's, in essence,
12 what he talked about.

13 Q: In that same conversation with Mr.
14 Bergen, did Mr. Bergen make any reference
15 to Dr. Risebrough's work in California?

16 A: I don't know if it was Mr. Bergen
17 or Mr. Wheeler. One of the two brought it
18 to my attention. I do know Mr. Wheeler
19 did, but I don't recall Mr. Bergen
20 mentioning that specifically. He mentioned
21 they're being found in lots of places.

22 Q: Did you have a conversation with
23 Mr. Wheeler in late 1969?

24 A: No.

25 Q: Your conversations with Mr. Wheeler

1 commenced after you took up your position
2 on January 1, 1970?

3 A: Yes.

4 Q: Did you and Mr. Bergen have any
5 discussion of incidents in the North Sea
6 involving potential PCB contamination of
7 birds or fish?

8 A: Not with --

9 MR. PREUSS: The time frame,
10 again?

11 MR. TALLON: End of '69.

12 MR. PREUSS: The same
13 conversation?

14 MR. TALLON: Yes.

15 A: I can't recall vividly that he
16 mentioned the North Sea. But that --
17 again, I don't know if it was Mr. Bergen or
18 Mr. Wheeler mentioning the North Sea
19 incident, but I was made aware of it early
20 on.

21 Q: Did Mr. Bergen tell you that he had
22 collected files with respect to the issues
23 that had been raised with respect to PCBs?

24 A: No, I don't recall any discussion
25 about his files.

1 Q: Do you recall Mr. Bergen having
2 told you about an Aroclor toxicity file?

3 A: Not at that meeting. Later on I
4 found out that was his file designation for
5 the subject.

6 Q: Later on, when?

7 A: Oh, the second or third week of
8 January or so. We were sharing
9 secretaries, so I was --

10 Q: By the way, do you recollect the
11 name of Mr. Bergen's secretary in early
12 1970?

13 A: Yes.

14 Q: What was her name or his name?

15 A: Her name. Myra Stanley.

16 Q: Did you and Mr. Bergen in that
17 initial December 1969 meeting discuss work
18 being done at the University of Utrecht in
19 the Neatherlands?

20 A: I don't associate Mr. Bergen with
21 that topic, no.

22 Q: Is that something you believe you
23 have may have discussed with Mr. Wheeler?

24 A: I'm certain that I did, yes.

25 Q: In your meeting with Mr. Bergen in

1 December 1969, did he mention to you
2 something called the Yusho incident?

3 A: Again, I don't associate Mr. Bergen
4 with that discussion.

5 Q: Is that a discussion you associate
6 with Mr. Wheeler?

7 A: Yes.

8 Q: And Mr. Springgate, by any chance?

9 A: No.

10 Q: And is it your recollection that
11 the Yusho incident was reported in the
12 summer of 1969?

13 A: Yes, summer of '69. The incident
14 occurred in '68. Yes.

15 Q: And is it your understanding that
16 when first reported it was believed that
17 rice oil had been contaminated with PCBs?

18 A: Yes.

19 Q: And that that contamination caused
20 illness among the populace of Yusho, Japan?

21 A: That was the allegation, yes.

22 Q: Do you recollect whether in your
23 discussion with Mr. Bergen at the end of
24 1969 you and he discussed a spill incident
25 at Monsanto's Pensacola, Florida plant?

1 A: I recall a discussion of the
2 incident, but, again, it's not clear in my
3 mind if Mr. Bergen discussed in detail that
4 type of subject. I just don't recall that.

5 Q: You indicated that when you were in
6 St. Louis for the Christmas holidays over
7 -- at the end of 1969 you also met with
8 Mr. Springgate, is that right?

9 A: That's right.

10 Q: Was your meeting with Mr. Bergen
11 longer than your meeting with Mr.
12 Springgate?

13 A: Oh, yes.

14 Q: Mr. Springgate did not touch on all
15 of the same topics as Mr. Bergen had?

16 A: No. No.

17 MR. TALLON: Why don't we take our
18 luncheon break.

19 (Recess).

20 MR. TALLON: Mr. Papageorge, I want
21 to touch back on a very few points that we
22 had been discussing immediately before
23 lunch in connection with your discussion
24 with Mr. Bergen that occurred in December
25 of 1969. I had asked you whether you

1 recalled if in that initial discussion Mr.
2 Bergen had said to you anything about the
3 work of Dr. Risebrough in California, and I
4 think you had indicated on the record that
5 you didn't have a clear recollection of his
6 having done so. I just wanted to show you
7 a passage from a deposition you gave in the
8 Outboard Marine case in 1981, over 11 years
9 ago, which focused on the same topic, and
10 ask you if reviewing that transcript
11 refreshed your recollection in any
12 respect. And the particular portion which
13 I'll ask you to read is the question that
14 appears on the bottom of page 180 and the
15 answer that you give on the top of page
16 181. But go ahead and read so much of this
17 as you like in order to give yourself some
18 context for the answer.

19 A: I've reviewed it.

20 Q: Does reviewing the answer you gave
21 at the top of page 181 at that deposition
22 refresh your recollection as to whether or
23 not you and Mr. Bergen discussed Dr.
24 Risebrough's work in the conversation you
25 had with him at the end of 1969?

1 A: It does. It does refresh my
2 recollection, yes.

3 Q: Having read that passage, do you
4 now, in fact, recall having discussed with
5 Mr. Bergen in late 1969 the work of Dr.
6 Risebrough?

7 A: Yes.

8 Q: Similarly, Mr. Papageorge, I had
9 asked you whether you recollected having
10 discussed with Mr. Bergen what has
11 sometimes come to be known as the Yusho
12 incident, and you indicated you didn't have
13 a specific recollection of that. I wonder
14 if you might for a moment review the
15 testimony you gave on page 184 of that
16 deposition and, again, I will ask you
17 whether your review of that refreshes any
18 recollection you have of, indeed, having
19 discussed the Yusho incident with Mr.
20 Bergen at the end of 1969.

21 A: I've reviewed page 184.

22 Q: Does having read that page refresh
23 your recollection as to whether or not you
24 discussed the Yusho incident with Mr.
25 Bergen at the end of 1969?

1 A: Yes, it does.

2 Q: And you do now recall having had
3 such a discussion with Mr. Bergen at the
4 end of 1969?

5 A: I do.

6 Q: Regardless of whether or not your
7 understanding arose out of that initial
8 meeting with Mr. Bergen, what do you recall
9 having occurred with respect to the Yusho
10 incident?

11 MR. PREUSS: At what point in
12 time?

13 MR. TALLON: Well, right now. What
14 was the Yusho incident about?

15 A: As I understand it, there was a
16 unit in Japan that refined rice bran oil
17 for use as a cooking oil. The system used
18 a heat transfer system in which a Japanese
19 made PCB mixture was involved. During one
20 of their operations in 1968 it appears that
21 some of this PCB material in the heating
22 coils and spaces of the processing unit
23 leaked into the oil itself. The oil
24 containing the PCBs was distributed fairly
25 widely in that prefecture in Japan. There

1 were many illnesses reported. As I
2 remember, the exposure, the number of
3 people exposed was in the thousands. I
4 don't remember the exact number. I do
5 recall some symptoms that were described as
6 occurring in terms of nausea, loss of
7 appetite, headaches, watery eyes, matter
8 forming in the eyes, children, newborn
9 children with dark colored skin. Those are
10 some of the symptoms or ailments that were
11 reported. The initial assumption was that
12 it must be the PCBs in the oil that created
13 these health problems. In December of '71
14 I was invited and attended a meeting in
15 North Carolina at a retreat center called
16 Quail's Roost. This meeting was called by
17 the director of the National Institutes of
18 Environmental Health, Dr. David Rawl. Also
19 invited to that meeting, among many other
20 people interested in PCBs, were
21 representatives from Japan who were to
22 discuss the Yusho incident. Their report
23 at the time struck me as, frankly,
24 confusing in terms of what their
25 conclusions were regarding what contaminant

1 in the oil created the health problems. I
2 was informed by a member of the Food and
3 Drug Administration that the administration
4 was also puzzled and intended to send a
5 representative to Japan to look into the
6 matter personally. In the meantime, I
7 contacted Monsanto's representative in
8 Japan to attempt to get as much information
9 as he could. Unfortunately, after so many
10 months of delay I did receive a package of
11 paperback booklets, all in Japanese, which
12 I, frankly, was frustrated, I couldn't get
13 them translated. Nevertheless, finally,
14 after many years of discussion here, in
15 1975 at a meeting sponsored by the
16 Environmental Protection Agency in Chicago,
17 this was November '75, there was what I
18 believe to be a sort of a final report on
19 the Yusho incident. And the conclusion I
20 was left with was that the oil was
21 contaminated with a high concentration of
22 chlorinated dibenzofurans. I recall a
23 summary made, and calculations made which
24 indicated this concentration was measured
25 in the thousands of parts per million,

1 highly concentrated. I recall a wrap-up
2 discussion, headed by Dr. Voss from the
3 University of Utrecht, and the discussion
4 concluded that the health symptoms were
5 related to the chlorinated dibenzofurans,
6 not to the PCBs. That had been documented.
7 And I last read this in a publication that
8 covered the proceedings of that meeting. I
9 hope that answers your question.

10 Q: Did you learn at any point between
11 1970 and '75, or thereafter, what had
12 caused the leakage of the heating material
13 into the cooking oil?

14 A: I did not.

15 Q: Was it your understanding that
16 there was some sort of break or rupture in
17 the heat transfer system?

18 A: Yes. Some failure in the system
19 permitting the two liquids to mix.

20 Q: Until the report in 1975 to which
21 you have just referred, was it your concern
22 that the toxicity characteristics of the
23 Yusho incident were attributable to PCBs?

24 A: Concern implies that I was in a
25 position to have all the facts with some

1 hard data and final conclusions. I had
2 more questions. Really, I would call them
3 questions rather than concerns.

4 Q: Was one of your questions whether
5 the toxicity characteristics of the Yusho
6 incident were attributable to PCBs?

7 A: More correctly, after talking with
8 our medical department representatives, my
9 questions really became one of could some
10 of these symptoms be due to PCBs and other
11 symptoms be due to something else. That's
12 the kind of gray area I found myself in.

13 Q: So, did you have a question as to
14 whether some of the symptoms evidenced as a
15 result of the Yusho incident were
16 attributable to PCBs?

17 A: That question was in my mind,
18 having no other facts, right.

19 Q: When you assumed your position as
20 of January 1, 1970, was Monsanto the sole
21 producer of polychlorinated biphenyls in
22 the United States?

23 A: To my knowledge, yes.

24 Q: To your knowledge, was the
25 production and the sale of PCBs a

1 profitable business for Monsanto when you
2 took on your position as of January 1,
3 1970?

4 A: It was profitable, yes.

5 Q: After you took on your position as
6 of January 1, 1970, I take it that you had
7 a number of meetings with Elmer Wheeler?

8 A: Oh, yes.

9 Q: And that was for the purpose of
10 your learning or increasing your knowledge
11 with respect to the issues that had been
12 raised with respect to PCBs as well as
13 knowledge about PCBs in general, correct?

14 A: Correct.

15 Q: Did you have the opportunity to
16 review whatever files Elmer Wheeler had had
17 available at that time?

18 A: Yes.

19 Q: Did you review files from Mr.
20 Bergen?

21 A: Some.

22 Q: Did you review his Aroclor toxicity
23 file?

24 A: Yes.

25 Q: Did you review files from other

1 sources?

2 A: Dr. Keller's operation. Some of
3 Dr. Richard's. And some from
4 manufacturing, Mr. Kuhn.

5 Q: Did you read any of the materials
6 that had been prepared by the ad hoc
7 committee?

8 A: Certainly. Mr. Wheeler gave me
9 those.

10 Q: Did you eventually become chairman
11 of the ad hoc committee?

12 A: Sort of. Although we never used
13 the title. I'm a person that called the
14 meetings and tried to direct them.

15 Q: Did the ad hoc committee ever come
16 to be known by any other name than ad hoc?

17 A: No, not that I know of. The term
18 ad hoc only lasted for a few months, until
19 they prepared a report recommending certain
20 actions.

21 Q: I'm sorry, were you finished?

22 A: After that, the people met, but
23 they did not refer to themselves as ad hoc
24 anything.

25 Q: Was one of the recommendations of

1 the report to which you have just referred
2 the creation of the job which you
3 ultimately took on on January 1, 1970?

4 A: I'm trying to recall the contents
5 of that report. And I honestly don't
6 remember if that was the ad hoc committee's
7 opinion or whether Mr. Springgate and Mr.
8 Bergen and their lieutenants, working off
9 this ad hoc document, included the
10 appointment of a manager as part of their
11 recommendations. I don't know where it
12 started.

13 Q: Did Mr. Wheeler tell you in early
14 1970 that research conducted before that
15 beginning of 1970 had determined that the
16 liver was a target organ for PCBs?

17 A: Before 1970 and PCBs? I believe he
18 did.

19 Q: Did Mr. Wheeler tell you that
20 studies had determined that chickens
21 developed reproduction problems from
22 exposure to Aroclor 1242?

23 MR. PREUSS: What point in time?

24 MR. TALLON: This is the same time
25 period.

1 **MR. PREUSS:** Late '69?

2 **MR. TALLON:** Early '70.

3 **A:** Early '70? The timing doesn't
4 strike me as being quite right. In early
5 '70 the chicken exposure studies were on
6 their way. I don't recall when the
7 hatchability problem was detected. I just
8 don't remember the dates.

9 **Q:** Did you and Mr. Wheeler discuss an
10 incident involving PCB contamination of
11 seals in the North Sea?

12 **A:** Yes.

13 **Q:** And do you recall that as part of
14 that discussion Mr. Wheeler told you that
15 the seals were determined to have PCBs in
16 their fatty tissues?

17 **A:** Yes.

18 **Q:** Do you recall what he told you in
19 that regard?

20 **MR. PREUSS:** Other than that?

21 **MR. TALLON:** Right.

22 **A:** That's about the gist of it. They
23 did find the presence of PCBs. He also
24 mentioned that the animals appeared to be
25 emaciated. That's all I recall of that

1 incident then.

2 Q: When you took on your position as
3 of January 1, 1970, did Monsanto have
4 studies under way at Industrial Biotest?

5 A: Yes.

6 Q: Are those the chicken studies to
7 which you just referred?

8 A: That's one of the studies.

9 Q: Were there also studies being
10 conducted on dogs and rats?

11 A: Yes.

12 Q: Did you ultimately come to learn
13 the results of those studies?

14 A: Yes.

15 Q: And was one of the results of the
16 IBT studies the finding that chickens
17 developed reproductive problems from
18 exposure to Aroclor 1242?

19 A: Yes.

20 Q: What reproductive problems were
21 determined to result?

22 A: As I remember, there was a
23 reference to the hatchability of the eggs
24 and some egg shell thing.

25 Q: Do you recall that the studies

1 concluded that the reproductive problems
2 developed from exposure to Aroclor 1242 in
3 quantities as low as three parts per
4 million?

5 A: I do.

6 Q: Do you know if similar conclusions
7 were reached by Dr. Risebrough?

8 MR. PREUSS: On what? Hatchability
9 of chickens at three parts per million?

10 MR. TALLON: Do you know if --
11 well, I'm using the term similar.

12 MR. PREUSS: Okay. Then I think we
13 need -- I'd like an explanation.

14 MR. TALLON: Okay. Are you
15 familiar with the work done by Dr.
16 Risebrough?

17 A: Some of it.

18 Q: Mr. Wheeler gave you a copy of Dr.
19 Risebrough's report in Nature magazine, is
20 that right?

21 A: That's right.

22 Q: And did you review that after you
23 took on your position as of January 1,
24 1970?

25 A: I did.

1 Q: And what do you recall of that work
2 by Dr. Risebrough?

3 A: Dr. Risebrough reported the
4 detection of DDT and PCBs in pelican eggs,
5 as I remember, the brown pelican off
6 southern California, and the observation
7 that in many of the nests, the eggs had no
8 shells or in others the shell was so thin
9 that it broke when the mother bird would
10 try to nest. I also recall that it was Dr.
11 Risebrough's suspicion that PCBs might be
12 the cause of this abnormality.

13 Q: Did you see any relationship
14 between the results of the studies
15 performed by IBT and Dr. Risebrough's work?

16 A: At what point in time, again? Dr.
17 Risebrough's work was --

18 Q: Prior.

19 A: Pretty early. Along comes the
20 chicken work.

21 Q: Right. So, of necessity, after you
22 found out about the IBT chicken test
23 results, did you draw any conclusions as to
24 the relationship between the IBT studies
25 and Dr. Risebrough's work, if any?

1 A: I did draw conclusions. But they
2 were also influenced by a report that came
3 out of the Patuxent, Maryland Wildlife
4 Sanctuary Laboratory. As I remember, they
5 were working with Japanese quail, some kind
6 of quail. I recall talking to the
7 researchers there, Dr. Stickel, husband and
8 wife team. Nevertheless, the final
9 conclusion, and published by that
10 laboratory, is that the wild birds did not
11 seem to be affected by PCBs, but were
12 affected by DDT in terms of their
13 reproduction capabilities. So, I concluded
14 then that our chicken turned out to be a
15 poor example of wildlife, so our tests
16 really didn't tell us much about affect on
17 wildlife.

18 Q: When was the -- or when were the
19 results of the Patuxent study available to
20 you?

21 A: Sometime in 1970. I don't remember
22 the exact dates.

23 Q: After you learned of the results of
24 the Patuxent study, did the -- did you
25 doubt the validity of the IBT work?

1 A: No. I had no reason to. The work
2 to me appeared quite valid.

3 Q: Did Elmer Wheeler give you articles
4 from his files relating to DDT?

5 A: Oh, yes, quite a few.

6 Q: And did he explain to you the
7 reason why he was furnishing you the
8 articles with respect to DDT in connection
9 with your work on PCBs?

10 A: The reason he did that is because
11 many of the reports available to him up to
12 that point in time included DDT along with
13 PCBs in their evaluations of results noted,
14 and the like. This starts even with Dr.
15 Jensen's work in Sweden. So the fact that
16 DDT kept appearing, well, just Elmer
17 Wheeler started collecting DDT literature
18 and had quite a bit of it by the time I
19 showed up.

20 Q: Did you learn, by the way, when
21 Monsanto first heard of the theories or
22 results of work being done in Sweden by
23 Jensen and Widmark?

24 A: I believe it was either late '66 or
25 early '67.

1 Q: Did you ever see internal Monsanto
2 correspondence which related to the initial
3 reports from Sweden?

4 A: I recall some documents, yes.

5 Q: Do you recall seeing memoranda
6 being transmitted to St. Louis by Mr. Wood,
7 who was then based in London?

8 A: Yes. He's one of the
9 correspondents. Yes.

10 (Discussion off the record).

11 MR. TALLON: Mr. Papageorge, I'm
12 going to hand you a couple of exhibits
13 marked at an earlier deposition bearing
14 Exhibit numbers 663, 664, 665, 666 and 667
15 and ask you to just take a moment and look
16 at those. Because this is the only copy of
17 these documents available at this moment in
18 history, I'm going to give them to your
19 counsel for a second for his review.

20 MR. PREUSS: You want him to look
21 at them?

22 MR. TALLON: Yes.

23 (Discussion off the record).

24 MR. PREUSS: Would you like him to
25 read all of them?

1 **MR. TALLON:** The question will be
2 whether Mr. Papageorge reviewed any of
3 these documents after he assumed his
4 position as of January 1, 1970?.

5 **MR. PREUSS:** Looks like the last
6 one --

7 **MR. TALLON:** Is short a page?

8 **MR. PREUSS:** Yes.

9 **MR. TALLON:** Well, with the proviso
10 that the last of those exhibits may be
11 missing a page, Mr. Papageorge, my question
12 for you is whether you recall having
13 reviewed any of those documents which were
14 marked as exhibits in a previous deposition
15 after you took on your position as of
16 January 1, 1970?

17 **A:** I did.

18 **Q:** Can you state as you sit here today
19 which of those documents you reviewed after
20 assuming your position?

21 **A:** All of them.

22 **Q:** Did you get those documents from
23 Elmer Wheeler?

24 **A:** I did.

25 **Q:** Was there a separate file which you

1 were handed or which was delivered to you
2 relating to the work of Doctors Jensen and
3 Widmark?

4 **A:** Not a separate file. All the
5 documents that Mr. Wheeler had that related
6 to the issue were put in a three ring
7 notebook for me, which I took for reading
8 purposes.

9 **Q:** Did there come a time when you
10 accepted as valid the results of the work
11 performed in Sweden by Jensen and Widmark?

12 **A:** Did I personally accept?

13 **Q:** Yes.

14 **A:** By the time I got on board, there
15 was enough information available to lead me
16 to believe that what these researchers had
17 reported was believable.

18 **Q:** In fact, by the time that you took
19 on your position as of January 1, 1970,
20 there was general acceptance within
21 Monsanto of the validity of the work
22 performed by Jensen and Widmark, correct?

23 **MR. PREUSS:** I'm going to object to
24 the form of the question as to what you
25 mean by general acceptance.

1 MR. TALLON: I mean that it was
2 generally accepted.

3 MR. PREUSS: Vague, ambiguous.

4 MR. TALLON: Okay.

5 A: It was believed within the Monsanto
6 technical community, those that know about
7 such matters, that the researchers in
8 Sweden had, indeed, detected materials that
9 analyzed as polychlorinated biphenyls.
10 There was still some skepticism about the
11 actual identities. They were calling them,
12 as I remember, the 1254 types. There was
13 some question about that. And there was
14 also some question regarding the
15 quantification. Yes, we believe it's
16 there, but when they report the amount, we
17 just don't know how accurate that number
18 is. That was the only uneasiness, let me
19 call it, that existed as of 1970, or up to
20 1970.

21 Q: When you referred to skepticism as
22 to the type of PCBs, are you referring to
23 the fact that Jensen and Widmark seemed to
24 be identifying PCBs that looked like the
25 more highly chlorinated PCBs?

1 A: Yes.

2 Q: And you knew when you took on your
3 position that the majority of the PCBs sold
4 by Monsanto either as Aroclors or in
5 mixtures were the more lower chlorinated
6 PCBs by weight?

7 A: Of the total amount, yes.

8 Q: You eventually traveled to Sweden
9 to meet with Jensen and/or Widmark,
10 correct?

11 A: I met with Professor Widmark.

12 Q: And you were accompanied by Dr.
13 Keller and Elmer Wheeler?

14 A: That is correct.

15 Q: The purpose for that trip was what?

16 A: We were seeking an up-to-date
17 report on any additional findings they may
18 have made, any further thoughts regarding
19 their early work and any plans they may
20 have regarding further work.

21 Q: Did you learn any additional
22 information with respect to any of those
23 three topics?

24 A: No.

25 Q: On that same trip you visited with

1 other manufacturers of PCBs?

2 A: Yes.

3 Q: And the purpose for the visit with
4 those manufacturers?

5 A: It was twofold, as I recall. One
6 is to share with them Monsanto's
7 understanding of the environmental PCB
8 issue, and information that we had,
9 information that we generated, and, also,
10 to get from the other producers some idea
11 of what they were doing and what they
12 thought and what plans they may have had
13 regarding further studies or curtailment of
14 production and the like.

15 Q: Did that trip take place in May
16 1970?

17 A: Yes. April, May.

18 Q: And did you also visit with
19 researchers at the University of Utrecht in
20 the Netherlands?

21 A: Yes.

22 Q: At that time they were conducting
23 studies with respect to the effect of PCBs
24 on poultry?

25 A: Yes.

1 Q: After you took on your position as
2 of January 1, 1970, did you contact any
3 government agencies that were looking at
4 the effect of PCBs in the environment or on
5 fauna?

6 A: Well, certainly, we contacted after
7 1970 -- shall we include the full six years
8 or --

9 Q: No. Not yet. Well, let me ask you
10 some more specific questions. After you
11 took on your position as of January 1,
12 1970, did you communicate with any
13 government officials in Georgia?

14 A: Yes. That had to do with milk.

15 Q: And when, to the best of your
16 recollection, did those communications take
17 place?

18 A: Early 1970.

19 Q: Was it your understanding that in
20 Georgia PCBs had been found in cow milk?

21 A: Yes.

22 Q: And was it ever determined what the
23 source of the PCBs in the cow milk was?

24 A: Yes.

25 Q: Was it determined that the silage

1 eaten by the cows had been stored in silos
2 painted in the interior with PCB-containing
3 paints?

4 A: Certainly, there was a situation
5 where silo coatings were involved, yes.
6 There was another situation in which cattle
7 grazing under power lines were
8 contaminated.

9 Q: From what?

10 A: Well, it seems that there were some
11 PCBs mixed with motor oil, used motor oil
12 and the like, and that oil was used as a
13 diluent for weed killer which was sprayed
14 under the power lines to keep the lanes
15 open. The cattle were permitted to graze
16 in that area and ingested the PCBs, plus
17 whatever was in the used motor oil. And it
18 showed up in their milk in Georgia.

19 Q: Meaning that the PCBs had
20 accumulated in the cow's milk production
21 system?

22 A: Well, certainly, it was part of
23 their milk producing system, yes.

24 Q: Did you have any communications
25 after you took on your position with the

1 Department of the Interior? I'm referring,
2 now, basically, to 1970 rather than later.

3 A: Department of Interior. Yes, we
4 had -- I believe that Patuxent, Maryland
5 laboratory is part of the Department of
6 Interior. Then there is a laboratory in
7 Columbia, Missouri that concerns themselves
8 with aquatic systems. So, we were in
9 contact with both of those laboratories.

10 Q: And did you, after taking on your
11 position as of January 1, 1970, communicate
12 with Dr. Risebrough?

13 A: Yes.

14 Q: How soon after you took on your
15 position did you do so?

16 A: It was only a matter of months. As
17 I recall, at the latest June of 1970.

18 Q: And what was the purpose for your
19 communication with Dr. Risebrough?

20 A: Well, the intent was to meet with
21 Dr. Risebrough and his mentor, I guess I
22 could call him, Professor Alcott, to do, in
23 essence, what we tried with Jensen and
24 Widmark, what further work have you done,
25 what further results have you obtained,

1 what further work do you plan to do. And
2 at the same time share with him what we
3 knew. It was a two way conversation,
4 Really, that was the intent of that
5 contact.

6 Q: As part of the learning process for
7 your new position, did you speak with Dr.
8 Kelly?

9 A: Oh, yes.

10 Q: Was Dr. Kelly associated with the
11 group that we referred to or, I referred to
12 as the ad hoc committee?

13 A: No. But Elmer Wheeler, his
14 Lieutenant, represented that function.

15 Q: Represented the function of the
16 medical department?

17 A: Yes.

18 Q: Do you recollect having had a
19 communication with Dr. Kelly in which he
20 reminded you of the discussions you had had
21 while you were plant manager of Anniston
22 regarding chloracne?

23 A: Yes.

24 Q: And do you recall that Dr. Kelly
25 reminded you that prolonged exposure could

1 lead to liver damage?

2 A: Yes.

3 Q: And death, if the liver was damaged
4 severely enough?

5 A: Where it couldn't recover, yes.

6 Q: I take it that that was not new
7 information to you at the time, but a
8 reaffirmation of what was known to you?

9 A: That is correct.

10 Q: I take it that as part of your
11 learning process you also spoke with Dr.
12 Richard?

13 A: Yes.

14 Q: Did Richard, Dr. Richard express a
15 concern to you that PCBs would, like DDT,
16 eventually be banned?

17 A: Dr. Richard did express that
18 thought, yes.

19 Q: And do you know when he expressed
20 that thought to you for the first time?

21 A: January or February 1970. Very
22 early on.

23 Q: Was Dr. Richard assigned to monitor
24 scientific literature that may be developed
25 in the field relating to PCBs?

1 A: Certainly, as director of research,
2 that was one of his responsibilities, sure.

3 Q: Did you and Dr. Richard establish
4 regular communications as part of your new
5 job function?

6 A: Certainly.

7 (Recess).

8 MR. TALLON: Did you share Dr.
9 Richard's concern about the prospect that
10 PCBs could be banned?

11 A: Well, the thought did occur to me.
12 I don't know how to evaluate my depth of
13 concern compared to his. I had a belief,
14 really, that I didn't have enough
15 information to arrive at a hard conclusion
16 that a ban is imminent. So, in my mind at
17 that time I was thinking a partial ban or
18 control -- regulated continued use is the
19 thought that ran through my mind, as
20 distinguished from Dr. Richard's strong
21 belief there will be a total absolute ban.

22 Q: In fact, it was one of the
23 conclusions or recommendations of the ad
24 hoc committee that PCB sales could continue
25 in controlled applications, is that right?

1 A: Yes, sir.

2 Q: Did you at some time, Mr.
3 Papageorge, undertake to make a
4 determination as to what kinds of
5 applications could be controlled?

6 A: Oh, yes. That was a continual
7 study, really. It never finished.

8 Q: Did you have access to information
9 from salesmen as to the kinds of
10 applications in which PCB mixtures as well
11 as Aroclors were being used by Monsanto
12 customers?

13 A: The salesmen were the principal
14 source of this kind of information, yes,
15 sir.

16 Q: Did there come a time when you, in
17 conjunction with others, began to describe
18 applications for the use of PCB products as
19 either open or closed?

20 A: Yes.

21 Q: In order to make a determination as
22 to whether or not an application was a
23 closed application or an open application,
24 was it necessary for you to acquire
25 information about the application?

1 A: Certainly.

2 Q: In the course of your analysis with
3 -- or analysis of applications in which
4 Aroclors or PCB mixtures were being used,
5 did you discuss with Dr. Richard the
6 subject of leakage from hydraulic systems?

7 A: Certainly, yes.

8 Q: And did you also discuss the
9 subject of leakage from hydraulic systems
10 with Elmer Wheeler?

11 A: Yes.

12 Q: And others?

13 A: Yes.

14 Q: It is the case that hydraulic
15 systems do leak, correct?

16 A: Ones not maintained, yes.

17 Q: And there are occasions when
18 hydraulic systems leak simply as a result
19 of parts failure?

20 A: Yes, sir. And this is particularly
21 true of the very high pressure systems.
22 Yes.

23 Q: Were you aware of an incident or a
24 series of incidents at Monsanto's
25 Pensacola, Florida plant involving leakage

1 from lubricant from an air compressor?

2 A: Yes.

3 Q: And to the best of your
4 recollection, when did you learn of that
5 incident or series of incidents?

6 A: When I talked with Mr. Wheeler in
7 January of 1970.

8 Q: And to the best of your
9 recollection, what understanding did you
10 acquire of what had occurred in Pensacola?

11 A: There was a remotely located air
12 compressor, by remotely I mean it was away
13 from the general high traffic area of the
14 plant, which was supplied with a
15 PCB-containing hydraulic fluid out of a
16 storage tank through a piping system into
17 the compressor and back. As I understood
18 it, the piping system developed a leak, not
19 a big one, but a leak. The material in
20 that pipe leaked out of that failure and
21 found its way into the estuary there. And
22 as I recall, there was something like three
23 or five gallons a day, some such number
24 comes to mind, and because of its
25 remoteness it was not observed immediately

1 until the level in the storage tank was
2 observed as being extremely low, and that's
3 when the leak was pinpointed and the
4 discovery made that the material had gotten
5 into the bay. As I recall, this was
6 reported to the Florida authorities and the
7 cleanup effort was made. And, of course,
8 the leak was repaired.

9 Q: Did you acquire an understanding as
10 to the amount of time that lapsed between
11 the initial leak and the discovery?

12 A: It seems to me a matter of days, up
13 to a week.

14 Q: Did you ever acquire an
15 understanding with respect to whether the
16 leak was under high pressure or, instead,
17 sort of dripping out?

18 A: It was not -- it was a little bit
19 more than a drip, but not high pressure.
20 It was a pinpoint stream.

21 Q: When you refer to leaking into an
22 estuary, do you mean that the lubricant
23 entered some kind of sewerage system and
24 went into --

25 A: No. What I meant was the natural

1 surface drainage system that exists into
2 the estuary, which becomes, really, part of
3 Escambia Bay. I think it's Escambia River
4 at that point, but it widens out into the
5 bay.

6 Q: Do you know what the fluid used in
7 that particular air compressor was?

8 A: I think it was Pydraul AC.

9 Q: Do you know what, if anything,
10 occurred in the estuary as a result of the
11 leakage, whether there was any fish kill or
12 effect on other fauna?

13 A: Not in the estuary. Nothing
14 observed.

15 Q: What about elsewhere downstream?

16 A: Nothing observed as a result.

17 Q: And approximately when did this
18 Pensacola incident occur, to the best of
19 your recollection?

20 A: '69. '68, '69, somewhere in
21 there. I believe it was 1969.

22 Q: I show you a document which we'll
23 mark as the next exhibit in order, Mr.
24 Papageorge, and I'm going to ask you, after
25 I show it to you, if you can just take a

1 moment and page through it, or take such
2 time as you want, but I'm going to ask you
3 some specific questions about some of the
4 content of it.

5 (Deposition Exhibit Number
6 1086 mark'd for identification).

7 A: I've reviewed the exhibit.

8 Q: Mr. Papageorge, have you seen that
9 particular document, report of Aroclor ad
10 hoc committee, dated October 2, 1969
11 before?

12 A: I have seen copies of it, yes.

13 Q: Have you seen this particular copy,
14 that is to say, one with the same
15 handwritten notations that appear some
16 places in it?

17 A: I don't recall seeing this
18 particular copy, no.

19 Q: After you assumed your position as
20 of January 1, 1970, did you learn that one
21 of the objectives of the ad hoc committee
22 had been to protect the continued sales and
23 profits of Aroclors?

24 A: That had been the ad hoc
25 committee's recommendation, yes.

1 Q: And did you also become aware that
2 one of the objectives of the ad hoc
3 committee had been to project -- pardon
4 me, protect the image of the organic
5 division and the corporation as members of
6 the business community?

7 A: Yes, sir.

8 Q: By the way, did you ever have the
9 opportunity to discuss the analysis and
10 objectives reflected in this particular
11 report with anyone who had been a member of
12 that committee?

13 A: No.

14 Q: Did you ever learn -- I'm
15 referring, as I go through this, Mr.
16 Papageorge, to various passages in the
17 report, and if it's helpful to you, I'm now
18 referring to the passages under the caption
19 "Probability of success" which begins on
20 page 2 of the report. And I'm wondering,
21 among other things, if you ever learned
22 that it was the belief of the ad hoc
23 committee that there was no practical
24 course of action to effectively police the
25 use of PCB products to prevent completely

1 environmental contamination?

2 A: I was aware of that line of
3 thought. And since I did not see this
4 particular document until years later, I
5 was not aware that the ad hoc committee had
6 addressed it.

7 Q: Had addressed it in writing?

8 A: That's right.

9 Q: Had you ever heard from any member
10 of the ad hoc committee their personal
11 view, or their view, personal or not, that
12 the persistence of Aroclors or PCB mixtures
13 in the environment was high?

14 A: I would better describe it was
15 higher than expected, I guess would be a
16 better understanding. It was thought that
17 somehow the environment would cope with it
18 and result in no detectible amounts. At
19 least no analytical methods then could
20 detect it. So, in a way, with the
21 information and technology available, I'm
22 talking now in the '60's and earlier, that
23 kind of talk did take place.

24 Q: What kind of talk?

25 A: The persistence in the environment

1 as high as --

2 Q: That's what I said, yes.

3 A: With the knowledge -- again, I'm
4 talking early on, before the analytical
5 methods were able to find the low levels
6 that were detected. The understanding of
7 the chemistry of the PCBs by sophisticated
8 scientists was such that these materials
9 are so refractory, by that I mean they are
10 so stable that they're not going to, first
11 of all, be detected out there. They're
12 like pebbles on the beach, you'd have to
13 hit that pebble to find it. And by its
14 sheer presence and unreactiveness, nothing
15 is going to happen. And this is the very
16 property that gives it the fire resistance
17 that everyone was thankful for. It's this
18 resistance to any kind of change or
19 deterioration which is the same property
20 that makes it fire-resistant, even high
21 temperatures don't seem to bother it. I
22 lost my line of thought on that.

23 Q: I think I may have, also. Could
24 you just read the question and the answer
25 back?.

1 (The requested portion of the
2 record read by the reporter).

3 MR. TALLON: In that last answer,
4 Mr. Papageorge, you referred to early on,
5 and what time period are you thinking of
6 when you use the term early on?

7 A: '60's back.

8 Q: Did you ever learn, Mr. Papageorge,
9 that it was the hope of the functional
10 fluids business group to be able to
11 continue to use the lower chlorinated
12 biphenyls in applications amenable to
13 control to attempt to control losses to the
14 environment?

15 A: Yes, that was one of their
16 objectives.

17 Q: Did you understand that to be one
18 of their objectives at the time you took on
19 your position in January of 1970?

20 A: Yes.

21 Q: By the time you took on your
22 position in January of 1970, did you have
23 an understanding as to whether the PCBs
24 being identified in the environment from
25 various sources were likely to have

1 occurred as a result of naturally occurring
2 phenomena, that is to say, in nature?

3 **A:** There was considerable discussion
4 regarding this. I personally didn't feel I
5 had enough information to help me arrive at
6 such a conclusion. And I base that on the
7 line of reasoning that says for nature to
8 form PCBs with the fingerprint of the
9 man-made material is highly unlikely. So,
10 whenever I heard of detection of PCBs that
11 had the fingerprint, the peaks and valleys
12 of the chromatograph similar to the
13 industrial material, I personally felt it
14 was man-made.

15 **Q:** Among people that you had business
16 contact with in the functional fluids
17 group, was it the general consensus that
18 the likelihood of natural origin of the
19 PCBs being found in the environment was
20 low?

21 **A:** I don't recall any industrial
22 representative addressing that subject with
23 me. Because very few of the customers had
24 the tools and resources to make these kinds
25 of studies, and they just did not bring up

1 that type of subject with me.

2 Q: Internally, with respect to the
3 people with whom you dealt at Monsanto in
4 the functional fluids business group or the
5 plasticizer group, was it the consensus of
6 the Monsanto businessmen and chemists or
7 others in the functional fluids and
8 plasticizer group that the likelihood of
9 natural origin of the PCBs being found in
10 the environment was low or remote?

11 A: Yes.

12 Q: Was it also the consensus of that
13 same group that the likelihood of
14 degradation was low or remote?

15 A: The consensus was that the
16 likelihood of degradation would vary
17 considerably depending on the type of PCB,
18 the circumstances in which this PCB would
19 find itself, if you will, the absence or
20 presence of micro-creatures that might feed
21 on it, the presence or absence of
22 ultraviolet light, as an example, the
23 temperatures involved. All of these
24 factors contribute to the degradation of
25 the material, and it would vary from case

1 to case.

2 Q: Was it generally viewed when you
3 took on your position that the more highly
4 chlorinated Aroclors and compounds would
5 degrade either slowly or not at all?

6 A: Yes.

7 Q: Do you know, Mr. Papageorge, if at
8 the time you took on your position in
9 January of 1970 the ad hoc committee had
10 recognized that functional fluid uses could
11 lead to losses of Aroclors into the
12 environment?

13 A: Yes. You have to put the proviso
14 in there, uses that were in systems that
15 weren't properly operated, properly
16 maintained. That thought did occur. So
17 the emphasis then became one of better
18 control of the operations.

19 Q: Whose emphasis became one of better
20 control?

21 A: Monsanto's communication emphasis
22 to its customers was one of don't let it
23 get away from you.

24 Q: Did you ever deal directly with
25 Texas Eastern Transmission Corporation?

1 A: No.

2 Q: Did you ever deal directly with
3 Transwestern Pipeline Company?

4 A: No.

5 Q: Do you know if anyone working for
6 Monsanto ever dealt with Texas Eastern
7 Transmission Company with respect to the
8 kinds of controls you testified to a moment
9 ago?

10 A: Yes, sir.

11 Q: You do know the answer to that?

12 A: Yes, sir.

13 Q: What is the answer?

14 A: I relied on Mr. Norm Johnson as my
15 source of information regarding this small
16 piece of business. And by small, I'm
17 talking about numbers of customers
18 involved. And it was his team's
19 responsibility to communicate in both
20 directions, to the customer and back to me
21 and to Mr. Bergen, whatever transpired in
22 terms of information forwarded and actions
23 taken.

24 Q: You mentioned in your answer a
25 small number of customers. Are you

1 referring specifically to a small number of
2 customers for products sold under the trade
3 names MCS-153 or Turbinol 153?

4 A: Yes.

5 Q: And which customers do you have in
6 mind?

7 A: I, frankly, don't know, other than
8 Texas Eastern as a listed customer. I
9 remember a second one he -- I thought I
10 remembered it started with a C. There
11 couldn't have been more than half a dozen
12 customers. That compares to thousands for
13 other product lines, so --

14 Q: Does the name Columbia Gulf
15 Transmission Company have any significance
16 to you?

17 A: That's the C I was trying to
18 recall.

19 Q: And what about the name
20 Transwestern Pipeline Company?

21 A: I don't recall personally ever
22 seeing Transwestern in any of the documents
23 that crossed my desk. I just don't recall
24 it.

25 Q: Do you have a sense today, or did

1 you have a sense during the period that you
2 had this responsibility between 1970 and
3 1976 of the total volume of sales to this
4 group of customers as compared to the other
5 customers for Aroclors or PCB mixtures?

6 A: The only sense I have is that it
7 was -- compared to the millions of pounds,
8 this was a modest amount. Actually,
9 relatively small, really.

10 Q: Compared to the millions of pounds
11 sold, actually, it was fractional, wouldn't
12 you say?

13 A: Oh, yes.

14 Q: When you took on your position at
15 the beginning of 1970, Mr. Papageorge, did
16 you have any discussions with Elmer Wheeler
17 or others concerning the discovery of PCBs
18 in commercially available electric
19 dishwashing compounds?

20 A: Yes, that did come up.

21 Q: And what is it that you recall
22 today about that subject?

23 A: I recall the customer informing us
24 that PCBs were found in his product, and I
25 also recall the lack of any information

1 that would lead us to find the source of
2 the PCB in that product. And that's where
3 it sort of stood in early 1970. It was
4 still a big question mark.

5 Q: In early 1970 it was still a big
6 question mark?

7 A: Yes, sir.

8 Q: Ultimately, was the source of PCBs
9 in the electric dishwashing detergent
10 determined?

11 A: Yes, sir.

12 Q: What was the source?

13 A: As I recall, it was the carton, the
14 boxes, which were made from recycled paper.

15 Q: And did you ever acquire any
16 understanding as to the process through
17 which the PCBs found their way into the
18 recycled paper?

19 A: We didn't have a specific source,
20 we had what we considered to be three
21 potential sources. One is the carbonless
22 copy paper that was salvaged and recycled.
23 The other was some printing inks contained
24 PCBs, and that could have been a source.
25 And a third was some adhesives contained

1 PCBs and some recycled packaging with
2 adhesives still on them could have been
3 involved.

4 Q: At what point in time did you
5 identify these three potential sources for
6 the presence of the PCBs and the recycled
7 paper?

8 A: As best I recall, it had to be
9 1970. And it was related to cereal boxes.

10 Q: How do you mean, related to cereal
11 boxes?

12 A: As I recall, there was PCBs found
13 in Shredded Wheat. It was traced to the
14 boxes. And in those days the Shredded
15 Wheat, the biscuits were just dropped in
16 the box before they put them in the
17 envelopes, as they now do. And the boxes
18 were determined to be made from recycled
19 paper. And that's when it first hit us
20 that the ordinary cardboard we see was --
21 could be a source of PCB. And then we went
22 back to the dishwasher detergent incident
23 and connected those two thoughts.

24 Q: And it was in 1970 that you or
25 others working with you reached this

1 conclusion with respect to the cardboard
2 boxes for Shredded Wheat?

3 A: Sometime in there, yes.

4 Q: The Aroclor used to develop
5 carbonless copy paper, or the manufacture
6 of it was Aroclor 1242?

7 A: Yes.

8 Q: Do you know what Aroclor or Aroclor
9 mixtures were used for certain paper
10 adhesives?

11 A: Well, it could be any of the --
12 any of them, 42, 48, 54 or 60.

13 Q: Were you ever able to determine
14 which Aroclors were present in the
15 cardboard boxes of either the Shredded
16 Wheat or the dishwashing detergent?

17 A: We did on the Shredded Wheat, as I
18 remember. That was 1242. I don't recall
19 any analysis of the detergent box.

20 Q: Let me show you another document
21 which bears production numbers Tran 016442
22 through and including Tran 016448. And
23 after we ask the court reporter to mark it
24 as the next exhibit, I'll ask you just to
25 take a moment and page through it, please.

1 (Deposition Exhibit Number

2 1087 mark'd for identification).

3 A: I've reviewed the document.

4 MR. TALLON: Are you able to
5 identify this document, Mr. Papageorge, as
6 work produced by the ad hoc committee?

7 A: No, I cannot do that.

8 Q: Do you know if this document --
9 I'm sorry, I thought you were finished.
10 Were you finished?

11 A: Yes.

12 Q: Do you know if this document formed
13 part of the materials considered by the
14 corporate management committee in their
15 meeting which resulted in the creation of
16 the position you assumed in January 1970?

17 A: I have no way to identify this
18 document and tie it in to specific
19 activities that did take place. I note,
20 also, that it appears that it's not a
21 complete document, because on the last page
22 there is a -- the last sentence refers to
23 a following section. So, I have a hard
24 time identifying this particular document
25 with any specific activity.

1 Q: Have you seen this before?

2 A: I have seen it before in matters
3 like this.

4 Q: In other depositions?

5 A: In other depositions. But I still
6 don't know where it originated and where it
7 was used.

8 Q: And from that answer I would take
9 it that you do not know who the author or
10 authors of this particular document may be?

11 A: That is true.

12 Q: In 1970 did you, yourself, conclude
13 that the presence of PCBs in undesirable
14 locations was a fact?

15 A: I have a bit of a problem with
16 undesirable locations. Undesirable in
17 terms of presence of the material or the
18 location is undesirable for other reasons?

19 Q: Undesirable as a result of the
20 presence of the material.

21 A: There is evidence to support that,
22 yes. I believe that.

23 Q: All right. After you assumed your
24 position in January of 1970, were any
25 studies with respect to the presence of

1 PCBs being undertaken at Monsanto's Ruabon
2 facility?

3 A: I associate the Ruabon facility
4 with some early studies regarding
5 biodegradation of PCBs. Ruabon, also, was
6 the site of a Monsanto research
7 laboratory. And they undertook some
8 studies in the United Kingdom that
9 resembled the kinds of studies that the St.
10 Louis laboratory was doing in the United
11 States, that is, obtaining samples of the
12 environment and analyzing it using Monsanto
13 procedures.

14 Q: When you refer in your answer of a
15 moment ago to early studies regarding
16 biodegradation that were conducted at
17 Ruabon, what studies were you referring to
18 in terms of time?

19 A: Time?

20 Q: What time period? In other words,
21 what do you mean by early?

22 A: I would suggest that this was the
23 period '69, '70.

24 Q: Are you familiar with the term
25 bioaccumulation?

1 A: I am.

2 Q: Is that a term that you were aware
3 of before you took on your position in
4 January of 1970?

5 A: I was not.

6 Q: Did you become aware of or familiar
7 with that term after you took on that
8 position?

9 A: I did.

10 Q: How long afterwards would you say?

11 A: Within six months.

12 Q: And at that time what did you
13 understand the meaning of the term
14 bioaccumulation to be?

15 A: It's the increase in presence of
16 PCB in a living creature that continues to
17 be exposed to PCB, either through ingestion
18 or through the environment, the water it
19 swims in and so on.

20 Q: And after you took on your position
21 in 1970, were you given information as to
22 how bioaccumulation occurs in the food
23 chain?

24 A: I have a suspicion we're confusing
25 bioaccumulation with biomagnification.

1 Q: I wasn't, but as long as you've
2 raised the term, what do you mean by
3 biomagnification?

4 A: To me that means that in the food
5 chain, from the littlest single cell
6 creature that is devoured by the biggest
7 creature on up to the eagle, each step of
8 the food chain accumulates PCBs in it, and
9 as you go up the food chain you get a
10 magnification of this quantity to the point
11 where the creature at the top of the food
12 chain has PCB in its tissue, or its system
13 that is magnified many, many times over
14 what it started out to be down at the
15 single cell amoeba, for example.

16 Q: And eagles, for example, accumulate
17 PCBs as a result of eating fish that are
18 themselves contaminated with PCBs?

19 A: Yes. Because they ate some lower
20 life creature that had PCBs. Each step
21 downward had less in it.

22 (Recess).

23 MR. TALLON: Earlier, Mr.
24 Papageorge, I had asked you about the
25 Yushow incident, and I just wanted to

1 follow up that with one document and ask
2 you if you've seen this particular document
3 before. We'll ask the court reporter to
4 mark it.

5 (Deposition Exhibit Number
6 1088 mark'd for identification).

7 A: I've read the document.

8 MR. TALLON: Have you seen that
9 before?

10 A: Yes, I have.

11 Q: Did you communicate at all with Mr.
12 Sido with respect to the information
13 reflected in this memorandum?

14 A: I personally?

15 Q: Yes.

16 A: No.

17 Q: Thank you. Let me show you a
18 document that bears production numbers Tran
19 071711 through 722.

20 (Deposition Exhibit Number
21 1089 mark'd for identification).

22 A: I've reviewed the exhibit.

23 Q: Mr. Papageorge, do you know whether
24 this is one document, two documents or
25 three, or, really, what comprises this

1 exhibit? The numbers are sequential, that
2 is to say, the production numbers are
3 sequential.

4 A: I don't know how you define
5 document.

6 Q: Let's look, for instance, at the
7 first three pages, Tran 071711 through 713,
8 which is entitled "Historical summary of
9 PCB environmental issue by W.B.
10 Papageorge". Is that your work product?

11 A: That is.

12 Q: And can you state when this
13 particular series of three pages was
14 created by you?

15 A: This was created about -- as best
16 I recall, this was created about the fall
17 of 1970, the last quarter of 1970.

18 Q: What was the purpose for which this
19 particular historical summary was prepared?

20 A: I was using this as a text from
21 which I could either read or refresh my
22 memory when I called on some customers of
23 Monsanto.

24 Q: And from what source or sources did
25 you acquire the information in order to

1 draft this historical summary?

2 MR. PREUSS: Just for the record,
3 the historical summary is the first three
4 pages.

5 MR. TALLON: Those are the pages I
6 identified.

7 A: Well, this reflects, really, the
8 condensation of the file that I accumulated
9 through the summer of 1970 on the subject,
10 and reflects my understanding of the
11 situation that I had been sharing with
12 customers earlier in 1970. And I decided
13 to put them down on paper and make it
14 easier on myself so I didn't forget any of
15 the points covered. There was no one
16 document that was the source of
17 information.

18 Q: Was the text of this actually
19 furnished to Monsanto customers? Again,
20 I'm referring only to the first three
21 pages.

22 A: Yes.

23 Q: And did you personally furnish it
24 to Monsanto customers?

25 A: When I was present I would have

1 extra copies with me or they would make
2 copies while I was visiting. I left
3 several copies with the Monsanto salesmen
4 that accompanied me. He, of course, could
5 make additional copies and distribute them
6 freely. There was no restriction on that
7 distribution.

8 Q: Which customers did you either
9 furnish a copy of this to or use it for
10 purposes of your discussions?

11 A: I, of course, don't remember all of
12 them.

13 Q: Naturally.

14 A: Manufacturers of electrical
15 equipment. The automotive industry.
16 Defense industry representatives. There
17 were a few of those. I can't remember any
18 other large categories. There might have
19 been a few individual exceptions here and
20 there. Heat transfer system or so on.

21 Q: Manufacturers of electrical
22 equipment, did that include General
23 Electric?

24 A: Yes.

25 Q: Westinghouse?

1 A: Yes.

2 Q: Any others that you can think of by
3 name today?

4 A: Electronic Components. Sprague
5 Electric. Sangamo Electric. Jard.
6 Electronic Components. I'm sure there are
7 others, they don't come to mind at the
8 moment.

9 Q: And what automotive customers do
10 you recall having furnished a copy of this
11 to or with whom you used this as a basis
12 for discussions?

13 A: General Motors and Ford. Those
14 two.

15 Q: And what defense industry
16 representatives do you recall having
17 furnished a copy of this to or having used
18 it as a basis of discussions with them?

19 A: Ratheon, Curtis Wright, and parts
20 of General Electric. I can't think of any
21 more at the moment.

22 Q: Was General Electric a big volume
23 customer for purchase of Aroclors or mixed
24 products?

25 A: Yes.

1 Q: And Westinghouse, is that true,
2 also?

3 A: Yes.

4 Q: Do you recall actually having
5 furnished a copy of this text to G.E. or
6 Westinghouse?

7 A: Yes.

8 Q: Do you recall when?

9 A: It seems to me it was 1971. I'm
10 having difficulty recalling the specific
11 situation. It was a group of General
12 Electric and a group of Westinghouse
13 people. I don't know if it was in St.
14 Louis or at their sites. It was a group of
15 representatives that were gathered to hear
16 the PCB update, and this was the document
17 that was used.

18 Q: Was this document furnished by
19 itself or was it part of a larger group of
20 documents furnished to G.E., Westinghouse
21 and others?

22 A: Well, the three pages we're talking
23 about was -- stood by itself for G.E. and
24 Westinghouse.

25 Q: For others, was this document part

1 of a larger assemblage of documents?

2 A: We're still talking about the first
3 three pages?

4 Q: Yes, I am.

5 A: Yes.

6 Q: During the time you held your
7 position between 1970 and 1976, was this
8 document ever made part of a larger
9 assemblage of documents to be furnished to
10 customers or for other purposes?

11 A: Not this specific document, no.

12 Q: All of the following pages except
13 for the last one appear to be a part of a
14 document entitled "Monsanto PCB actions in
15 Canada by D.G. Willie", do you see that?

16 A: I see that.

17 Q: To your knowledge, was the Monsanto
18 Canada document ever combined with the
19 historical summary in any kind of
20 compilation of internal information?

21 A: I'm having problems understanding
22 what you mean by a compilation. The
23 package that we're looking at was left with
24 Canadian customers by Mr. G. Willie, after
25 we made the presentation. I made the first

1 three pages, he made the middle and I made
2 the summary statement. For those audiences
3 that we visited in late '70, they got the
4 package immediately, then Mr. G. Willie had
5 additional copies made that he would
6 distribute to those customers that I could
7 not personally visit.

8 Q: You believe that Mr. G. Willie made
9 copies of this entire exhibit available to
10 customers in Canada in 1970?

11 A: That was the intent and that was my
12 understanding, yes.

13 Q: Did you ever furnish a copy of any
14 portion of this exhibit to Texas Eastern
15 Transmission Corporation?

16 A: I personally did not.

17 Q: Do you know whether you ever
18 personally provided a copy of any portion
19 of this exhibit to Transwestern Pipeline
20 Company?

21 A: I did not.

22 Q: Do you have any information which
23 suggests to you that copies of any portion
24 of this exhibit were furnished to either of
25 those two companies?

1 A: Copies of this summary statement,
2 the first three pages were made available,
3 again, to Mr. Johnson's team with the
4 strong recommendation on my part to
5 distribute it widely, don't hold back. And
6 I was led to believe that was done, I have
7 no reason to believe otherwise.

8 Q: When you say you were led to
9 believe that was done, did Mr. Johnson lead
10 you to believe that he had done so?

11 A: That his team had done it. Now, I
12 don't know if he did it personally or
13 whether another member of that group did.

14 Q: Did you ever see any list of
15 customers to whom the first three pages of
16 the exhibit had been furnished, customers
17 that would have been within the group of
18 customers for which Mr. Johnson was
19 responsible?

20 A: No.

21 Q: I take it you have no personal
22 knowledge whether or not Mr. Johnson or
23 someone working for him actually furnished
24 the first three pages to any customer?

25 A: You mean personal specific

1 knowledge that this packet was delivered to
2 so and so on this date at this time?

3 Q: Right.

4 A: No, no different than any other
5 literature.

6 Q: All right. Let me show you a
7 document which bears production numbers STL
8 001523 through 1529 and has been marked in
9 some other context Plaintiff's Exhibit 26,
10 and we'll just mark it with our numbering
11 sequence here.

12 (Deposition Exhibit Number
13 1090 mark'd for identification).

14 A: I have reviewed the document.

15 MR. TALLON: Can you identify this
16 document?

17 A: I believe I can.

18 Q: All right. Would you tell me what
19 you think it is?

20 A: This is the text that Mr. Elmer
21 Wheeler used in making a presentation
22 before Monsanto's corporate management
23 committee in November of 1969 on the
24 subject of PCBs in the environment.

25 Q: Is this a document that you

1 reviewed after you took up your position as
2 of January 1, 1970?

3 A: This is one of the several
4 documents I did review, yes.

5 Q: Did you ever use the terminology
6 direct contamination or indirect
7 contamination when referring to points of
8 entry of PCBs into the environment?

9 A: Direct contamination and indirect?
10 I probably used those terms, yes.

11 Q: In particular, I was referring to
12 the usage of those terms on page 4 of this
13 memorandum. And, then, specifically on
14 page 4, Mr. Papageorge, it's the fifth
15 paragraph from the top of the page or the
16 second from the bottom.

17 A: I have read the references to
18 direct and indirect, and they do fit my
19 understanding of the types of entry into
20 the environment.

21 Q: And direct contamination would be
22 what, in your understanding?

23 A: Well, it's analogous to just
24 dumping a bucket of PCB into the local
25 river, that's direct.

1 Q: And indirect is what?

2 A: Indirect is one where, to give an
3 example, NCR paper in the office waste
4 basket is hauled to an incinerator to burn
5 waste at a municipal incinerator operated
6 at a fairly low temperature, just enough to
7 burn the paper, smoke kind of operation,
8 that's enough to vaporize the PCB without
9 really changing it chemically, they just go
10 up the stack as a vapor. Eventually,
11 that's picked up by the winds and the rain
12 and what have you and lands on earth
13 somewhere, whether it be an ocean or land
14 or river, and that PCB eventually builds up
15 to the point where the analyst can see it.
16 So, that's the indirect route.

17 Q: Is that explanation consistent with
18 your use of the terms direct and indirect
19 as of 1970?

20 A: Yes, I would use those terms to
21 describe that kind of entry.

22 Q: Did Mr. Wheeler tell you that he
23 had, indeed, made the presentation
24 reflected in this exhibit to the corporate
25 management committee?

1 A: Yes.

2 Q: And this particular copy, referring
3 among other things, to the notation on the
4 front page, did this come, so far as you
5 know, from Mr. Bergen's Aroclor toxicity
6 file?

7 A: I hesitate, because there were two
8 individuals in the PCB marketing group that
9 used the expression Aroclor toxicity for
10 their filing purposes. One was Dr. Richard
11 the other was Bergen. It could have come
12 from Bergen, I don't know.

13 Q: Do you know whether the -- there
14 are initials which appear on the front page
15 under the checkmark, and whether those
16 initials are HB?

17 A: I see the H, but I can't make out
18 the next one. I don't know.

19 Q: And do you recognize or can you
20 identify the handwriting that appears on
21 the first page?

22 A: No, I cannot.

23 Q: Let me show you another document,
24 please, Mr. Papageorge. And it is a
25 document which has previously been marked

1 as Plaintiff's Exhibit 24 and has the
2 production sequence of numbers commencing
3 with STR 021938 through STR 021961. We'll
4 ask the court reporter to mark that.

5 (Deposition Exhibit Number
6 1091 mark'd for identification).

7 A: I have scanned the document.

8 MR. TALLON: Can you identify that
9 document?

10 A: I believe I can. This is a copy of
11 a rough draft of a proposed plan for
12 responding to the PCB environmental issue.

13 Q: Have you seen this document before?

14 A: I have seen copies of it, yes, sir.

15 Q: Do you know who the author or
16 authors of this document were?

17 A: I do not.

18 Q: Do you know whether this --
19 whether the presentation reflected in this
20 rough draft was part of a presentation to
21 the corporate management committee in
22 November of 1969?

23 A: That was the intended purpose of
24 this information.

25 Q: And what is the source, or the

1 basis of your statement that such was the
2 intended purpose of the information
3 included with this document?

4 A: Well, there are several indicators
5 that I see here that lead me to do that.
6 For example, on page 12 there is mention of
7 a project manager or the equivalent. That
8 recommendation was picked up, and we saw it
9 earlier in the minutes of the corporate
10 management committee meeting. I don't know
11 how else to confirm that. There is
12 reference to the ad hoc committee and its
13 input, which I believe we saw earlier.
14 That was the beginning of the series of
15 steps taken to prepare for that November
16 meeting. And the previous exhibit where we
17 saw the text by Elmer Wheeler is an example
18 of how the presentation assignments were
19 finally made to several individuals.

20 Q: Was this a document that you
21 reviewed after you took over your
22 responsibilities in January 1970?

23 A: It was after that, but not
24 immediately after. It was several months
25 before I got to it.

1 Q: Is it accurate to say that Monsanto
2 confirmed the presence of PCBs in the
3 environment in mid 1969?

4 A: Yes.

5 Q: Is it accurate to say that Monsanto
6 confirmed the adequacy of the work by
7 Widmark and Jensen in 1969?

8 A: As I said earlier, the adequacy in
9 terms of identifying the materials as being
10 chlorinated biphenyls. The question
11 regarding the amounts reported was still
12 debated.

13 Q: Is it accurate to say that in 1969,
14 so far as you know, Monsanto employees
15 within the functional fluids group viewed
16 PCBs as a world-wide ecological problem?

17 MR. PREUSS: I'll object as
18 over-broad. All Monsanto employees in the
19 functional fluids section?

20 MR. TALLON: I didn't say all. I
21 said that Monsanto employees, which
22 conceivably could include a number less
23 than all.

24 MR. PREUSS: I object as ambiguous.
25 It could be all, it could be something less

1 than all.

2 A: Those employees that were involved
3 with the PCB type products were aware of
4 it, yes.

5 Q: Do you know whether Aroclor 1242
6 contains 7 percent of pentachlorobiphenyl
7 or higher, that is to say, more highly
8 chlorinated phenyls?

9 A: Yes.

10 Q: You do know. And is that the case?

11 A: That is the case. It can vary from
12 batch to batch, that 7 percent is not
13 absolute, but it's about that.

14 Q: It's an average?

15 A: Yes.

16 Q: Do you agree with the statement
17 that in 1969 Monsanto product labels did
18 not carry all information about known
19 effects of PCBs?

20 A: What page is that, sir?

21 Q: 5. Under the caption "Legal
22 liability".

23 A: Are you talking about the third
24 sentence in that paragraph?

25 Q: Actually, the second. Well, yes,

1 I'm sorry, you're correct. That first
2 sentence, only four words long, the
3 sentence beginning "All customers".

4 A: Keep in mind, that's referring to
5 environmental effects.

6 Q: I understand.

7 A: Yes.

8 Q: And do you agree with the statement
9 that all customers using the products,
10 referring to PCBs, have not been officially
11 notified about known effects?

12 A: Again, regarding the environment,
13 that's true.

14 Q: Did you, after you took up your
15 position as of January 1, 1970, become
16 aware of efforts to reformulate certain of
17 the products sold by Monsanto that at least
18 at that point contained polychlorinated
19 biphenyls?

20 A: Yes.

21 Q: And when did you first learn that
22 there would be some consideration given to
23 the reformulation of PCB products?

24 A: Oh, very early on in 1970. By
25 February I was tuned in to Dr. Richard's

1 efforts with his research team to replace
2 the higher chlorinated types, say Aroclor
3 1254 and 1260. That was the initial
4 effort, emphasis.

5 Q: And was Dr. Richard's emphasis to
6 reformulate products that contained the
7 more highly chlorinated PCBs only?

8 A: At that time, yes.

9 Q: At that time. By the way, excuse
10 me, just one other question on the document
11 which is before you, Exhibit 1091. At the
12 end of the document, the last two pages,
13 there is some draft graphs which have some
14 kind of profit curve, do you see those?

15 A: I see those.

16 Q: Did you ever see final versions of
17 charts or graphs that looked like that?

18 A: I have not.

19 Q: In early 1970 after you took up
20 your position, did you learn of any efforts
21 to reformulate products containing PCBs
22 where the ability to control spills or
23 escape of those products into the
24 environment was difficult?

25 A: Yes.

1 Q: And what did you learn?

2 A: Well, I don't know quite how to
3 describe it. There was a lot of research
4 effort going on in the laboratories, tests
5 being conducted to find replacements, say,
6 in the paint applications, the carbonless
7 copy paper application, the substitution or
8 alternative material for the 1254 and 1260,
9 even in the electrical use was looked at,
10 because the emphasis was still on that high
11 chlorinated material. Also, in the
12 hydraulic fluids, those that had the higher
13 chlorinated PCB ingredients. So, there was
14 a multi-directed effort in all of these
15 product lines looking for something that
16 would do as well without the PCBs present.

17 Q: And were the efforts that you've
18 just described under way by the time you
19 took up your position?

20 A: Not all of them. They were phased
21 in as research companies were made
22 available.

23 Q: As best you recall, what
24 reformulation projects were either in
25 consideration or in progress by the time

1 you took up your position?

2 A: Oh, in January of '70, the
3 carbonless copy paper was getting a lot of
4 attention. The hydraulic fluids with the
5 high chlorinated type PCBs were getting
6 attention from that particular group. And
7 the applications in paint and varnish and
8 caulking and the like were getting
9 attention. Those three areas were the
10 starting points.

11 Q: After you took up your position on
12 January 1, 1970, did there come a time
13 where Monsanto was sued civilly by private
14 plaintiffs in connection with its
15 production of PCBs and sale of
16 PCB-containing products?

17 A: Certainly, there were lawsuits
18 after I assumed that position.

19 Q: And you have testified as a witness
20 for Monsanto in cases where it has been
21 sued, is that correct?

22 A: That is correct.

23 Q: Do you have any ability to state
24 the number of different cases in which you
25 have testified at depositions for Monsanto?

1 A: Both trial and deposition?

2 Q: Deposition.

3 A: I have not kept a score sheet, but
4 I would suggest it's a couple dozen.

5 Q: Is the number of trials at which
6 you have testified a lower number?

7 A: Yes.

8 Q: Do you have any ability to state
9 the number of trials where you have been a
10 trial witness for Monsanto?

11 A: Oh, about half a dozen.

12 Q: Have you ever testified before
13 Congress with respect to PCBs?

14 A: Yes.

15 Q: On one occasion or on more than one
16 occasion?

17 A: Just one before a Congressional
18 subcommittee.

19 Q: Was that Congressman Ryan's
20 committee?

21 A: No.

22 Q: What committee was that?

23 A: This was a subcommittee that
24 concerned itself with many matters. I
25 don't recall its exact title, but the word

1 Merchant Marine is in it. And one of the
2 members was Congressman Stutz, is it, from
3 Massachusetts. I think he's now chairman
4 of that same committee currently. At that
5 time he was a member. And he held hearings
6 primarily concerned about the presence of
7 PCBs in the bays and harbors.

8 Q: When do you believe that testimony
9 was given?

10 A: I wish I had a copy of the text
11 that I sent them. I'm going to say, as
12 best I remember, 1971.

13 Q: Did you indicate in your answer of
14 a moment ago that you had furnished that
15 committee with some materials, textual
16 materials?

17 A: Yes.

18 Q: What materials were those?

19 A: It was the text of my comments. It
20 was the document that I read from.

21 Q: Were you at a point designated as
22 the spokesman for Monsanto in PCB
23 litigation?

24 A: On occasion I am. It's not a --

25 Q: It's not a title?

1 A: It's not a title, nor is it a
2 consistent assignment. It varies.

3 Q: After you retired from Monsanto in
4 1986, have you worked as a consultant for
5 Monsanto?

6 A: Yes.

7 Q: And you have been compensated for
8 your time -- I'm sorry, go ahead.

9 A: Let me correct that. I said yes.
10 I've served as a consultant for a law firm
11 that is engaged by Monsanto.

12 Q: And that is work for which you are
13 compensated?

14 A: Yes.

15 Q: And in 1987, you worked
16 approximately 600 hours in that kind of
17 engagement?

18 A: I don't remember. I guess I did.

19 Q: Are you serving as a consultant
20 today?

21 A: I don't really know. I'm just
22 helping out as requested. I'm available.

23 Q: Do you anticipate testifying at the
24 trial of this case, Mr. Papageorge?

25 A: I would not be surprised if I'm

1 asked to testify, yes.

2 Q: Are you aware that as of early 1970
3 degradation studies showed that the
4 principal components of Aroclor 1242 were
5 degrading and what was left looked like
6 Aroclor 1254?

7 A: Yes.

8 Q: And what studies showed you that?

9 A: In 1970 they were -- the studies
10 that were carried out in Ruabon in Wales,
11 that indicated that, and it was confirmed
12 by some studies conducted in St. Louis with
13 St. Louis river water as the media in which
14 the PCBs were observed.

15 Q: Were you satisfied that the number
16 of identifications of more highly
17 chlorinated biphenyls in the environment
18 were actually incidents of 1254 or 1260 or
19 something that looked like 1254 or 1260?

20 MR. PREUSS: What point in time?

21 MR. TALLON: '70.

22 A: 1970? In 1970 the reports, as I
23 received them, would say specifically that
24 PCB detected and analyzed is Aroclor 1254
25 in concentrations of so many parts per

1 million. That kind of report. As time
2 went on, and I would suggest this started
3 happening in later 1970, the laboratories,
4 those that were getting quite sophisticated
5 in analyses of PCBs, would report their
6 results in different language. They would
7 say this PCB we've detected in this amount
8 resembles Aroclor 1254, which told me that
9 all the peaks and valleys that 1254 had
10 were not quite present, so it's a distorted
11 1254 pattern. When I saw reports that used
12 that "resembles" or "similar" to 1254, that
13 gave me a hint that the starting material
14 could have been 1254, but it could also
15 have been a 1248 or a 1242.

16 Q: The number of incidents of reports
17 of 1254 in the environment, to your mind,
18 were out of proportion to the amount of
19 material that was really sold as 1254,
20 correct?

21 A: That is correct.

22 MR. PREUSS: What point in time?

23 MR. TALLON: I'm still dwelling on
24 1970.

25 MR. PREUSS: All right.

1 **MR. TALLON:** Let me show you a
2 document which is dated November 17, 1969
3 and which bears production numbers Tran
4 023298 through 023301.

5 (Deposition Exhibit Number
6 1092 mark'd for identification).

7 **A:** I have reviewed the document.

8 **Q:** Can you identify the document?

9 **A:** Yes.

10 **Q:** What is it?

11 **A:** It's a copy of excerpts from
12 minutes of the meeting of the Monsanto
13 corporate development committee dated
14 November 17, 1969, and addresses the PCB
15 environmental issue.

16 **Q:** Is it your understanding that at
17 this meeting the position which you
18 ultimately filled was created?

19 **A:** Yes.

20 **Q:** And that was as a result of the
21 presentation to the committee by Messrs.
22 Bergen and Springgate?

23 **A:** Yes.

24 **Q:** You reviewed these minutes after
25 you assumed your position as of January 1,

1 1970?

2 A: I eventually saw them within a
3 three month period in early 1970.

4 Q: One of the items listed on the
5 third page of this exhibit, item number 10,
6 is to determine feasibility and cost of
7 eliminating 5/6 chlorine in Aroclors 1242
8 and 1248. Do you see that?

9 A: I do.

10 Q: Do you have any knowledge as to
11 whether such a feasibility study was ever
12 undertaken?

13 A: Yes, it was.

14 Q: And was there a result produced?

15 A: Yes.

16 Q: What was the result?

17 A: There was a redistilled version of
18 Aroclor 1242, which was marketed as Aroclor
19 1016.

20 Q: What do you mean when you use the
21 term redistilled?

22 A: Well, if you'll recall when 1242
23 was initially produced there is a
24 distillation step. In order to make the
25 Aroclor 1016, this distilled 1242 is again

1 distilled in another more sophisticated
2 distillation unit, and the resulting
3 product is one in which the 5 and 6
4 chlorines are virtually eliminated, and
5 some of the 4s. So, it concentrates the 3
6 chlorine type of PCB in the final product.

7 Q: Was the Aroclor 1016 ever made
8 commercially available?

9 A: Yes.

10 Q: What does the prefix 10 indicate?
11 We discussed earlier the meaning of 11 and
12 12.

13 A: There is no meaning attached to the
14 number 1016. When this material was being
15 tested, developed and sampled to the
16 electrical customers, it was referred to as
17 MCS 1016, Monsanto Company sample 1016.
18 And the number 1016 comes out of a
19 laboratory log book where the number is
20 taken out and identifies the project and
21 who the research chemist is and what date
22 this assignment was made. After the
23 product was introduced to the market, it
24 was sold as Aroclor 1242 B, indicating
25 biodegradable version.

1 Q: When was -- I'm sorry, I thought
2 you were finished.

3 A: The communications became quite
4 garbled after a while between the original
5 42 and the 42 B, to the point where it was
6 decided that in order to keep everything
7 communicating properly, all the parties
8 involved, we'd better go back to the 1016
9 number. And that's how we sort of backed
10 into Aroclor 1016.

11 Q: To your knowledge, when was MCS
12 1016 first made available commercially?

13 A: Late '71.

14 Q: And to what customer or which
15 customers was it sold?

16 A: It was sold to manufacturers of
17 electrical capacitors.

18 Q: Does that mean G.E. and
19 Westinghouse?

20 A: Among others.

21 Q: Was it sold to any other customers
22 at that time, to your knowledge?

23 A: Yes.

24 Q: Which?

25 A: Oh, I don't propose to recall all

1 of them. But there is the JARD Company I
2 referred to earlier. Sprague Electric.
3 Electronic Components. Universal.
4 Sangamo. P.R. Mallory. I'm sure there are
5 others, I just can't think of them now.

6 Q: Are those companies that you've
7 just identified all manufacturers of
8 electrical capacitors?

9 A: Yes, sir.

10 Q: To your knowledge, was MCS 1016
11 sold to customers other than customers who
12 were manufacturers of electrical
13 capacitors?

14 A: I don't know of any.

15 Q: Was Aroclor 1242 B made available
16 commercially under that name?

17 A: For a brief period of time, yes.

18 Q: And then it was renamed Aroclor
19 1016?

20 A: Correct.

21 Q: Was Aroclor 1242 B made available
22 to the same group of customers you've just
23 described?

24 A: Yes.

25 Q: Was it made available to any larger

1 group of customers, so far as you know?

2 A: You mean for other applications?

3 Q: Yes.

4 A: No.

5 Q: Was MCS 1016, Aroclor 1242 B or
6 Aroclor 1016 ever included in a mixed
7 product, so far as you know?

8 A: I don't know of any mixed product,
9 no.

10 Q: Just one question, Mr. Papageorge.
11 The members of the corporate development
12 committee identified on the first page of
13 the exhibit we were just looking at, do you
14 understand that to include among the
15 members senior management of Monsanto
16 Chemical Company or the Monsanto Company?

17 A: Yes.

18 Q: And Mr. Bock, who is the chairman
19 of this committee, was he also the chairman
20 of Monsanto?

21 A: He's the chairman of the board of
22 Monsanto, yes, sir.

23 Q: I'm sorry, while we have this
24 document before us, there is a reference in
25 the last paragraph of the minutes on the

1 last page stating that the status of
2 Aroclor 1242 should continue to be tested
3 to determine whether it contributes to this
4 problem. Do you see that reference?

5 A: I do.

6 Q: Do you know whether tests going to
7 the status of Aroclor 1242 were made after
8 the date of this meeting?

9 A: Yes.

10 Q: Were such tests made?

11 A: Yes.

12 Q: And what was the result of those
13 tests, as best you recall it?

14 A: The approach was taken in two
15 directions. One was the biodegradation
16 studies that we talked of earlier, which
17 indicated that the 5 and 6 chlorine type
18 PCBs in 1242 could be identified in the
19 environment. The other was in the -- it
20 was really a program where samples were
21 obtained in the environment and the chemist
22 looked for 1242. That was to determine its
23 presence in the environment. So, those two
24 programs did take place.

25 Q: As a result of the second program

1 you described, was 1242 found in the
2 environment?

3 A: Yes. They were found in the
4 environment near the sites at which they
5 were used and released.

6 Q: Let me show you a document, Mr.
7 Papageorge, which is a two page document
8 bearing production numbers Tran 036319 and
9 320. I'll ask the court reporter to mark
10 it as the next exhibit in order.

11 (Deposition Exhibit Number
12 1093 mark'd for identification)

13 MR. TALLON: Would you take a
14 moment and review that, please?

15 A: I have read it.

16 Q: Can you identify the document,
17 please?

18 A: It is a letter dated August 18,
19 1970, signed by me and sent to a
20 representative of Sprague Electric Company
21 in Massachusetts.

22 Q: Did you prepare this letter?

23 A: Yes.

24 Q: The second page of the letter,
25 actually, the paragraph beginning on the

1 first page and carrying over to the second,
2 purports to break down the component
3 homologues in Aroclor 1242 in approximate
4 percentages, correct?

5 A: I see that, yes.

6 Q: And do you know the source from
7 which you acquired that information?

8 A: It came from Monsanto's analytical
9 research laboratory.

10 Q: The last, or, rather, the
11 penultimate paragraph on page 2 states that
12 test quantities of MCS 1016 have been
13 prepared. Is that the substitute,
14 redistilled product that you were just
15 referring to a moment ago?

16 A: It is.

17 Q: And does this suggest to you that
18 test quantities of MCS 1016 were available
19 by the summer of -- late summer of 1970?

20 A: Yes.

21 Q: One other thing. On the first
22 page, in the second paragraph there is a
23 reference to the -- this is the last three
24 lines of that paragraph, which I will
25 actually read the whole sentence for

1 purposes of completeness. "We can only
2 recommend that samples be representative of
3 the conditions being studied with due
4 consideration given to the low solubility
5 of PCBs, their high density and their
6 tendency to cling to solid surfaces." What
7 did you mean, Mr. Papageorge, when you
8 wrote that PCBs have a tendency to cling to
9 solid surfaces?

10 A: PCBs do have the property of
11 attaching themselves to soil particles, any
12 solid matter, and that clinging is quite
13 strong. And I also describe it, it's
14 difficult to remove that PCB off of that
15 particle, which is one of the challenges in
16 the analytical laboratory, to try to
17 extract that PCB to analyze for it.

18 Q: Did you ever -- I'm sorry, I
19 thought you were finished.

20 A: And I mention that to highlight,
21 really, the fact that when they grab a
22 sample and they want to determine the PCB
23 content, they consider that particular
24 property.

25 Q: Is that a property of PCBs of which

1 you became aware after you took on your
2 position in January of 1970, or is that a
3 property of PCBs of which you were aware
4 before that date?

5 A: I believe I was aware of that
6 property before 1970.

7 Q: Had you ever heard that in
8 Monsanto's labs Monsanto's scientists had
9 difficulty working with PCBs in glass
10 beakers and containers because the PCBs
11 adhered to the sides of the glass vessels?

12 MR. PREUSS: At any time?

13 MR. TALLON: Yes.

14 A: Any time? Initially, that was one
15 of the unrecognized problems, this
16 magnetism, if you will. But once that was
17 determined to be a problem, the chemist
18 found ways to overcome it with the proper
19 solvents and all.

20 Q: When you use the term initially,
21 what time period were you referring to in
22 that answer?

23 A: I'm talking about when they got the
24 procedure out of Sweden and tried to use it
25 in our laboratory and kept getting peculiar

1 answers, they determined that one of their
2 problems, among several, was the fact that
3 the PCBs were clinging to the glassware and
4 not showing up through the instrument.

5 Q: When you indicated that the
6 tendency of PCB is to cling to solid
7 surfaces was a characteristic of which you
8 were aware before 1970, do you have any
9 ability to state when you became aware of
10 that tendency or characteristic?

11 A: It was a gradual awareness. I
12 certainly knew how difficult it was to
13 clean off the concrete factory floor or to
14 clean off of hand rails and door knobs and
15 that kind of awareness. And I was also
16 aware of how it clinged to the limestone
17 pits we talked about earlier in the sludge.

18 Q: At Anniston?

19 A: At Anniston. It clung to those
20 particles and didn't go off with the water,
21 it stayed behind.

22 Q: Let me show you a document, Mr.
23 Papageorge, which is dated March 6, 1970,
24 and it bears production numbers Tran 008420
25 through 8423, which we'll have marked as

1 the next exhibit.

2 (Deposition Exhibit Number
3 1094 mark'd for identification).

4 A: I've read the exhibit.

5 Q: Is that a document that you
6 prepared, Mr. Papageorge?

7 A: Yes, it is.

8 Q: And one that you prepared in March
9 of 1970?

10 A: It is.

11 Q: Was this in response to questions
12 which had been raised by Mr. Durland?

13 A: Yes.

14 Q: And I take it that Mr. Durland was
15 in Tokyo at the time?

16 A: Yes.

17 Q: There is a reference on the first
18 page to waste handling, and in particular
19 you state that "lacking any positive
20 guidelines we have tentatively selected a
21 target of 10 PPB," is that right?

22 A: That is correct.

23 Q: That, of course, is a reference to
24 parts per billion?

25 A: Correct.

1 Q: Can you explain to me how that
2 target level is achieved -- excuse me, how
3 that target level was selected?

4 A: It's primarily based on the ability
5 of the analytical chemist to detect levels
6 down to 10 parts per billion reliably, time
7 after time. Pushing it any tighter than
8 that at that time would give answers that
9 just could not be relied upon. So, really,
10 the analytical method and its
11 reproduceability and reliability determined
12 that for us.

13 Q: So, at that point in history, that
14 is to say, March 1970, technology was
15 available to detect the presence of PCBs
16 down to 10 parts per billion?

17 A: Yes. Now, this is technology
18 available to a manufacturing plant, not to
19 a sophisticated research laboratory. There
20 is a difference.

21 Q: And I take it from your response
22 that a sophisticated laboratory might have
23 access to equipment which could detect in
24 smaller quantities at that time?

25 A: Not only the equipment, it's the

1 expertise of the chemist and the time he
2 could devote. Research chemists can take a
3 month on this sample, a plant chemist can't
4 do that, the conditions are different.

5 Q: And I take it the target that you
6 set here was, therefore, the minimum level
7 of detectability for a plant chemist?

8 A: Yes.

9 Q: Was equipment installed at
10 Anniston, at the Anniston and Krummrich
11 plants to actually conduct detection tests?

12 A: It was installed at the Krummrich
13 plant.

14 Q: When?

15 A: About 1972. Late '72.

16 Q: The corporate development
17 committee, in November 1969, had called for
18 a study of the discontinuance of the
19 manufacture of Aroclors 1254 and 1260,
20 correct?

21 A: Yes.

22 Q: And after meeting with General
23 Electric, that plan was called into
24 question by you?

25 A: That is correct.

1 Q: And that is because General
2 Electric sought to continue to use the more
3 highly chlorinated Aroclors in
4 transformers?

5 A: That's true.

6 Q: Transformers were filled with
7 Aroclors and then sealed, right?

8 A: Aroclors, as one ingredient of
9 several in a liquid that was sealed tight,
10 yes.

11 Q: In fact, the transformers were
12 welded shut?

13 A: Certainly.

14 Q: Had you met with representatives of
15 General Electric by March 1970?

16 A: Yes, we had.

17 Q: And the purpose of that meeting was
18 to discuss the possibility that Monsanto
19 could discontinue the manufacture of
20 Aroclors 1254 and 1260?

21 A: That was one of the subjects
22 discussed, yes.

23 Q: And had you also personally met
24 with representatives of National Cash
25 Register by March of 1970?

1 A: Yes.

2 Q: Did you meet with National Cash
3 Register representatives in St. Louis or
4 elsewhere?

5 A: As I recall, it was in Dayton.

6 Q: And did NCR or National Cash
7 Register had manufacturing facilities where
8 they used Aroclor 1242 in the United
9 States?

10 A: Oh, yes.

11 Q: And in the U.K.?

12 A: Yes. Well -- yes.

13 Q: Does this memorandum indicate to
14 you that by March of 1970 Monsanto was
15 proposing a substitute for Aroclor 1242 to
16 be sold to NCR?

17 A: Yes. In the United States.

18 Q: There is a reference, Mr.
19 Papageorge, on page 3 of this memo, under
20 the title "Biodegradability", that in
21 particular states Aroclor 1242 undergoes
22 slight degradation in sludge containing
23 micro-organisms acclimated to biphenyl, do
24 you see that?

25 A: I do.

1 Q: Did you acquire that piece of
2 information as a result of studies being
3 done at Ruabon and St. Louis?

4 A: And St. Louis. Both locations.

5 Q: And what is the sludge referred to
6 in that sentence?

7 A: The media in which the tests were
8 conducted was, to a layman like me, murky
9 water. There was particulate matter in it
10 that exists out in the natural
11 environment. As I understand it, in that
12 particulate matter exists bacteria that
13 feed off of anything present in that
14 particular environment, and it was found
15 that during the studies that after a period
16 of time these micro-organisms became
17 acclimated or accustomed to the PCB and
18 were willing to destroy it, to consume it.
19 I don't know how else to explain that
20 acclimation bit. What it turns out, as I
21 understand it, is that these organisms will
22 consume any food material that they're
23 accustomed to first, and once that's
24 exhausted, they're forced to go after such
25 things as the biphenyls.

1 Q: What did you mean when you used the
2 term "slight" to modify the term
3 "degradation" in that same sentence?

4 A: That means that portions of the
5 1242 disappeared when the analyst went
6 looking for them.

7 Q: Portions, what does that mean?

8 A: The lower chlorinated PCBs present
9 in the original mixture disappeared.

10 Q: The lower chlorinated isomers?

11 A: Yes.

12 Q: Do you include within the lower
13 chlorinated isomers the
14 monochlorodiphenyls?

15 A: Yes.

16 Q: What about the dichloro?

17 A: That's true.

18 Q: Trichloro?

19 A: Some of them.

20 Q: Tetrachloro?

21 A: A few of them.

22 Q: A few meaning what to you?

23 A: Some of the tetrachloros are
24 resistant because the chlorine is
25 distributed in such a way, apparently, the

1 bacteria can't get at it, whereas some
2 versions of the tetrachloro where the
3 chlorine especially is over at one end,
4 they can get at the easy end to start
5 digesting it and consuming it.

6 Q: Did the micro-organisms have any
7 affect on the pentachloro or more highly
8 chlorinated biphenyls?

9 A: Not detectable.

10 MR. TALLON: We'll break now.

11 (Recess)

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DEPOSITION CORRECTION SHEET

In Re: *Transwestern Pipeline Company vs Monsanto Company, et al.*

Upon reading the deposition and before subscribing thereto,
the deponent indicated the following changes should be made:

Page Line Should read:
117 9 Peakall up at - - - .
Reason assigned for change:
 Spelling

Page Line Should read:
123 20 Cole Weber .
Reason assigned for change:
 Spelling

Page Line Should read:
135 18 - - - , Dr David Rall. - - - .
Reason assigned for change:
 Spelling

Page Line Should read:
143 24 - - - egg shell thinning .
Reason assigned for change:
 Incorrect word.

Page Line Should read:
156 22 - - - Professor Olcott , - - -
Reason assigned for change:
 Spelling

Page Line Should read:
195 7 - - - , a smokey kind of operation,
Reason assigned for change:
 clarification

Page Line Should read:
203 21 in as research capabilities were made
Reason assigned for change:
 Incorrect word.

Page Line Should read:
213 6 - - to keep everyone
Reason assigned for change:
 Incorrect word

Page Line Should read:
286 23 Bayer Company
Reason assigned for change:
 Spelling

William B Papagorgis