COPY

STATE OF INDIANA )
) SS:
COUNTY OF MARION )

IN THE MARION SUPERIOR COURT

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| C. M. BOTTEMA, JR., d/b/a BOTTEMA FARMS, Plaintiff | |
| -vs- | S 778-0603 |
| MONSANTO COMPANY, BLOOMFIELD SILO COMPANY, INC., CONCRETE SILO COMPANY, INDIANA BRAND COMPANY, MADISON BRAND COMPANY, JOHN DOE, and JOHN DOE, INC., Defendants | |

The deposition of WILLIAM B. PAPAGEORGE, taken on behalf of the plaintiff, at the offices of Tierney Reporting Co., 928 Circle Tower Building, in the City of Indianapolis, County of Marion, State of Indiana, on August 6, 1981.

Herman F. Tierney, Reporter

TIERNEY REPORTING CO.
Stenotype and Shorthand Reporters
928 Circle Tower
Indianapolis, Indiana
Phone 638-3559

# I N D E X

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| C. M. BOTTEMA, JR., d/b/a BOTTEMA FARMS, Plaintiff -vs- MONSANTO COMPANY BLOOMFIELD SILO COMPANY, INC. CONCRETE SILO COMPANY INDIANA BRAND COMPANY MADISON BRAND COMPANY JOHN DOE, and JOHN DOE, INC., Defendants | S 776-0603 |

DEPOSITION OF WILLIAM B. PAPAGEORGE

Appearances:

FOR THE PLAINTIFF: Young & Young, by Mr. HOWARD S. YOUNG, JR. and Mr. JOSEPH STEVENSON

FOR THE DEFENDANT MONSANTO COMPANY: Kocap, Kocap, Reese & Young, by Mr. KEITH C. REESE, Mr. JOHN D. COCHRAN and Mr. JAMES GALE

FOR THE DEFENDANT BLOOMFIELD SILO COMPANY: Dutton, Kappes & Overman, by Mr. DAVID W. GRAY

Herman V. Herrey, Reporter

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| Plaintiff | ) | |
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| MONSANTO COMPANY<br>BLOOMFIELD SILO COMPANY, INC.<br>CONCRETE SILO COMPANY<br>INDIANA BRAND COMPANY<br>MADISON BRAND COMPANY<br>JOHN DOE, and<br>JOHN DOE, INC., | ) | |
| Defendants | ) | |

The deposition of WILLIAM B. PAPAGEORGE, a witness produced and sworn before me, Herman F. Tierney, a Notary Public of Marion County, State of Indiana, at the offices of Tierney Reporting Co., 928 Circle Tower Building, in the City of Indianapolis, County of Marion, State of Indiana, on the 6th day of August, 1981, pursuant to the Rules of Indiana Procedure. This deposition was taken on behalf of the plaintiff, in a certain action now pending in the Superior Court of Marion County, Indiana, wherein C. M. Bottema, Jr., d/b/a Bottema Farms is plaintiff, and Monsanto Company, Bloomfield

Silo Company, Inc., Concrete Silo Company, Indiana Brand Company, Madison Brand Company, John Doe, and John Doe, Inc., are defendants.

WILLIAM E. PAPAGEORGE, having been previously duly sworn to tell the truth, the whole truth and nothing but the truth relating to said cause, deposes and says:

DIRECT EXAMINATION,

QUESTIONS BY MR. HOWARD S. YOUNG, JR.:

1 Q Would you state your full name, please?

A William E. Papageorge.

2 Q Would you spell it for the Reporter, please, your last name?

A My name, it is P-a-p-a-g-e-o-r-g-e.

3 Q Where do you live, sir?

A St. Louis, Missouri.

4 Q What is your job?

A I am Director, Environmental Operations, for Monsanto Chemical Intermediates Co., an operating unit of Monsanto Company.

5 Q Would you give me your job history, please, your work history, and start way back when you started to work.

Let's get your education first, what was that?

A I have a Bachelor of Science and Master of Science in Chemical Engineering from Washington University in St. Louis, Missouri.

Q When?

A The Bachelor of Science is 1943, the Master of Science is 1947, and my first professional employment was with Phillips Petroleum Company in Bartlesville, Oklahoma.

Q What did you do?

A I was in the Research Department concerned with improving the recovery of oil from exhausted wells. And then I was assigned to process engineering in the Refining Department of which I helped design equipment for refining petroleum. Following that, I joined Monsanto Company.

Q When?

A In 1951, and I have been with Monsanto Company since then.

My principal assignments have been in manufacturing management.

Q What does that mean?

A That is the supervision of people and work forces involved in the manufacture of chemicals.

Q Sort of administrative?

A Yes, sir.

Q Now, will you give the dates on that, please?

A That was from 1951 until January, 1970, and through the

years, the level of responsibility increased with time.

12 Q What do you mean by that?

A I started out as a supervisor of a small manufacturing unit, and by the end of 1970, I was the plant manager at one of the plants that Monsanto has in Anniston, Alabama.

13 Q Now Monsanto is a chemical company, is it not?

A Yes, sir.

14 Q Makes chemical products?

A Primarily.

15 Q What departments were you in when you started out as a supervisor with Monsanto, what department were you in?

A The department that my initial assignment was with the unit that made Phthalic and Hydride.

16 Q What is that?

A That is the basic chemical that is used to combine with other chemicals to make plastics, paints, primarily.

17 Q I see, well, go ahead and tell me more. After you left that department, you said you became the head of the plant.

Now, would you tell me the various responsibilities you had with respect to products during that interval from '50 to '70?

A I had responsibility for manufacture and sales, packaging and distribution of the Phthalic and Hydride mentioned, various plastisizers, which are materials used to add to plastics to make them, to give them properties that are desirable.

I was also responsible for the manufacture of Phenol, which is also known as carbolic acid; manufacture of rubber additives. These are chemicals that are added to rubber to give the desired properties.

18 Q Well now, when you say "you are responsible" you were, I take it you were in an administrative responsibility?

A Yes, sir.

19 Q Okay?

A Yes, sir.

20 Q Now, I am sorry I interrupted you. I didn't mean to do that.

A That is all right.

Also made chemicals that in the chemical industry are called intermediate chemicals. These are chemicals that don't in themselves end up used by an ultimate consumer, but they are used to make other more useful chemicals.

21 Q What was the name of the plant that you were attached to?

A There were two plants.

22 Q Two?

A In addition to the one that I was assigned as plant manager, that is three, total.

23 Q What were they?

A There is a plant in St. Louis I referred to, Monsanto, and the John F. Queen.

24 Q Could you give me the dates on that that you were--

A I was there from 1951 until 1965.

I was then transferred to the plant in a village called Sauget, Illinois.

25 Q Is that the name of the plant then?

A The plant is called the William G. Krummrich plant.

26 Q Okay, go ahead, the third one?

A The third one is the Anniston plant in Anniston, Alabama.

27 Q Give me the dates of those last two plants?

A The Krummrich assignment was from 19--no, I was in error on the first one--the first one I should have said 1951 to 1964.

The Krummrich plant was from 1964 to 1965, and the Anniston plant from 1965 to the end of 1969.

28 Q And, I see.

A Yes, December, '69.

29 Q Now then, I take it you were not trained as a chemist?

A That is correct. I am a chemical engineer by training.

30 Q What is the difference between a practicing chemist and a chemical engineer?

A The chemical engineer has the same basic chemical education, but he has in addition, a more thorough background in the equipment it takes to process the chemicals.

31 Q All right, now in your training as an engineer, did you get your degree in chemistry?

A No, sir, in chemical engineering.

32 Q I see.

Since 1970, what has been your job?

A From 1970 until 1976.

33 Q What date in '70, can you give me that?

A January 1.

34 Q Just the beginning?

A The beginning of the year, 1970, until about March 1, 1976, I had a couple of titles, but the same job. The initial title was Manager, Environmental Protection, and it was eventually changed to Manager, Environmental Control, and my--

35 Q Where did you do that work?

A In St. Louis.

I have a correction to make. There was a third title I picked up, Manager, Production Acceptability.

36 Q The titles changed, did your work change?

A No, sir, the principal--

37 Q Still worked out--

A Still worked out of St. Louis, and the principal responsibility was related to a product line referred to eventually commonly as Polychlorinated Biphenyls.

38 Q PCB's?

A Yes.

39 Q Polychlorinated Biphenyls, PCB's from now on?

A Yes.

40 Q And if I call it PVC or PVC's or PBC's, I am talking about PCB's.

MR. REESE: Well, you better call it by the correct name, because it will be helpful.

41 Q So that we understand each other, there is nothing about PCV's in this lawsuit.

A Okay.

42 Q Is there?

A Not to my knowledge.

43 Q Not to mine either.

Well, so we understand one another, with that, and if you have any trouble with that Keith, let me know.

MS. REECE: I will, Howard.

44 Q Now the Monsanto Chemical Company, what is the correct name of it?

A Monsanto Company.

45 Q Does it have divisions?

A It has divisions, but we don't, we do use the word division, but it is, we also use the word, operating units.

46 Q Okay, they mean about the same thing?

A I suspect that.

47 Q All right, are they just part of the same general corporation, or are they separate corporations?

A They are part of the one corporation.

48 Q Now what operating unit have you been attached to?

A At what period of time?

49 Q Well, I don't know. Can you tell me, generally?

A Yes. I don't believe I can recall the specific dates,

but in sequence--

50 Q Let's just divide it from 1970 and 1970 back.

A All right, before 1970 I was in the Organic Division, Organic Chemicals Division.

Early in 1970, I was still with the Organic Chemicals Division, and about the mid-'70's, it became, we reorganized, and it was referred to as Monsanto Industrial Chemicals Company.

In 1976, I was transferred to the Monsanto Chemical Intermediates Company.

51 Q Monsanto Chemical Intermediates?

A Intermediates Company.

52 Q Did you continue doing the same type of work from 1970 to the present?

A Up through 1976.

53 Q I see, what occurred in '76?

A In '76, I was assigned an entirely new group of chemicals for which I had environmental and product safety responsibilities.

54 Q Explain what you had been doing before and after '76 as to the type of chemicals?

A From 1970 to 1976, I was responsible for the PCB's, in 1976.

55 Q Alone, took all your time?

A 90-plus percent of my time.

There were occasions when I would, because of my background, would be consulted on other chemicals, but the primary responsibility was PCB's.

In '76, PCB's were assigned to another individual, and I was given a different group of chemicals altogether.

56 Q I see. Did you lose contact with PCB's at that point in '76?

A Not total, but quite a bit.

I was not involved daily.

57 Q All right, what did your responsibility continue to be with PCB's after 1976?

A As an individual to consult with regarding what happened in the past, because of my--

58 Q Experience?

A Exposure experience.

59 Q Between January 1 of '70 and March of '76, what were your duties?

A In a very general way they were, I was responsible for keeping informed of any activities associated with PCB's so that I could properly inform the proper

management people within Monsanto, and at the same time, I was expected to make recommendations regarding what Monsanto should do.

60 Q Now that is pretty general.

A Yes.

61 Q Can you tell me more specifically what you did?

A I, of course, tried to keep up with anything that appeared in print, whether it be the popular press or the technical journals.

I attempted as best I could to keep very closely with the various disciplines involved, such as medical, toxicology, industrial hygiene, chemistry, applications of PCB's.

I was also expected to be familiar somewhat, with the marketplace where they were sold, what kinds of uses generally they were put to.

I was also expected to stay abreast of developments that happened in government, and at the universities.

62 Q Just to summarize, was this mostly your responsibility with respect to the problems that had occurred with the use of PCB's?

A At the time.

63 Q In the environment?

A At the time, it wasn't a matter of problems so much as a matter of discovery and presence.

64 Q You did have problems that you dealt with during that time, did you not?

A I don't know the meaning of the word "problems" from your point of view.

65 Q Well, you had claims from people that they had been injured; that the product was dangerous, that the product was toxic and causing trouble and lawsuits, that is what I am referring to.

A No, I never had that.

The accusations were in the popular press, but I never had anybody call me and say he was hurt and what should I do.

66 Q I didn't ask you if they called you, but did you relate that to a particular type of problem?

A If I heard of such a situation, I would try to respond.

67 Q Was it your responsibility to take charge of that sort of thing and direct and coordinate the activities in Monsanto?

A Coordinate is the appropriate word, yes, sir.

68 Q Pardon me?

A Coordinate is the appropriate word.

69 Q What departments did you coordinate in your working during that period?

A Monsanto's Medical Department, Research Department, Marketing Department, Legal Department, Distribution Department, Public Relations Department, Advertising Department, Personnel Department, all departments, really.

70 Q Dealing with PCB's?

A Yes, sir.

71 Q Now then, did you take somebody, take over somebody's job on January 1, 1970?

A No.

72 Q How was it set up then?

A I don't know that I understand how was it set up.

73 Q Let me strike the question.

I take it it was a new activity that you took over and took charge of?

A Correct.

74 Q Prior to that time, there had been nobody coordinating the work on PCB's that you then took over, is that correct?

A Correct.

75 Q What I want to know is, who all was doing the work that you did, started doing on January 1, 1970 with the

Monsanto Company?

A In January, the level of activity was not as great as eventually it developed. What little activity was occurring was handled by each, by representatives of each of these departments I mentioned, previously.

76 Q That you have talked about?

A Yes.

77 Q To whom did they report on that problem, then?

A It depended on the person and the department he belonged to.

For example, if it was a medical question, it would go to the Medical Director who was head of the Medical Department, and he reported to the Vice President of Administration very high in the organization.

If it was a marketing problem, they would report that, that situation would go to the Marketing Manager, who eventually after several levels reported to the Business Director, the Business Group Director.

If it was the Research Department Department, it would go to the chemist involved with PCB's who would in turn report it to the research organization.

78 Q How did it eventually fiually funnel to one individual higher up?

A Yes, sir, it eventually did.

79 Q And who was that?

A It would be the General Manager of the Organic Division.

80 Q What was his name?

A Howard Minckler.

81 Q St. Louis?

A He used to be in St. Louis.

82 Q For what period did he head up that activity of all of these various problems?

A I don't recall exact dates.

He was in that position in 1970, and it continued until the reorganization took place in which the Monsanto Industrial Chemicals Company was formed.

83 Q When was that?

A As I best recall, that was '73, 1973-74, somewhere in there.

84 Q It was after you took over, then?

A Yes, sir.

85 Q How about before January 7?

A Yes, sir, Mr. Minckler was the General Manager before 1970, but I don't personally recall when he was assigned that position, sometime in the middle to late '60's.

86 Q When did Monsanto first start making PCB's?

A Monsanto as an entity purchased the manufacturing unit that was making PCB's in about 1934-1935.

87 Q What was that entity?

A Swan Chemical Company.

88 Q Where?

A Of Anniston, Alabama.

89 Q And thereafter they started?

A And Monsanto continued the manufacture of PCB's from that point on.

90 Q What was your first responsibility with respect to PCB's?

A My direct responsibility began when I reported to the Anniston plant as plant manager in 1965.

91 Q Was this PCB manufactured at that plant?

A Yes, sir.

92 Q You call that the Anniston plant?

A Yes.

93 Q How do you spell that?

A A-n-n-i-s-t-o-n.

94 Q Where was it located?

A Anniston, Alabama.

95 Q Is that in the same general vicinity as the company which Monsanto purchased?

A That was the facility.

96 Q That was it?

A Yes.

97 Q What also is manufactured in that plant besides PCB's?

A At what point in time?

98 Q When you first went there?

A We manufactured chlorine and caustic soda; we manufactured biphenyl, phosphorus peta sulfide.

99 Q Let me interrupt you, was that plant confined to manufacturing chemicals that went into the PCB's?

A Not confined, no, we made--

100 Q But largely did that, you said chlorides?

A Not largely, if I, about half of the capacity went to PCB's.

101 Q Did that plant continue to manufacture PCB's as long as you were there?

A As long as I was there, yes, sir.

102 Q What other plants would Monsanto have manufactured PCB's in?

A The Krummrich plant at Sauget, Illinois.

103 Q Any other plants?

A No, sir.

104 Q Those two?

A Yes, sir.

105 Q Were you ever connected with the Krummrich plant?

A Yes, sir.

106 Q When was that?

A That was 1964 to 1965.

107 Q What period of time were you at the Anniston plant? Tell me again, if you told me?

A 1965 to the end of 1969.

108 Q Did you have any responsibility with respect to PCB's prior to '64?

A I am confused about the date that implies that I had responsibility from '64 to '65.

109 Q Well, you told me that you went to the Krummrich plant in '64?

A That is correct.

110 Q Did you have any, I believe you told me, but what connection did you have prior to that time, then?

A I am totally confused now.

111 Q Well, tell me when you first had any responsibility with respect to PCB's, tell me, again?

A It was when I took over the management of the Anniston plant in 1965.

112 Q All right, you did not have any responsibility at the

Krummrich plant?

A That is correct.

113 Q And you did not have any contact really with PCB's prior to '64, I mean, '65?

A I had contact, but not responsibilities.

114 Q Okay, what was your contact prior to that?

A Well, I was a user, for example, of equipment that contained PCB's.

115 Q What do you mean, in your capacity as an employee of Monsanto?

A Yes, sir.

116 Q You don't mean at home?

A No. No. Well, I don't know at home. I may have, and didn't know it.

117 Q Well, go ahead and tell me how long that, what that was, that contact?

A That contact is typical of an industrial plant in which varieties of equipment are used, such as compressors, and electrical transformers, and all kinds of heat equipment, and on occasion, I would be involved with an operation that had a piece of equipment, that used PCB's.

118 Q Okay.

A So that would be my contact.

119 Q I see.

Now did you have any kind of a program prior to 1970, January, which studied the toxic effects of PCB's?

MR. COCHRAN: Howard, you mean he personally, or Monsanto?

120 Q Monsanto.

A Yes, Monsanto had a program that was typical of the period.

121 Q Just tell me what it was?

A It was the testing of a material, PCB's in this instance, to get enough information that would guide us in the proper methods of handling, labeling, storage, and this included the battery of tests that are given to industrial chemicals which are commonly referred to as the acute toxicity testing, in which the amount of material that will be toxic to half of a group of test animals as determined, and is related to non-common materials.

There are tests conducted to determine irritation of skin, irritation of the eyes, irritation of the respiratory system.

122 Q Are you talking about in animals?

A In animals, yes.

There were, in the case of PCB's, as I remember, also some skin tests conducted with human volunteers.

123 Q When did that program start, the testing program?

A As best I remember, in the '30's-'40's period, and began some repeat tests which were made in the '50's.

124 Q Was it an ongoing continuing thing, or what?

A It was a situation where we would conduct a test, get the results, and take the appropriate labeling and handling action, and then as the technology and testing would change through the years, there was a repeat of the test to see if the data was the same, the information would be the same.

125 Q What brought on the testing program? What caused it to be set up?

A That is normal, that is done for all chemicals, industrial chemicals.

126 Q Who was in charge of that, during those years?

A That would be the Director of Monsanto's Corporate Medical Department.

127 Q Who was he?

MR. REESE: What period, Howard?

128 Q Well, you mentioned '30's, '40's, '50's?

A Dr. Ernet Kelly was the Director of the Medical Department, and he joined Monsanto at about that time in the middle '30's.

129 Q Is he still living?

A Yes, he is.

130 Q St. Louis?

A Yes, sir.

131 Q Is he still active in that responsibility?

A He is retired from Monsanto.

132 Q Who is in charge of that testing program after he left it?

A Dr. George Roush is now the Director.

133 Q When did he take over?

A I don't recall the exact period, 1973-1974, somewhere in there.

134 Q He still has that responsibility?

A Yes.

135 Q Were reports made from time to time of the test results regarding PCB's?

A Yes.

136 Q Would you state in a general way what the nature of those reports were?

Well, strike the question.

Were they compiled from time to time in any one place or a volume or book or a file, those reports?

A It would be in the Medical Department's files; there would be typically summary reports of the various tests transmitted via company memorandum, to the people who would have a need to know this information, such as the manufacturing people who manufactured it at the plants, the individuals who would design the labels, what wording should appear on the product label.

They would receive copies of this. This would be summary statements prepared and included in any product literature that was prepared to give to potential customers or active customers.

137 Q But in a general way, you have a central location where those reports are collected and kept and maintained?

A Yes, sir.

138 Q Are they in the custody and the care of the Directors Kelly and Roush?

MR. COCHRAN: Are you talking about right now?

139 Q Well, were they when Kelly was there, and are they now--well, strike the question.

Who has got custody?

MR. COCHRAN: Are you talking about right now?

140 Q Right now?

A I don't know now.

141 Q It would be within the province of the Medical Director's Department, is that right? Would that be correct or not?

A I don't know, right now. I haven't been involved.

142 Q The last time you knew where they--

A They were in the Medical Department when I was last involved.

143 Q How long ago was that?

A In 1976.

144 Q Now you mentioned labeling?

A Yes.

145 Q Do you have any department that works on labels for this material, PCB's?

A Yes, sir.

146 Q What was that department called?

A Just a small group of people in our Corporation Distribution Department which is the department that moves the product to the marketplace.

147 Q I presume they worked on all labels for all your products?

A Yes, sir.

148 Q What is that called? Some name they have?

A They probably do, I don't know that it is official. I just refer to them as the Labeling Section. I don't know if that is correct or not.

149 Q Who was in charge of the Labeling Section in 1960 to 1970?

A I can only speak for the period closer to 1970. I don't, I can't go back to 1960, personally.

150 Q What was his name?

A Robert Sibo.

151 Q All right, during that, that was in the '60's to '70's, how about in the 1970's?

A He is still.

152 Q Still the man?

A Still there, yes, sir.

153 Q The '60's, did you have any input with respect to labeling of PCB's?

A No.

154 Q Did you, after 1970?

A Yes.

155 Q January?

A Yes.

156 Q What input did you have?

A I was involved in the additions to the labeling that were considered necessary, based on new information that we were getting.

157 Q So you would modify your labels from time to time?

A Oh, yes.

158 Q You would be involved in that?

A Yes, sir.

159 Q Are you familiar with the type of labeling that was used with PCB's prior to 1970.

A Yes, sir.

160 Q Would you state to me, please, what type of labeling that you used prior to 1970 for PCB's?

A I am assuming when you say involved, you mean the wording on the labeling?

161 Q Yes, thank you.

A I of course don't recall the exact words, but there were statements there referring to avoiding prolonged breathing, having adequate ventilation, avoiding skin contact, washing hands thoroughly; those are the key statements as I recall, regarding safety, product

safety.

162 Q What particular danger were you trying to warn of when you said, avoid breathing, adequate ventilation, skin contact?

A Earlier, when I mentioned the automatic toxicity testing, the animal studies indicated that the PCB's could cause skin irritation as well as mucus membrane irritation, and as a result of the animal studies, we extrapolated that the caution that people should not get it on their skin, and avoid breathing too much in the way of numbers.

This was the basic piece of information that led to that wording, as well as our plant experience, in which we determined that those individuals that didn't wear gloves and didn't wash their hands would get the chapped hands effect, or the reddening of the skin.

So we passed that on the customers by putting it on the label.

163 Q Did this particular department keep, make reports and keep records with respect to the types of labels that were put on PCB's during the '60's?

A Yes, sir.

164 Q Where are those records kept?

A I personally do not know.

165 Q Well, when you were familiar with them, do you know where they were kept?

A The labels in which I had a specific interest at the time were in the possession of Mr. Siko, where he stored them permanently, or from where he retired them, I do not know.

They would be on his desk or in his desk drawer when I would arrive in his office.

166 Q All right.

A That is all I know.

167 Q Excuse me, was there any other danger, or, yes, any other danger that you were attempting to warn the public about, or your purchasers with your labels during the '60's than what you have said, breathing, skin contact, irritation?

A There were no other known dangers.

168 Q All right, now you, during that time, you were conducting these toxicity tests?

A Yes, sir.

169 Q During that, the '60's, did you have any testing program with respect to the transfer of PCB's from one material to the other?

A Not to my knowledge.

170 Q Did you have any testing for the effect of ingestion of PCB's during the '60's?

A During the '60's?

In the latter part of the '60's, there were some long-term studies started.

171 Q Would you be a little more specific when you say the latter part, please?

A About 1968, Monsanto started a program which was aimed at trying to determine whether or not PCB's could cause any harm to animals and birds.

172 Q By what--excuse me.

A Over the long term, not the short tests that I talked about earlier; this is lifetime exposure for the test animals, for example.

173 Q Are you talking about ingestion?

A Yes, sir, feeding studies.

174 Q That is what I mean.

A Feeding studies.

These tests were started in, as best I remember, '68, and as is normal for this kind of testing, we started with preliminary testing to determine what levels of exposure or feeding to use for the long-term

study.

175 Q You didn't set up those tests, did you?

A I didn't, no, sir.

176 Q But you are familiar with them?

A Yes, I, that was one of the first things that I looked into when I--

177 Q What prompted those tests?

A The tests were prompted because of the reports Monsanto received that there were some scientists discovering PCB's in the environment.

The question then was raised, they are there; they probably are there. We will confirm that, but if they are there, what harm are they doing, if anything.

178 Q What reports, you say reports from scientists?

A Yes, the principal reports, there were two reports about that time that were known to Monsanto, one was a report from the University of Stockholm that the researchers there at the university there were detecting PCB's in many places, including pine needles, infant hair, as I recall, feathers from an eagle in a museum.

There were many many samples taken, and PCB's were alleged to be present. This was one report that

started this interest.

There was another report that came out of the University of California at Berkeley, Dr. Robert Risebrough--I am not too sure how he spells it, R-i-s-e-b-r-o-u-g-h, something close to that--he reported finding PCB's in the area in which the brown pelicans and seals off of southern California inhabit.

179 Q Anything else?

A That is all I can recall at the moment, the early reports.

180 Q Those reports inspired this testing?

A Yes, yes.

181 Q Now what part of '66 are you talking about, when you started this program?

You said in '68, you said the latter part, didn't you?

A As I remember, I wasn't personally there, so I didn't know exactly when.

182 Q Who ordered this testing program set up, you know?

A This was ordered by Dr. Kelly, and he told his staff members to design the testing program, and the staff members attempted to contact government agencies as to what would be appropriate, and did not get any assistance

because no government agency at the time--

183 Q Well--

MR. REESE: Let him finish his answer.

MR. COCHRAN: Let him finish his answer.

MR. REESE: What was his question, Mr. Reporter?

THE WITNESS: Please.

(The preceding question was read by the Reporter as follows: "Who ordered this testing program set up, you know?")

MR. REESE: You go ahead and finish your answer. Do you want your answer read to you?

MR. YOUNG: I think he finished it.

MR. REESE: Before you interrupted.

A I was trying to establish that this was a new field for the industrial chemicals; no precedent was available to guide Monsanto; it was a frustrating experience.

184 Q Well, my question was simply who ordered, that was the question. I think you have answered my question.

Now tell me and we will get into that a little later, what had been done before, and as a matter of fact, I will ask you right now, what had you had, had you ever had any such testing programs prior to this time as to the toxic effect, if any, of ingestion of

PCB's in living creatures?

A No, sir, which was typical of all industrial chemicals.

185 Q What was PCB's used for up to the time, what were they?

A I will attempt to cover all the uses, but I am sure I won't remember all of them.

186 Q I understand.

A There were many uses.

The initial use was as a liquid in electrical equipment to cool the equipment when it is operating.

This is referred to as the dielectric use.

As a liquid in heating equipment, used to convey heat from a source to a use.

187 Q Was that used in the food industry?

A It was, at one time.

188 Q At what period of time was it used in the food industry?

A I think it began sometime in the '60's. I am not familiar exactly when, and it continued until 1971 or '72, somewhere in there. That was when it was terminated.

189 Q That is when you discontinued selling to the food industry, I assume?

A Well, we discontinued selling to the food industry in 1970, as I remember.

190 Q That was one of the first things you did, as I remember?

A Correct. There was another use in, as a fluid in hydraulically driven equipment, in which a fire-resistant fluid was mandatory.

191 Q Example?

A To operate the equipment in a die casting plant where hot molten metal is manipulated down conveyor systems or handled, these systems had to have a fire-resistant fluid as distinguished from the mineral oils such as you find in your automobile brake system.

192 Q Go ahead.

A All right.

Those are the three principal uses in equipment.

There was another category which Monsanto referred to as the plasticizer use which really means miscellaneous use, all the other uses.

193 Q Go ahead.

A In those applications, the PCB's were blended with other chemicals to provide certain qualities such as resistance to acids, resistance to water, long wearing from abrasion and rubbing.

They did not peel or flake or dry out; long-lasting

properties in plastics, caulking materials, paints and coatings, lacquers.

There was another use that was rather unique, which was one of the many ingredients used in the making of the carbonless copy paper--you may recall--this is the paper that involves two surfaces facing each other, and the ballpoint pen breaks the minute capsules and releases the ink to make the imprint on the second copy.

I think I have covered most of the applications in a very broad way here.

194 Q All right.

Now then, with respect to the Medical Department, what files did they keep on, what did they put in the files with respect to PCB's?

A I am not familiar with everything they kept in their files, and I am assuming you are talking now in 1970?

195 Q Yes.

A I do know that they kept in those files the results of any testing regarding PCB's they were aware of that they conducted through their sponsorship and initiative, or read in the literature.

196 Q Now you mentioned, or I asked you about the food industry. What applications did PCB's have to the food

industry?

A None directly that I know of--oh, I am sorry.

197 Q How was it used in the food industry?

A I am sorry, I had forgotten it was used as a medium for transferring heat in packing and cooking equipment in the food industry.

198 Q How was that done?

A A typical installation involves a reservoir of PCB's in rather remote parts of a factory, or a food plant which is heated by say an oil or gas fire to verify temperatures which the PCB's could withstand, and the hot PCB's were then piped to the point of use, whether it be a cooking kettle--

199 Q I see.

A Or an oven, and, to heat the contents to perform the cooking.

200 Q Well, so that the food then would come in contact with the pipes through which ran the hot PCB's and transferred the heat from the PCB's to the food, heated the food, in other words?

A The food would not come in contact with the pipes themselves. The pipes would be under some plate of steel, let's say, for example, and the loaves of bread would be

above.

201 Q How about liquids?

A Liquids, in some instances, the pipes containing PCB's would be in the liquid.

202 Q Right, so if you had a leak it would get in the food?

A If there was, yes, I was thinking--yes.

203 Q All right, now I want to ask you some questions, Mr. Papageorge, am I pronouncing that correct?

A That is okay.

204 Q What is better, what is correct?

A Papageorge, that is what I say. I don't know that it makes it any more right.

205 Q Mr. Papageorge, did anyone else in the country make PCB's other than Monsanto in a substantial way?

A I don't know what you mean by "substantial".

206 Q 90% of it or something like that?

A Someone else make 90%? I am sorry.

207 Q Did anyone else make PBC's?

MR. REESE: PCB's.

MR. YOUNG: You correct me.

MR. REESE: I will.

A I was informed that on occasion some companies, Coastal

Chemical, Geneva Chemical, were reported as having made PCB's.

I also am aware that some PCB's were imported from the European producers.

I have no way of personally knowing how much and for what periods of time, and I cannot think.

208 Q Would it be fair to say that Monsanto had 90% or more of the market of PCB's in this country during all of the time that it manufactured them?

A I don't know that I can--90--I don't know that I can support 90%.

209 Q You don't know about that?

A We were a major producer is really all I know.

210 Q Do you know of any other major producers?

A No, sir, not in the country.

211 Q How as a matter of fact, you didn't have much foreign competition on account of tariffs and that sort of thing, did you?

A I am not qualified to say whether tariffs would be--

212 Q Well, leave the "tariffs" out of that question.

Did you have any substantial foreign competition?

A I don't know.

213 Q You don't know of any?

A No, I don't know the effect of the foreign material in this country on Monsanto's.

214 Q Now is there more than one type of PCB's?

A Well, it depends upon your definition of Polychlorinated Biphenyl.

215 Q PCB's.

A The material in industry has never been a pure chemical product. It has always been a mixture.

216 Q Right.

A Of a family of chemicals.

217 Q Now then, how many different--did you have a particular, any trade name for PCB's that you manufactured?

I was asking you about a trade name.

A There were several trade names that belonged to Monsanto.

218 Q Was Aroclor one of them?

A Yes, sir.

219 Q What is the correct pronunciation of that?

A Aroclor, A-r-o-c-l-o-r.

220 Q Does that also have a name of Therminal?

A Therminal is the name applied to the mixture sold for heat transfer purposes.

221 Q Is it confined to that?

A Yes, sir.

222 Q Is the chemical makeup any different than that of the Aroclors?

A I don't want to confuse you.

The Aroclors that were designed for the electrical use were generally of higher quality than the Aroclors used for heat transfer purposes.

This does not mean that many times a high quality material was not sold as a heat transfer fluid.

223 Q All right, but Therminal is the term used for Aroclors that was used for heat transfer?

A Correct.

224 Q Do you describe your Aroclors by numbers?

A Correct.

225 Q And how about No. 1254, what is that?

A The 1254 designates a mixture of PCB's in which the chlorine content averages typically 54% by weight of the total mixture.

226 Q So that the last two numbers in the number designation of Aroclor indicate the chlorine in the content by volume?

A By weight.

227 Q By weight?

A Yes, sir.

228 Q What do the first two numbers refer to?

A That was arbitrarily chosen to represent Biphenyl, Chlorinated Biphenyl.

229 Q What about Aroclor 5460?

A That is not a PCB.

230 Q It is not?

A No, sir.

231 Q What is it?

A That is a Chlorinated Terphenyl.

232 Q What is the difference between the two, as to use?

A The Terphenyls were never used for the major uses that the Chlorinated, that the PCB's were put to.

For example, they were not used in electrical equipment, heat transfer, hydraulic systems.

The Terphenyls generally found their way in the miscellaneous use in which a solid material was required as distinguished from the liquids that the PCB's are.

233 Q All right, so they would be more solid, in other words?

A Yes, sir, they are heavy.

234 Q The 1254 is a liquid?

A Correct.

235 Q Does it ever come in a, does it ever become solid?

A Not to my knowledge. I have never seen it.

236 Q Are you familiar with Cumar?

A I have heard of the expression.

237 Q What is Cumar?

A Well, to the best of my knowledge, as I understand it, it is a trade name which belongs to some chemical company, and I am not certain just who.

I believe it is Neville Chemical, I am not certain. And as I understand it, it is a resin.

238 Q A what?

A Resin, r-e-s-i-n, a plastic kind of material, and that is all I really know about it.

239 Q Do you know that Aroclor is used in that?

A Whether it was used in Cumar or not in the '60's, I have heard the expression Cumar used in a different way from what I described to you.

I am told that it is used to describe a material that is used for coating.

240 Q Right, but my question is, did you know that Aroclor was used in the manufacture and makeup of Cumar.

MR. COGRAN: Are you talking about now, at this moment?

241 Q Not now, in the '60's?

A Oh, I was never aware of it in the '60's. No, I did not know anything about it.

242 Q I didn't mean what you knew about in the '60's, but I want to ask you did you know, if in the '60's, Aroclor was used in Cumar?

A I was told this by some attorneys in Monsanto.

243 Q When did you first learn that?

A 1970, middle of 1970, about March, April, is the best I recall.

244 Q I take it you had nothing to do with the sale of this product?

A That is true.

245 Q Or the--

MR. COCHRAN: Which product are you talking about?

246 Q Aroclor, the PCB's?

A When you say nothing to do, I don't know what you cover by that.

247 Q Well, now, you tell me, did you have anything to do with the sale of it?

A If by "sale" you are talking about packaging and loading it on trucks and sending it to a customer, if that is the sequence of events, I was involved in the early part.

And later, starting in 1970, I was in my coordinating job, I was aware of some of the marketing activities, not all, but some of them.

248 Q In the early part, you are talking about in the '60's when you were chief chemist?

A I was at the Anniston plant.

249 Q At the Anniston plant?

A Correct.

250 Q And at that time, you had something to do with labeling, you assisted in that, is that what you are telling me?

A Yes, sir.

251 Q And that would contain warnings and that sort of thing as to any toxic effects or dangers about the product?

A Yes, sir.

252 Q Did you not have to know for what uses this, or what purposes this Aroclor was, and PCB's were being used for, in order to make a proper label?

A Not necessarily. The proper methods of handling had nothing to do with it, and used--

MR. REESE: Howard, let him finish his answer, please.

253 Q I am sorry, you go ahead and finish. Did you finish?

A I believe so.

254 Q All right, who, in your company then sold Aroclor to the people who made Ozmar?

A I do not know.

255 Q Did you have any responsibility for instructing the Sales Department of your company as to the proper uses of PCB's?

A Not proper uses, no.

256 Q Did anyone in your company advise the Sales Department as to what the proper uses for PCB's were in the 1960's?

A I am not aware; I don't know.

257 Q Is your answer the same as to the 1970's?

A In 1970, we terminated the sales of PCB's to these miscellaneous uses, if that is part of instructing the sales people, yes, in 1970, we did instruct.

258 Q You started in by "we", yourself?

A Well, I was part of a group of people involved, yes.

259 Q Do you know whether they were given such instructions prior to you starting to instruct them?

A I do not know.

260 Q Whose job was that if it had been done?

A It would depend really on the situation, if it were a medical situation, it would come from the Medical

Director; if it were say a chemical situation, it would come from the research people.

261 Q Well, whose job would it have been to advise the Sales Department with respect to say the toxic effects of PCB's?

A It would be the Medical Director's responsibility.

262 Q Okay, were there any patents issued for PCB's?

A Yes.

263 Q What patents were issued?

A I recall a patent that was issued to the General Electric Company.

I don't remember the dates for the use of PCB's in electrical equipment. And as best as I recall, there was another patent issued to the National Cash Register Company for the use of PCB's as an ingredient in the carbonless copy paper.

264 Q Were any patents issued on PCB's just on the product itself, not the applications of it?

A Not to my knowledge.

265 Q How about the company you bought that made PCB's, did they have?

A Not to my knowledge.

266 Q Is that a patentable thing, that formula?

A I am not a patent authority, but the chemistry is so

basic I would suspect it isn't.

267 Q How about trademarks, do you have trademarks for any of your named products?

A Yes, the trademarks as I recall were registered.

268 Q Is Aroclor registered with the trademark?

A I believe so, yes.

269 Q Were separate trademarks issued for the different types of Aroclor that you sold?

A Not that I recall, no.

270 Q Just the same Aroclor?

A Correct.

271 Q How about Therminal?

A Correct, Therminal.

272 Q Were any other trademarks issued for any other Aroclor than Therminal and Aroclor?

A I find the question puzzling.

MR. COCHRAN: Issued to Monsanto?

273 Q Yes.

MR. REESE: You want to hear the question, Bill?

MR. YOUNG: Let me rephrase it.

274 Q Did Monsanto secure a trademark for any other name that

applied to Aroclor, PCB's, I mean?

A All right, I think I know now.

There was another trademark or a couple that I recall, Satovvoc.

275 Q What was that?

A That was a fluid used in vacuum pumps, vacuum systems which contained PCB's. They were not 100% PCB's.

There is another trademark which is Monsanto's called Pydraul which was used for a line of hydraulic fluids which contained PCB's as one of several ingredients.

276 Q Now when was the first claim for loss made because of the use of PCB's?

MR. REESE: If you know.

A I don't know.

277 Q You heard your lawyer tell you how to answer that.

MR. REESE: No, I didn't tell him how to answer.

A That was the answer I arrived at.

278 Q Who knows about that?

A It would be our legal staff at Monsanto.

279 Q When was the first claim that you know of that?

MR. COCHRAN: Against Monsanto?

280 Q Right.

A I could be wrong, but as best as I recall, it was some dairy farmers in Ohio who filed a claim against Monsanto in '71--'70, '72, somewhere in that period. I have forgotten.

281 Q That was the first one you heard of?

A That is the first I recall, as best as I recall.

282 Q Did you have any prior to that time? Had you received any complaints regarding the impact of PCB's on the environment, including animal life?

A I don't know that I would call them complaints, but I had read reports.

For example, I mentioned earlier the University of Berkeley report from Dr. Risebrough about the pelicans and the seals in California.

283 Q That was in '68?

A '68, yes, sir.

284 Q What did you do after you read these reports, if anything?

A That is what triggered our toxicity study program, the expanded study program.

285 Q What did you include in that toxicity study or program?

A I don't know that I understand what you mean by "include".

286 Q Well, you said expanded, what did you include that you hadn't included before?

A They were long-term feeding studies which covers the normal life span of the rat; the feeding studies on leghorn chickens, and also, a reproduction study on rats and chickens, three generations reproduction study on the rats.

287 Q When were those studies done?

A The work started in 1968, and the final reports were available in about 1972 or so.

288 Q You had interim reports?

A Yes.

289 Q Available?

A Yes.

290 Q From time to time?

A Yes.

291 Q During that period, what were the results of these tests?

A The tests involved three Aroclor materials, the Aroclor 1242, and the Aroclor 1254, and Aroclor 1260.

As I remember the levels of feeding to the animals

were two parts per million, ten parts per million, and 100 parts per million in the daily diet of the test animals for the total length of the study.

292 Q Two, ten, and what?

A 100.

Now those are extremely high levels for an industrial chemical and related to food.

293 Q What were the results?

A In the rats, the higher chlorinated materials in Aroclor 1254 and Aroclor 1260 showed a decrease in weight gain and enlarged livers, which I am told by the medical experts would be expected for this kind of material.

294 Q You could have expected that, in other words?

A Yes, the liver, I am told is the organ that tries to cope with this strange material, and that is why it is enlarged.

The Aroclor for the chickens, the reverse was true--not reverse--but the Aroclor 1242 had an effect on their eggshell thickness.

295 Q Anything else?

A I don't recall any others.

296 Q Now who has those reports?

A I don't personally know at the moment.

297 Q Who conducted these tests, the Medical Department? They conducted them?

A The Industrial Bio Test Laboratories.

298 Q Is that an independent outfit?

A Yes, sir.

299 Q Where are they located?

A Northbrook, Illinois.

300 Q Still in business, are they?

A I think they are still an entity; they are not active.

301 Q When you were coordinator in '70, did you have copies of these reports?

A I would get copies of the interim reports and I have got, I received at the time, at the end of each study, the final reports, copies of the final reports.

302 Q Now what other tests were made?

MR. COCHRAN: When?

303 Q At any time.

MR. COCHRAN: By whom?

304 Q By Monsanto.

A There was a study with beagle dogs.

305 Q What?

A Beagle dogs.

306 Q All right.

A But I never personally never saw the end results of that report.

307 Q When was that done?

A I am going to say since I was reassigned in 1974, it must have been '75-'76, in that period of time.

308 Q Did your company make any other tests of the effect of PCB's on living creatures than what you have already described in 1960 or 1970?

A '60 or '70, I think I covered them all.

I think I covered all that I recall.

309 Q Did you come to make any tests prior to 1960 of the toxic effects or the effects on living creatures of this material?

A The tests that I mentioned earlier, the acute toxicity test itself, skin tests, eye tests, the LD-50.

310 Q When was that?

A As I remember, there was some in the '30's, '40's, some in the '50's, repeat in the '50's.

311 Q Those are the tests that were made by the Medical Department?

A Sponsored by, they themselves didn't do it. They would have contracted it.

312 Q When I say Monsanto making tests, I really mean tests that they might have hired to be done by like this Northbrookville group.

A Yes.

313 Q Now including that part in the answers, were there any other tests that you haven't described?

A Not that I recall.

314 Q What did you do with respect to directing or warning your Sales Department to pass the word to the customers of your test results?

MR. COCHRAN: What period of time are you talking about?

315 Q At any time.

A Well, the procedure was that any time anything of significance developed, we would convey that to the customers, the active customers at that point in time.

When the final reports were submitted in the '72-'73 period, by that time, the information had been released to the government agencies concerned, and had been publicized, and we had already embarked on a withdrawal

program from much of the marketplace.

So the evolving situation was such that the final reports were really anticlimactic; everybody that needed to know was already informed.

316 Q Did you know that PCB's were used as a part of a lining for silos, the part of the material that was used to coat interiors of silos?

MR. COCHRAN: At what time?

A At what point in time?

317 Q At any time?

A Yes, I was eventually informed that this was a use, yes.

318 Q When was that?

A I believe the first inkling that I personally had occurred in 1970 about March or April, and that was sort of a vague indication, nothing specific. It was a speculation on somebody's part. That was the first piece of information I personally had.

319 Q What information did you get, whether it was vague or not, what was it?

A Well, it was, as best I recall, I got a telephone call from a Dr. Hill who was an employee of one of the agencies

in the State of Ohio that is involved with monitoring and managing the milk industry.

320 Q Board of Health, something like that?

A Something like that. I am not sure of the exact agency title.

The man was, but he was trying to become informed, and he mentioned to me that some laboratories had determined the presence of PCB's in some milk, and in the conversation he speculated that it might be coming from a coating in some silos.

As I recall, that was the first time I had heard of that application.

321 Q Now that would be you, personally?

A Personally, correct.

322 Q When was that?

A I believe it was March, 1970, somewhere in there.

323 Q March of '70. That is right after you took your job as coordinator?

A Yes, early in '70.

324 Q To your knowledge, did anyone else have any information regarding in your plan, regarding problems with milk or anything of that sort?

A To my knowledge, no one else had, no.

325 Q You mentioned a claim from some dairy producers in Ohio, what was that?

A I am not sure of the timing. It was after this call from Dr. Hill, and I just don't recall when it became an officially filed claim.

326 Q Well, I don't mean that, I mean the information regarding--

A Information?

327 Q Yes.

A Well, it started with Dr. Hill's call, and then evolved over the next year or so, and the picture became clearer as to which dairy farms were involved, and the like.

328 Q Did you investigate that, and by "you", I mean someone under your control or anybody at Monsanto?

A Oh, yes, we were of course interested.

I personally visited the two farms.

329 Q What did you find with respect to the silos?

A I don't quite know how to answer. They were inactive. They were placed out of service.

330 Q Did you examine them?

A I looked in them. I climbed in them.

There was a, what appeared to be the remainder of a coating. It was a worn surface. Parts of it

appeared it had a coating on it.

The coating appeared to be a dark color varnish type of appearance. I had conversations with the dairy farmers there.

331 Q Now what did you learn as to what the coating had been?

A They used the expression Cumar, which was quite common with them.

332 Q Had you heard that expression before?

A Yes, I had heard this from our attorneys who had been involved with these.

333 Q Other claims regarding Cumar?

A I believe it was these two claims, these two farms.

And I went out to just personally get familiar with the situation.

334 Q What did you learn as to whether Cumar contained your products Aroclor?

A I took samples of the scrapings off the wall, and it did contain, that particular group of samples did contain PCB's in the coating.

335 Q You took samples?

A Yes.

336 Q You found that there were PCB's in there, is that right?

A Yes.

337 Q Now then, did you then conduct any kind of an investigation or inquiry as to where those PCB's come from?

A I personally didn't.

338 Q I don't mean you personally, I mean, you know, your company, or to your knowledge, people under your control as coordinator of this effort?

A I don't personally know what our Legal Department did with some of this information.

339 Q The question I want to know, Mr. Papageorge, is whether or not you, as coordinator of the effort of these PCB problems, made any effort at that time to determine where the PCB's, where the PBC's came from--have I got that right?

MR. COCHRAN: PCB's, you had it right the first time.

340 Q You found that the material that lined the silos over in Ohio where you were getting a claim?

A The effort that I made was my going back at some point in time in this period.

I went back to the manager of the product that markets this product and asked him if he was--

341 Q Markets Aroclor?

A Markets Aroclor for these miscellaneous uses, and I asked him was he aware that we sold anything to anybody that looked like related to the dairy farms and silos and the like. And at that time he told me no, the record doesn't show anything like that.

That was the extent of my personal involvement, because this was at that time an isolated instance with very fragmentary information, not enough to really do anything with, to know where to go next.

342 Q All right, did you ultimately find out that the PCB's in the material lining those silos came from Monsanto?

A No, I didn't.

343 Q You didn't?

A No, I never did do that.

344 Q What was your purpose in going over there?

A Well, this was a new development, new to Monsanto. We, Monsanto associated with PCB's are not familiar with dairy farms and know nothing about the operations, and it was decided that someone ought to at least go out and get somewhat familiar with what kinds of situations exist, and I was chosen to go out.

345 Q As a matter of fact, Mr. Papageorge, the claim was being made against Monsanto for damages to the cattle and the

farmers as a result of Monsanto's PCB's in the lining of the materials of those silos, was it not?

A That was the claim, as I understood.

346 Q And you went out to investigate that, did you not?

A Yes, sir.

347 Q What did you find as to whether or not that was your PCB's that have been used in this material?

MR. REESE: He has answered that question about twice.

MR. YOUNG: I don't think he has, Keith.

MR. REESE: You asked him point-blank about two minutes ago whether he determined that Monsanto manufactured it, and he said he did not learn that.

That is my recollection of his testimony.

MR. YOUNG: The question--

MR. REESE: You can answer again, go ahead.

348 Q Do you recall the question after all that speech?

A I believe I do.

We determined--well, would you read the question?

(The preceding question was read by the Reporter as follows: "What did you find as to whether or not that was your PCB's that have been used in this material?")

A I did not have any information that said PCB's in that coating was Monsanto's PCB's.

349 Q Who analyzed those samples for you?

A Well, the laboratory within Monsanto.

350 Q At your plant?

A Not at the Central Research Laboratory.

351 Q How much PCB was found to be in that material?

A I don't remember.

352 Q You have reports on that?

A There were reports. I don't know where they are today.

353 Q Did that go into litigation?

A I don't know.

354 Q Was a lawsuit filed?

A Yes, a lawsuit was filed.

355 Q Was your deposition taken in that litigation?

A Yes, yes.

356 Q Where was that lawsuit filed?

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

It would be the Canton, Ohio--at least.

357 Q I wasn't there.

A I was deposed in Canton, Ohio. I don't know where the lawsuit was filed.

358 Q Did you testify in a trial?

A No, sir.

359 Q You know what the disposition of that claim or suit was?

A No, sir.

360 Q Who were the parties?

A The plaintiffs as best I recall were Mr. and Mrs. Humphreys.

361 Q Humphreys?

A Humphreys.

362 Q Were there any other parties to the lawsuit?

A Of course, Monsanto, and I don't remember any other parties.

363 Q Who built those silos?

A I don't know.

364 Q Did Bloomfield Silo Company build them to refresh your recollection?

A I don't know.

365 Q Who has knowledge of that?

A I don't know who would have knowledge.

366 Q Did you make any investigation with the manufacturers of Cumar as to where they got the PCB that was used in that product that you found, that you found in that product?

A No.

367 Q Did anyone under your direction or control or anyone from Monsanto contact the producer of Cumar?

A Not to my knowledge.

368 Q Just let it go, did they?

MR. COCHRAN: Well now, Howard, he didn't say that.

369 Q Well, I will withdraw that.

MR. COCHRAN: Thanks a little.

370 Q Would you know that if that had been done as coordinator of the whole shebang?

A If it had been done, not necessarily.

371 Q Would you know the results of any inquiry of that sort?

A Not necessarily.

372 Q Was it any concern to you or Monsanto that PCB's were being used, might have been used in Cumar that was being used to line silos?

A You must keep in mind that in 1970 there was no evidence that the presence of these PCB's in silos or in milk or in the environment was a problem.

373 Q That is--I didn't mean to ask you that.

(The preceding question was read by the Reporter as follows: "Was it any concern to you or Monsanto that PCB's were being used, might have been used in Cumar

that was being used to line silos?")

A There was no evidence to create any concern. Presence alone does not necessarily mean that harm is being done.

374 Q In other words, you didn't pursue it any further?

A That is true, because there was no perceived need to take any further action.

375 Q That would be true, in your opinion, that was your thought about the matter?

A It is our thought bolstered by my contacts with the government people who didn't express any concern either at that time.

376 Q Now, you let the government people make your decision for you?

A No, sir, but--

377 Q All right, now after, when you went over to Ohio on that Ohio claim, were you not informed that PCB's were found in the milk of the cattle that had eaten silage from these silos that you took the sample from and found PCB's?

A I was told this, yes, yes.

378 Q Who told you?

A Mr. and Mrs. Humphreys eventually told me.

379 Q Who else?

A Well, initially, Dr. Hill mentioned this.

380 Q Did you make any investigation to determine how PCB's got in the milk on that farm?

A That was the purpose of the trip.

381 Q Well, what did you find?

A I found that PCB's were present in the coating, and they were present in some of the silage, and I was told it was present in the milk.

382 Q Right, you accepted that, did you not?

A I had to, there was no--

383 Q You did, did you not? Did you accept that, or did you just disregard it?

MR. COCHRAN: Howard, let him answer, you keep interrupting.

384 Q Sorry, I don't mean to interrupt you.

A I read the report and I saw the numbers. I don't know what you mean by "accept".

385 Q Well, you assumed that was correct, did you not?

A Not necessarily.

386 Q Did you make some tests of your own?

A I could not get samples of the milk for my laboratory to analyze.

387 Q At least, you had been informed that there were PCB's in that milk?

A I was informed that a laboratory with unknown qualifications interpreted their results as being PCB's.

And at that point in time, there were very few laboratories qualified to analyze for PCB's.

388 Q You had one?

A Yes, sir, one of maybe two or three in the whole world.

389 Q How long had you had this laboratory able to do that?

A Oh, I would say in that period of time, it was maybe that it had six months of experience, but it took about--

390 Q At what period of time?

A The development of the analytical method was started as soon as we heard about the Stockholm report, and it took our laboratory about two years which would take it through 1968 and 1969, to feel comfortable and confident in the results on PCB's starting in late '69 and early '70.

391 Q So you could do it in '70?

A Yes, sir.

392 Q All right, what was your opinion as to what caused PCB's to get into the silos that these cows consumed?

A At that time, I, assuming, well, I really didn't know

where the PCB's could be coming from.

But if the coating had PCB's that could be a source. But I didn't know where else in the dairy farm operation PCB's might be present either.

393 Q You knew it was present there?

A That is the only place where I had definite information.

394 Q Well, as a scientist, what was your opinion as to the source of the PCB's in that silo?

A The probability was that a good bit of it could have come from that coating, could have, but there were other sources possible.

395 Q Did you investigate the possible other sources when you went over there for that purpose?

A I questioned the individuals, the dairy farm owners, but they were not familiar enough with the types of lubricants they used, the equipment they were using, where their cattle came from, or--much of the other information just wasn't available to them.

396 Q You didn't pursue it any further than that?

A That is true.

397 Q All right, well, it was your opinion that that is where the PCB's in the lining of the silos was the source of the PCB's in the silage, was in the silos, was it not?

MR. REESE: He said it was possible.

A Possibly a source. I do not speak for any other sources.

398 Q And that was your opinion at that time?

A Correct.

399 Q Did you pursue any inquiry as to how PCB's got into the lining of that material of that silo, having in mind that you knew that it was Cumar?

A Well, I was told it was Cumar. I don't know what that really means. It is somebody's recipe for a coating.

...At this time, a discussion was had off the record.

MR. COCHRAN: His statement with a correction of mischaracterization, he didn't know was Cumar; he didn't know anything; he had been told that.

400 Q I understand that.

Now, we have got our minds off on another track.

Do you recall the question now?

A Yes, sir, I personally did not pursue.

401 Q How about your company or someone under your direction as the boss?

A I cannot speak for everyone that could have pursued this,

primarily, because these were handled through our Legal Department, and what they did, I was never really--

402 Q But you never pursued it?

A That is what I said.

403 Q Nobody under your direction pursued it?

A That is true, to my knowledge.

404 Q You were the big coordinator between the Legal Department and all these other departments that were concerned with the problems you were getting with PCB's, were you not?

A Not in every legal case.

405 Q How many legal cases did you have?

A I don't remember. I never knew the total number.

406 Q Approximate?

A Oh, I have no idea.

407 Q How many cases have you given depositions in?

A Regarding this subject, regarding PCB's, I, half a dozen or so. I don't remember them all.

408 Q Half a dozen, that is all you remember?

A Uh-huh.

409 Q That would be six?

MR. REESE: That is a brilliant deduction from a

lawyer and a chemist, both.

410 Q How long does PCB's stay in materials? How long does it last?

A That depends upon the material and the conditions to which the material is exposed.

I can't answer that.

411 Q Give us a range then of time that PCB's will last?

A Well--

MR. COCHRAN: I am going to object. Your question is so vague.

MR. YOUNG: Let the witness answer.

MR. REESE: To the point where he can't answer.

412 Q If it is too vague that he can't answer it, he can tell me.

You don't need to tell the witness how to answer the question. He is a very intelligent man.

MR. COCHRAN: I understand, but I am making my objections for the record.

413 Q That is what I am questioning.

A There are examples of PCB's still in use in transformers that are 40-50 years old. There are examples I am

told of caulking materials around windows of skyscrapers that are, the original installation, and many years old.

There are also laboratory studies that show that PCB's that are put through a system that simulates a city sewage handling system will degrade.

414 Q Will what?

A Degrade, they disappear, eventually.

415 Q What about PCB's in silage, how long would that PCB's stay in silage?

A I don't know.

416 Q Did you ever make any test to determine that?

A No, sir.

417 Q Do you know of any tests that have been made to determine that?

A No, sir, I don't know of any tests that one could use.

418 Q The question is, do you know of any tests?

A No.

419 Q Thank you.

And you have no different opinion?

A No, sir.

420 Q Might have been years until it got eaten up?

MR. COCHRAN: Howard, I object.

421 Q Well, it might stay as long as the silage was a useful product, in other words?

A I don't know.

422 Q Which of the silos, or when were the silos in Ohio filled?

A I have forgotten, I don't know.

423 Q Would it be in the record?

MR. COCHRAN: What record?

424 Q Of that case.

MR. REESE: He doesn't know; he is not a lawyer.

425 Q All right, I will withdraw the question.

You don't have to be a lawyer to know everything.

MR. REESE: Well, it helps, I think.

426 Q Did you have any other cases involving complaints of PCB's in milk?

A At what point in time, now?

427 Q At any time, the oldest, farthest back that you can think of.

A We have reports of PCB's found in milk in one of the earlier reports that I was eventually made aware of,

which was a situation in Virginia, as I recall, in which PCB's were used along with other oils to dilute some weed killer that was sprayed under transmission lines and cattle grazed in the area, and the PCB's eventually were detected in their milk.

As best I recall, that was reported in '69, late '60's.

428 Q What is the name of that claim?

A I don't know that it had a name.

This was a report that I personally got from government people.

429 Q Was that the Humphreys case?

A No.

430 Q But the cows had been grazing under some power lines?

A Yes, sir.

431 Q Where the power lines were, was there any PCB's around the power lines?

A No, the PCB's were part of the oil that was used to dilute the weed killer, and it was, the idea is to keep the growth from under the transmission lines from getting out of hand.

432 Q So you finally traced the PCB's back to the oil then?

A The government traced them.

433 Q All right.

A Other--

434 Q You had advantage of their findings, I take it?

A Correct.

435 Q Go ahead.

A Other situations involving PCB's in milk, I had reports of situations in Tennessee and Georgia, of course, Ohio.

436 Q Others than you have mentioned in Ohio?

A I only remember the two in Ohio. I don't recall any others.

There is also some reports out of Michigan.

437 Q Was that the Michigan silo involved in that?

A Michigan silo has been mentioned, and I got that from our legal people.

438 Q When was this Tennessee claim?

A As best I recall, 1972 or thereabouts.

439 Q How about Georgia?

A About the same time.

440 Q How about Michigan?

A Michigan, that was later.

I heard about those in about 1975--'74-'75.

441 Q Now you have determined, have you not, that PCB's are harmful to cattle?

A No, sir.

442 Q Have you determined that PCB's may be harmful to wildlife?

A No, sir.

443 Q What efforts did you make to determine whether or not PCB's were or were not harmful to living creatures?

A That was the very purpose of the long-term studies that I mentioned earlier.

444 Q Did you do anything else other than that?

Specifically did you get, did you receive the results of the studies by the Federal government and the state government?

A Well--

445 Q On the subject?

A We received, or saw reports of studies by the Federal government.

For example, the studies on Aroclor 1254 that the, the National Cancer Institute Study showed that they were not carcinogenic, that was reported.

446 Q Do you recall that one?

A Yes, that is a fairly recent report that came out.

447 Q Would it be fair to say that your activities took advantage of all studies by any governmental agency

on the toxic effects or harmful effects of PCB's on living creatures?

A I don't know what you mean by the word "advantage".

448 Q Let me--

A He certainly--

449 Q By that I mean, did you secure copies of all that you could?

A As wherever we could, all over the world.

450 Q All right, and you were successful in getting reports wherever studies had been made, were you not?

A As best as I can tell.

451 Q All right, and as a result of your activity and your work, did you take all PCB's off the market except for use in the Dielectric Department, did you not, eventually?

MR. PEESE: You want to read that question?

MR. YOUNG: It isn't a good question. Let me rephrase it.

452 Q You did later limit your sales of PCB's to dielectric users, did you not?

A Eventually, yes.

453 Q When was that?

A Well, the program started in 1970, and the actions we

took were based on the information we had at hand.

Starting in 1970, we terminated the sale of the PCB's that we knew ended up in uses that were not contained, closed systems, these miscellaneous kinds of uses that lend themselves to immediate release into the environment.

454 Q That would include, would it not, the use of PCB's in materials used to line silos, would it not?

A If that is where they were used, yes, coatings.

455 Q That would be one of those uses?

A Miscellaneous uses, yes, sales of those materials were terminated in August of 1970; August 30, as I remember.

August 30 was the date.

456 Q 1970?

A 1970.

457 Q Was it a directive that went out, or something?

A Yes, sir, oh, yes, it was approved.

458 Q You have a copy?

A It was approved by top management.

Sorry, I didn't hear the last part.

459 Q That is okay, I will withdraw that.

A Along with that withdrawal of the miscellaneous

open-ended uses, we also had a program for using those PCB's whatever we could, and still keep the safety features, fire resistance, explosive resistance and the like in these hydraulic systems, and the electrical systems that had not been reported by the environmental analysts as being discovered in the environment.

So we selectively reduced the amount of the Aroclor 1260, Aroclor 1254 that was sold.

That was part of the program.

460 Q Yes. That is what went into Cumar, wasn't it?

MR. COCHRAN: Well, now--

461 Q 1254?

A I was told that. I don't know.

462 Q Okay, you don't try to verify everything personally, you wouldn't have time for that, would you?

MR. REESE: The question is impossible to answer, and I object.

463 Q Don't answer it.

A All right.

This was in 1970 that the program of withdrawal from the marketplace, and this was based, I think it is

important to know, was based on the fact that PCB's, some of the PCB's were being discovered in the environment.

So it is a matter of presence of a man-made chemical which we made, and we felt that if this is true, let's pull back on those operations that literally dump it into the environment.

That is the purpose of that program at that point in time, okay?

464 Q Well, I wasn't asking the purpose so much as I was asking the sequence as to when this did occur.

Now let me ask you when did you terminate selling PCB's for use that might get into say, food?

A That was at the same time.

465 Q '70?

A Yes, sir.

466 Q What did you do to disseminate the reasons for that to the people who had already purchased your materials?

A Well, as I remember, there were several things done.

Marketing people, who were, of course, familiar with the customers, the baking company, the baking company were advised to go back and talk with contacts in those companies.

At the same time, we on our own labels, we included the statement not to be used in equipment associated with human food--those aren't the exact words--but that is the thought.

467 Q Did you say anything about being harmful to living creatures, or livestock, this product?

A I couldn't do that, that is not true.

468 Q The answer is you did not?

A That is true, didn't have to.

469 Q Well, that is what you decided.

MR. REESE: That is his answer now. You might not like it, but that is his answer.

470 Q Well, I like it fine, because that is his explation.

A I forgot where I was.

471 Q I have, too.

MR. REESE: It wasn't harmful to living animals.

472 Q Read the question.

A I was talking about informing customers that we were--

473 Q Would it help if we read the question, please?

A The labels--

474 Q All right, we will get back to the labels then.

A All right.

475 Q The labels were part of my question as to what you did with respect to informing the people who had purchased your product of the dangers that you found which caused you to reduce, to withdraw the use of that product say in food that might go to human beings or anything else?

MR. REESE: That is not--

476 Q That is a long question, I will withdraw that question.

MR. REESE: That is improper, because it contains evidence that is not--

MR. YOUNG: You don't have to say anything more.

MR. COCHRAN: Why don't you let him finish the answer to the question instead of interrupting him. I don't think he was finished.

MR. YOUNG: Keith interrupted me.

MR. COCHRAN: You asked the question, and he starts to give the answer, and you interrupt with other questions without letting him finish the answer to the first question.

MR. YOUNG: I didn't realize.

MR. COCHRAN: What is the original question that

you asked the witness?

I believe it was something to the effect that was steps you took informing your customers, and I don't believe the witness--

MR. YOUNG: Read the last question please, to Mr. Cochran.

(The referred-to questions and answers were read by the Reporter.)

477 Q Had you finished your answer?

A I don't believe I had.

I talked about--

478 Q Do you have anything to add?

A I talked about the personal contact of our sales representatives with the customers; I talked about the change in the wording on the label, and then I was going to add that we also sent, as I remember, the best I remember, letters to these known customers that had them in their systems about reclamation of sales of PCB's for that use.

477 Q Did you make, did you send any of these warnings, warning letters, I assume that is, may we call them that, to any of your users of silos?

A No, sir.

478 Q What effort did you make, if any, to determine what silos were in existence at that time which had PCB coatings in them?

A There was no additional effort made because in 1970, in May, June, July, August, there were only two dairy farmers to our knowledge, involved with about three silos.

This was a very very small situation from our point of view. It could have been an isolated case.

We just didn't have enough information to tell us that there were more silos involved.

479 Q Did you make any effort to find out if there were more silos involved?

A No, sir.

480 Q So you did not notify anybody who was using the product Cumar or who had purchased it?

A We had no knowledge of those people, so we could not communicate.

481 Q Excuse me, are you finished?

A Yes, sir.

482 Q You said salesmen in the field, did you not?

A Yes, sir.

483 Q What department did they come under?

A The Sales Department of plasticizers, business groups.

484 Q Did you make any effort to find out who had sold PCB's to the manufacturers of Cumar, the individual in your Sales Department?

A We, I touched base as I mentioned earlier.

485 Q Who was that?

A That was the marketing manager of the plasticizer applications.

486 Q What is his name?

A I believe it was Dr. Cumming Paton, as best I recall.

487 Q Was that individual instructed to give the manufacturer of Cumar any information regarding the possible hazards of the use of PCB's in silo linings?

A No, because we didn't know there was such a person existed, a manufacturer of Cumar.

488 Q You didn't? Who did you think made it?

A Don't know, at that point in time. We didn't know that this was a widespread kind of application.

489 Q So the answer is that nothing was done with respect to Cumar to warn of the dangers of PCB's in a silo lining?

A Well, I am disturbed about the fact that you use the "warning of dangers". There were no perceived

warnings of danger in 1970 regarding PCB's and cattle and milk, and to that date, there are no such perceived dangers.

490 Q Well now, to answer the question of whether there are warnings or not, you did nothing, with respect to advising?

A That is right, there was no perceived need to do anything.

491 Q At least, you didn't perceive of any?

A That is correct.

MR. REESE: Why don't we recess?

...At 11:30 A.M., the further taking of the deposition was recessed for lunch, to reconvene at 1:00 P.M.

AFTERNOON SESSION

1:00 P.M.

Following the noon recess, the parties again met, and the following proceedings were had:

W I L L I A M E. P A P A G E O R G E, having been previously duly sworn, resumed the stand and testified further as follows:

DIRECT EXAMINATION (Continued),

QUESTIONS BY MR. HOWARD S. TOMS, JR. (Continued):

492 Q Mr. Papageorge, is it your opinion that PCB's are not harmful to living creatures?

A Yes, at the dosage or levels of exposure one would normally expect in the average kind of use of PCB's.

493 Q Now you dropped your voice at the end, and I missed it.

A At the levels one would normally expect from an exposure to industrial chemicals, PCB's are not harmful.

There is no evidence they are harmful.

It is only at the extremely high levels such as those I mentioned earlier that the animals under test were exposed to the 100 ppm and above. This kind of level, there is an effect, not at low levels.

494 Q All right, what do you mean, "low levels"?

A I am talking now in low parts per million.

495 Q What, how low?

A I am not qualified to pick a number like that.

496 Q What do you mean when you say "low"? That is your word, not mine.

A That is right.

In my mind, it is less than 50 ppm for a single exposure, and less than maybe ten ppm for repeated exposures.

497 Q For how long, how much repetition?

A I have to depend upon what I know about it in the animal studies, and say, for the lifetime kind of exposure, such as the rats were exposed to for a lifetime.

498 Q Well, I am not familiar with how long rats live, but--

A About two years.

499 Q Let's take a human being then, is it your opinion that

exposure to PCB's is not harmful to human beings?

A At low levels; it is a dose situation.

500 Q Let's go back to low levels again.

What do you mean with respect to human beings as a low level harm exposure?

A As I said earlier, I am not a medical person.

501 Q But you say "low", those are your words. I am trying to understand you.

A Well, I am saying low as to distinguish in the 100 ppm used in the animal studies, and low with respect to the situation is well known and is documented that happened via an accident in Japan, where it was 2,000 ppm. When you compare the levels that one might expect with such high numbers like 100 and 2,000, that is what I mean by low.

502 Q Are you talking about 100 ppm or 2,000 ppm or what?

A I am calling these high levels.

503 Q Now what is low level?

A I don't have an exact number.

504 Q I know you don't, but you say, in what range are you talking?

A Are you asking for a layman's opinion?

505 Q No, your opinion.

A My opinion, I am a lay person.

506 Q You are a toxicologist?

A No, not a toxicologist.

507 Q You are a chemist?

A I am a chemical engineer.

MR. REESE: He is a chemical engineer.

A And I will have to, my personal opinion is based upon my understanding as an engineer, without any unique training in this field, that it would have to be 20 ppm or less, if you force me to come up with some sort of number.

508 Q 20 ppm or less, you say would not be harmful?

A I don't believe that would be harmful.

509 Q Would that also depend, in your opinion, upon the number of exposures in that amount to that level?

A Assuming that this is a repeated exposure for extended periods of time, as quite a bit of exposure, yes.

510 Q Repeated by, you mean, on a daily basis?

A Yes.

511 Q Or over a period of years?

A Yes.

512 Q And you feel that would not be harmful?

A Yes, that is right.

513 Q To human beings?

A That is right.

514 Q Do you have information as to whether this PCB is cumulative in the food chain?

A I have, yes, I do.

515 Q What is meant by that "cumulative in the food chain"?

A Well, as I understand it, this refers to the situation in which the various living creatures in the environment which are part of the food chain, the larger creature eating the smaller creature and the like with PCB's have the ability to end up with the result in which the largest creature in the food chain consumes a higher level of PCB's because it is accumulating in each of the parts of the food chain, and increases as it proceeds up the food chain.

516 Q All right. Then on the basis of that, do you have an opinion of whether PCB's in the environment might accumulate sufficient concentrations of PCB's to be harmful to human life?

MR. REESE: I am going to object to the question. This lawsuit does not involve any personal injury of any kind, and I have let you get into this about three

or four times, but I don't think it is proper, and not germane to any of the issues in this lawsuit.

As I understand it, you are suing for damages to silos and forced sale of cattle and damage to some silage.

Consequently, I think the question is improper. You have been into it three or four times, and I object for the reasons stated.

517 Q Go ahead and answer. The Court will rule on his objection at the time.

A Uh-huh.

MR. REESE: Just hold on a minute.

Go ahead and answer, if you recollect.

You remember the question?

A The possibility is there, but it is highly unlikely.

518 Q Now then you mentioned that, you stated that in your opinion, it would take more than low levels of PCB concentrations to be harmful to living creatures?

A Uh-huh.

519 Q Would you state what you base that opinion on?

A It is based on the results of the animals and poultry studies conducted for Monsanto.

That is based on my reading of the literature published on other studies, and it is also based on my personal observation of workers making PCB's in the work place day in and day out throughout their working careers with no adverse medical consequences.

520 Q Anything else?

A That is all I can recall at this time.

521 Q You spoke of animal and poultry studies made by Monsanto, have you described those studies?

A Yes.

522 Q What readings did you base your opinion on?

A I mentioned the 100 ppm.

523 Q No, I didn't--excuse me, maybe I didn't make my question clear.

What readings did you read?

A Do you mean of other literature?

524 Q Whatever it was when you referred to, when you said you based your opinion on readings?

A I don't recall all of the articles and reports, but there have been government reports issued by a task force in 1972. There was, I mentioned earlier the National Cancer Institute study of Aroclor 1254.

I have read reports of interpretations of a

Japanese incident.

I am sure there are others, but they don't come to mind right now.

595 Q You spoke of a Japanese incident, what was that?

A This is the incident referred to as the Yusho incident, which occurred in Japan, and as I remember in 1969, I believe it was, in which a PCB used to provide heat in an oil refining process, that is an oil derived from rice, which is used for salads and cooking was contemplated.

This oil was contemplated by PCB's and thousands of individuals in the community digested in their food, and at the time it was reported that the estimated concentration of PCB's in this oil was about 2,000 ppm; the symptoms that were reported included nausea, skin discoloration, headaches, tiredness, general poor health. Some infants were born to women pregnant at that time the incident occurred that were born with a darker pigmentation, which I am told eventually lightened.

So it was a temporary effect. It was subsequently determined that the cause for all these symptoms could well have been a contaminant present in the PCB's, not the PCB's themselves. That is generally the

incident.

526 Q That is the incident you were referring to?

A Yes.

527 Q Then you stated your opinion, are you speaking for Monsanto Company when you state that opinion?

A Well, it is my personal opinion.

528 Q Are there any writings that are a part of the records of the company pertaining to the decision to terminate all sales of PCB except for dielectric uses?

A Yes, there were.

529 Q What were they, would you tell me?

A I recall letters that were mailed to customers on record.

I recall references to the corporate management committee approving the withdrawal program.

The references to the programs we instituted regarding the recall of material from distributors, a program to assist our customers of heat transfer fluids and draining, flushing, and refilling their system; that is all I remember, now.

530 Q Were you privy to that decision to terminate sales of PCB's?

A I was part of the recommendation, and I was made aware

of the approval of that program, yes.

531 Q By that, I take it you appeared before the committee that made that decision, and testified or spoke. Were you present when the decision was decided, made?

A No, my superior was present when the decision was approved.

532 Q What was his name?

A John Mason.

533 Q Was a Board of Directors action taken?

A No, this was a corporate management committee.

534 Q Was that the recommendation or action of that committee approved higher up than the corporate management committee?

A No, it didn't have to be. They are the top committee in the corporation to approve such matters.

535 Q When was that done, '70?

A May, 1970, early May.

536 Q Do you know the basis of it, or the foundation for that action?

A The foundation for withdrawal was based on the presence as reported of PCB's in the environment, and our intent to do two things:

One is to eliminate further release of PCB's by

terminating the use in open systems, open-ended uses, and also to eliminate as much as we could, principally those PCB's such as Aroclor 1254 and Aroclor 1260 that were being reported by the analytical chemists. That is the purpose.

537 Q Did not that committee act on the opinion and the assumption and thought that the presence of PCB's in the environment were harmful?

A No, they did not, because there was no evidence that they were harmful.

538 Q You were not present. Did others testify before that committee?

A Not to my--well, I don't wish to confuse you--I was present at a meeting in April in which the broad intent of the program was described, and in May, the specific dates were established, and that is when the approval was given.

539 Q Well, I take it that that committee felt that, and that action was taken because PCB's in the environment might be harmful to living creatures?

A No, no, the corporate management committee decided the presence in the environment of a man-made chemical for which we could at least reduce the loss to the

environment was something that should be done in a responsible way, and they proceeded to approve it.

540 Q Why would they want to be induced to eliminate the presence of PCB's in the environment if it might not have been harmful?

A Well, it is based on the fact that if something is man-made and it is out there, we have no good reason to put it out there unless there is a definite benefit to be gained by the use of the material.

541 Q You produced about 40,000,000 pounds of PCB's each year at your plant, did you not?

A I don't recall the exact, but that is about the right order of magnitude.

542 Q Now the 40,000,000 pounds per year were made at the Sauget plant, were they?

A That is about right, yes, sir.

543 Q And Monsanto employs about 50,000 people?

A Somewhere in there, yes.

544 Q Are you familiar with the, when you speak of chickens having been contaminated, you are referring to the Campbell soup?

A That was one.

545 Q Complaint?

A That was one of the incidents that I heard of, yes.

546 Q What was that complaint?

A As I recall, the chickens used in a product by the Campbell Soup Company were found to have PCB's in them, above some level--I have forgotten the number. And the resolution was that they could process the chickens by removing those parts of the chickens with the high levels, such that the product eventually sold at a level less than five ppm.

547 Q What happened to the chickens that were in that soup, were they destroyed or what?

A No, they were eventually used, because the PCB level was reduced by removing the skins and the fat.

548 Q And the livers?

A I don't know about the livers. I don't think livers are used in making chicken--but that is, I don't know what happened to the livers.

549 Q PCB's end up in the liver generally, does it not?

A No, sir.

550 Q Of living creatures?

A No, it ends up in the fat. The liver destroys PCB's.

551 Q Does that accumulate in the liver?

A Well, there is a little bit there that the liver hasn't

worked on yet, so there is an amount that can be found there, but it is not the storage place for it.

552 Q The storage mostly is in the fat tissue?

A Yes, sir.

553 Q That would be throughout all the tissue?

A Wherever there is fat.

554 Q Why did they take the skin off then?

A Because I am told that the fatty layer underneath the skin is the principal--

555 Q On chickens?

A On chickens, is the principal place of storage of PCB's.

556 Q Are you familiar with the Holly Farm case?

A Yes, sir.

557 Q What happened there, leak in a transfer unit in a what?

A There was a fish meal processing unit which used PCB's as a heat transfer media to provide the heat to dry the fish meal.

As I recall, the PCB's leaked through damaged equipment into the fish meal. The fish meal in turn was sold to a poultry feed processor who blended it in with other ingredients to make a poultry feed or

different kinds of poultry feed.

The poultry feed eventually was delivered to the poultry farms, the egg hatcheries and the like, and as I remember, there were some reproduction problems. There were some chicks that were diseased. Of course, there was the presence of PCB's in the poultry that was exposed. That is the situation, as I recall it.

558 Q Now have you had other claims with respect to PCB's in milk cows from silos and PCB's?

A None other than those I reported earlier or discussed this morning.

559 Q Well?

A Should I repeat those?

560 Q No, as I recall you reported one in Ohio?

A Yes, sir.

561 Q And you reported one in Michigan?

A I don't know that I had the number in Michigan.

There are some in Michigan. I don't remember the exact number.

562 Q How many were there in Michigan?

A A couple.

I think there were a couple in Michigan.

I remember in Tennessee there were some. I don't

know how many.

563 Q Do you know the number in Tennessee?

A No, I don't. These are all handled by our Legal Department, and I am not directly involved.

564 Q What other claims have you had arising in Indiana than this?

A I have only heard from our legal people of one additional.

565 Q What is that?

A I have heard it mentioned as the Hastings case. I don't know what that means. That's all I know.

566 Q You are not familiar with the Hastings case?

A No.

567 Q Are you familiar with the test results of the EPA, Environmental Protection Agency with respect to PCB's?

A I don't recall any tests sponsored by EPA. No, I don't. I don't recall any EPA-sponsored PCB studies.

568 Q If there are, you are not familiar with them?

A That is true.

569 Q Have you told us all of the warnings on labels that you have placed to warn people about PCB's?

A No, I did not get the chance to mention that as soon as we had heard about the environmental presence, we changed

our label in early 1970 to caution the user not to permit the PCB's to contaminate the environment; I don't remember the exact words, but don't release to rivers and the environment.

570 Q When was that done?

A March or April of 1970.

571 Q Did those labels indicate what the consequences of such a release might be?

A I believe it mentioned a word "presence".

572 Q Pardon me?

A Presence in the environment. I believe it said the recent reports indicated the presence of PCB's in the environment, and caution should be taken not to release this material and on and on.

573 Q Well, did you indicate any dangers from such a release or what the dangers might be?

A No.

574 Q In your labels?

A No, because I didn't have any information that would lead me to do so.

575 Q Well, you did not do so?

A That is correct.

576 Q Did your company do, make any environmental impact

studies as to PCB's?

A I don't know what is meant by an environmental impact study.

It varies from situation to situation, so we--

577 Q Let me make a little more clear then, did your company make any studies as to the effect in the environment, on the environment of PCB's, is that any better?

A Well, the studies that I mentioned, the rats, the dogs and the chickens were intended to help us understand what these materials will do to living creatures, mammals, birds.

That was our total intent on conducting these studies.

578 Q Did you make any other studies than that, so far as the effect of PCB's on the environment?

A No.

579 Q Are you familiar with tests that were made with monkeys?

A Yes, I neglected to mention these this morning.

580 Q Yes, what are they?

A I neglected--I didn't get a chance to.

581 Q Now is your chance.

MR. REESE: You are going to let him answer it now,

Howard?

A I am limited in my knowledge of those studies, because they were placed as best I remember in 1975 prior to our Medical Department, and since I was reassigned in early '76, I really don't know anything about those studies, other than that they were placed.

582 Q When was that done, when were those tests made, on monkeys?

A I believe they were started in 1975, but--

583 Q Who made them?

A I don't know.

584 Q Now you mentioned some toxicity studies, was that first done in '58?

A I believe the 1950 studies were a repeat of earlier studies that were done in the '30's, '40's; there were 50 less two studies made.

585 Q Have you described all the toxicity studies that your company made regarding PCB's?

A I tried to. I may have missed something here.

586 Q Now we mentioned something about the tendency of PCB's to migrate. Does that word have a meaning?

A I don't recall any discussion on migration.

587 Q I am referring to the tendency of PCB's to migrate from

one material to another, that is in close contact with it.

Is there such a phenomena?

A Not to my knowledge. The migration, if by migration we mean the movement of PCB's?

588 Q Right.

A My understanding of how this happens with PCB's generally because they adhere to particulate matters such as grains of sand in a river bottom, and it is only when that grain of sand moves that the PCB moves.

Now PCB's are heavy, and they will settle to the bottom of the water and stay there.

589 Q Well, are you familiar with the fact that PCB's in a material used to coat an inside of a silo moves into the silos?

A Well, I would call that, if it does occur, I would say, suspect very highly it is a leeching action, where a material dissolves the PCB, and takes it up in that fashion.

590 Q Well, that would be a transfer of material from one material to another, would it not?

A Correct.

591 Q Have you made any studies as to the transfer effect of

PCB from one material to another?

A There were very early studies made that showed that PCB's were highly insoluble in water, and very soluble in many chemicals particularly, what is known by the chemist as organic chemicals, solvents, particularly, oils.

592 Q Right.

A So they are soluble in some materials.

593 Q Silage would be one of them, wouldn't it?

A I don't know enough about what is in silage and silage liquids to comment.

594 Q Well, are you familiar with the effect of PCB's on juvenile shrimp?

A Yes.

595 Q What was that, tell us about that? What is your understanding of that?

A I was told by the laborers in Gulf Breeze, Florida, an EPA laboratory.

596 Q When, if I may interpose?

A I am going to say about 1972.

597 Q Okay, go ahead.

A Somewhere in there.

598 Q I interrupted you, so--

A By Dr. Duke, Director of that laboratory at that time, that they had found that juvenile shrimp were extremely sensitive to exposure to PCB's.

599 Q And as a matter of fact, that study showed that one ppm would kill those shrimp?

A It is a very low level, yes, sir.

600 Q That was in '71, was it not?

A Well, all right, I had forgotten.

601 Q Now you said that you withdrew this product from distributors, who are your distributors, do you recall? I think you used the word?

A Well, our distributors for our purposes were considered customers, and yet we communicated with them in a special way to make sure that they in turn communicated with their customers, the recall--

602 Q Go ahead.

A The recall was part of the termination of sales to distributors, and it was our intent to help them get rid of any inventory they might have had in their warehouses.

603 Q Okay, so they had bought and paid for such, and you bought it back, so to speak?

A We had a recall plan within so many days.

604 Q You paid for it?

A Yes, sir, and as time--

605 Q In other words, you gave them their money back?

A Yes.

606 Q And your distributors are your customers, is that what you said?

A Well, they are listed along with our other customers.

607 Q Do you have distributors who have customers?

A Yes.

608 Q Who?

A Well, I am sorry, I didn't understand.

609 Q Describe them generally for me, would you?

A Customers or distributors?

610 Q I didn't make myself clear.

Do you have distributors, and those distributors have customers?

A That is true.

611 Q Okay, now what effort did you make to see that the distributor took back from their customers this material?

A We made no specific effort to make sure that he went to his customers to recall; it was recommended that he inform his customers.

612 Q What, inform them of what?

A Two things. Early on, we had informed our distributors that PCB's were being found in the environment. Most of the findings referred to Aroclor 1254, and let's make sure that this material is not permitted to be dumped into the environment,--some of here is what we understand. This was in February.

And later, when we decided to terminate sales, we told the distributor we are going to stop sales on August 30. We suggest you tell your customers there will be no more PCB's available after August 30. We even went so far as to suggest attached is a form of a letter that you might want to consider using.

613 Q Did you follow that up in any way?

A Yes, we did check with our distributors through our marketing people as to--did you get our letter? Have you done what we suggested? And the answer generally came back, yeah, we heard you and we are out there; we are communicating.

614 Q So you asked your sales people, and I assume marketing people means your sales people?

A Correct.

615 Q To follow up on that?

A Yes.

616 Q Did you have a written directive to him to do that?

A No, no.

617 Q Did you have them make a report as to what they had done?

A Not to me, personally.

618 Q To anyone?

A I didn't see any; I don't know if any existed.

619 Q You weren't given a form or anything like that?

A Not to my knowledge.

620 Q You would know, would you not, as the head coordinator?

A I wouldn't know everything, no.

621 Q Not in every detail, of course?

A No way.

622 Q But you know whether or not there was such a program?

A I would know that our marketing people knew of the situation, and they knew what was expected of them, and I would expect the managers to fulfill their duties.

623 Q Did the company, that is Monsanto reimburse the distributor for any PCB material that the distributor took back from their customers?

A I don't know. We don't, the material that returned to us, we don't know where it came from, but whatever--

624 Q Anything that was returned to you?

A We reimbursed.

625 Q And you did tell the distributor, go get it, send it in?

A That is right.

626 Q You mentioned that this Cumar was made in a company plant; you didn't know the name of the company that made it, but you did indicate you knew where it was, where was it?

A I didn't know that I said plant.

I was informed by our attorneys who are responsible for handling litigation situations of a formula, of a coating referred to in a, in the Midwest here as Cumar.

627 Q Right.

A And this all came from the lawyers.

628 Q Well, they are good people, go ahead.

A I know that, but I have no way of knowing where they got it, or how valid it was, but nevertheless, they told me about Cumar. Did I know anything about it? I told them I didn't know anything about it. Later, they came back and says, here is a formula and recipe. I forget, there are a half a dozen ingredients listed, one of them was our Aroclor 1254, and they asked me

then, do you recognize this, and that is the first, I said, that is the first I have seen it, and that is really the extent of any knowledge of Cumar.

629 Q What I was trying to get at was, I thought you knew where it was made, not the name of the company, not the name of the company, but where?

A I was told again by attorneys that there is a man by the name of Egan associated with the silo company.

630 Q This was Bloomfield Silo?

A I am sorry?

631 Q Bloomfield Silo?

I don't want to interrupt you too much.

A No.

632 Q Go ahead, excuse me.

A I don't associate that with Bloomfield. Michigan Silo--Mr. Egan with Michigan Silo Company had formulated this recipe, and it was used to coat silos. Again, all of this came from our attorneys.

633 Q When did you get this from your attorneys?

A I think this started to develop in 1971.

634 Q All right, now then to refresh your recollection as part of that formula, there was Aroclor 5460 in the amount of 20 pounds, and Aroclor 1254 in the amount of

70 pounds, out of a total of about 200 and some-odd pounds.

Were you familiar with that fact?

A I had forgotten, but I don't remember the numbers.

635 Q Now complaints, say when you received complaints from silo users and manufacturers, they went to you, did they not?

A Not necessarily.

636 Q Well, you got wind of them, did you not?

A Some of them.

637 Q Did you not. Are there some that you don't know about?

A I have a belief that some complaints regarding silos went to our Legal Department, and it is at their discretion as to when they would inform me and involve me.

638 Q Who is Mr. Cory?

A Mr. Cory at one time was my superior.

639 Q What did he do, and at what time was he your superior?

A Mr. Cory was my superior at the time Monsanto reorganized and formed the Monsanto Industrial Chemicals Company, and my job was placed under his supervision.

This was 1973 or 4, somewhere in there.

640 Q Prior to that time, your job came under what division

or part?

A It was prior to that, it was the Organic Division.

641 Q Okay.

And after '73, it all was under the Monsanto Industrial Chemicals Company?

A Up until 1976.

642 Q All right.

Who is the man in the Legal Department who is, to whom you reported regarding PCB's?

A There were several, many.

643 Q Who was the head man then?

MR. COCHRAN: When?

644 Q In the Legal Department.

A At what time?

645 Q When you were in charge of coordinating all the PCB work, investigation of mills, warning, whatever?

A Putzell was the corporate general counsel and head of the Legal Department.

646 Q Who was John Stapleton?

A John Stapleton reported to Mr. Putzell and took care of legal matters for Monsanto Industrial Chemical Company from 1973 to about sometime in 1974. I forget

the exact times.

647 Q All right, now have you any litigation with some feed manufacturers on account of PCB's getting into the feed?

A I believe I recall one. When you say with them, were they--

648 Q Well, again, "them" or "they" would be against you, or--

A I don't know the exact situation, but there was a feed situation involved in upper New York, and another feed situation involved in New Hampshire.

649 Q How about Michigan?

A I haven't heard of any Michigan situations.

650 Q Did you have any litigation with or against Campbell Soup on account of PCB's other than this chicken?

A Not that I know of.

651 Q Was that litigated?

A I don't know; not to my knowledge.

652 Q What happened to it, that claim?

A I don't know.

653 Q Did you have any litigation with anyone regarding any other type of animals having PCB's?

A Yes.

654 Q What?

A In New Hampshire, we had a mink exposure.

655 Q A what?

A Mink exposure.

656 Q What was that about?

A The allegation was that the minks suffered ill health, and did not reproduce as expected because of ingestion of PCB's.

657 Q What is the claim as to how they got this PCB's?

A This claim was that the PCB's were present in duck offal, which was fed to the mink.

658 Q Wild ducks?

A No, these were Long Island duck.

659 Q How did the Long Island duck get it?

A The allegation there was that the feed that the duck ingested was contaminated with PCB's.

660 Q And how--

A There were two possible, at least, two possible routes. One is from the presence of PCB's in inks used in packaging of waste bakery or stale bakery goods.

The other is a possibility of PCB's being present in floor sweepings or what have you from a bakery operation.

661 Q Did you have any litigation with any county, inter-county cooperative?

A Yes, that is the one I had in mind when I mentioned upper New York. I think that was the inter-county.

662 Q What was that about, if you know?

A That had to do with poultry being exposed to contaminated feed.

663 Q Is that the complaint regarding eggshells, or is that the one where they had to take the skin off of them?

A Well, I don't know the relationship.

664 Q How did you sell PCB's to the general market, by volume, or weight, or--

A It is sold by weight.

665 Q How is it packaged, as I understand it, it was a liquid?

A PCB's were liquid.

666 Q Some of course were a little more thick than others, I assume?

A Correct, that was sold anywhere from five gallon pails to tank cars, railroad cars, tank car lots.

667 Q Would that be by the pound, in other words?

A Always sold by the pound, yes.

668 Q How much a pound did you sell it?

A Oh, I don't remember.

669 Q $15.00 a pound? $15.00 a pound would be right, or was it 30?

A No, no, it is much less than that. It was in cents per pound. I have forgotten.

670 Q Say it again?

A Cents per pound.

671 Q You mean less than 5¢?

A Well, it didn't get that low.

I will have to guess--15¢ a pound, 25¢ a pound.

672 Q I see.

A Something like that, and it rose with the times, and the cost.

673 Q What did it cost you to make it?

A Again, I don't remember.

674 Q In your plant that you were in charge of?

A I honestly don't remember.

675 Q Didn't you have cost effective studies and that sort of thing?

MR. REESE: Well, I object to this line of questioning.

MR. YOUNG: I will cross out the question.

MR. REESE: Thank you.

676 Q I thought you had to have. You know what the cost is, that was my question?

A I don't remember. I did know at one time.

677 Q Would it be about half of what you sold?

MR. REESE: This witness has told you three times he does not remember.

Now I object to the question and I instruct the witness not to answer, and let's get on with the deposition.

MR. YOUNG: We will get along just fine without your sticking your nose into it.

MR. REESE: We can get along just fine unless you start asking the same question four times, and I don't intend to sit here the rest of my life to listen to it.

MR. YOUNG: Did I ask a question about how much it cost before?

MR. REESE: Three times.

MR. YOUNG: Did I get an answer?

MR. REESE: He said he did not know. You have got an answer.

MR. YOUNG: I am trying to help him.

MR. REESE: I know you are trying to help him, but

he has answered the question, and that is what he is here for. I have no objections to his answering.

MR. YOUNG: You are getting awfully cantankerous.

MR. REESE: Well, I am getting tired of hearing the same question over and over.

678 Q I have got one more question, what time does your plane leave?

A 5:35.

MR. REESE: Maybe.

THE WITNESS: There is a maybe there, five something.

MR. YOUNG: All right now, just a second, I want to have a pow-wow and step outside.

...At this time, a recess was taken.

AFTER RECESS

679 Q Mr. Papageorge, you told us about going to Ohio, and personally inspecting these silos at that one place, was that the Humphrey farm?

A Yes, sir.

680 Q And you mentioned going to another place over there. Why was that, and where?

A It was in that same area, Mr., I think it is Schwartzwalder, I believe that was the man's name, he was another dairy farmer.

681 Q Schwartzwalder?

A Schwartzwalder, S-c-h-w-a-r-t-z-w-a-l-d-e-r, I think, I believe that is the name.

It is something close to that.

682 Q Is that Canton, or is that elsewhere?

A It is within driving distance of Canton, Ohio.

I have forgotten the exact location, sir.

683 Q What did you find there?

A Not very much.

684 Q What did you go there for?

A Because Mr. Schwartzwalder's milk had been embargoed at one time by Dr. Hill's office, but he managed to get the level of PCB's below, into an acceptable level; therefore, he was able to market his milk quickly, much more quickly than the Humphreys.

685 Q What did he do?

How did he do that?

A I do not know.

686 Q All right, what did you do when you went there?

A I was trying really to get a better understanding of

the total dairy situation, silos, silage. As a city boy, I knew nothing, so I started from zero knowledge, and I looked over his idle silo. It was empty; nothing in it.

He was happy to show it to me, but he indicated to me that his milk was acceptable, and that he had no particular problem. Glad to meet me kind of thing, very social, so I really found out nothing from that last visit.

687 Q Did you examine the silo?

A Visually I looked at it.

688 Q Did you take any samples from the silos?

A I don't, I had intended to, but I don't recall if I did. I don't know.

689 Q Well, you would probably have some record of that, would you not?

A There was a record at one time, after the analytical result. I do not know where it is at present.

690 Q So you would have taken something to get an analytical result, would you not?

A If I took a sample, the result would have been recorded.

691 Q Did you, what did you determine was the source of the PCB that was found in his milk?

A Oh, I didn't make any determination there, I couldn't.

692 Q What did he tell you?

A All he told me was that they found some PCB's in his milk at a certain time, and several days later he checked it again, and it was acceptable, and it took all his milk.

693 Q What did he tell you he did with the silage?

A I am confusing the two farms. I don't remember specifically what he did with his.

694 Q But you say it was empty?

A It was empty, yes.

695 Q Did you ask him why it was empty, if everything was hunky-dory?

A I don't recall asking him why. He was telling me that he was feeding them hay and other kinds of feed, and that he had abandoned the silo, was not using it any longer.

696 Q Was that because it had PCB's in it and would contaminate the silage, did he say?

A I do not, I did not ask him.

697 Q How did you happen to go?

A Because I heard that his was one.

698 Q How did you hear that?

A Dr. Hill's, and also our Legal Department by then, this was in '71, yes, Legal Department informed me of Schwartzwalder.

699 Q That he had made a claim, I take it?

A Must have been.

700 Q What disposition of his claim was made?

A I don't know.

701 Q What other formal inspections did you make in your effort to learn all about the farming problem?

A Those are the only two that I visited.

702 Q On that occasion, but I am talking about any other time?

A I don't recall visiting any other farms.

I met with other dairy farmers, but not at their farms.

703 Q Did you get the total silage story from the observation at those two farms in Ohio?

A No, I got the story from the two known instances in 1970 before we terminated the sale of PCB's for that kind of use.

704 Q Are you saying that the only two silos that you inspected were those at the Humphreys and also the Schwartzwalder farms?

A Those are the only dairy farms where I physically with

my own eyes saw the silos and entered the silos.

705 Q Now you said that you conferred with cattle raisers and milk people, dairy farmers?

A Uh-huh.

706 Q What was the occasion for that?

A We visited some dairy farmers in Michigan in 1975.

707 Q Was that where they condemned all the cattle up there and buried them 16 feet under ground?

A No.

708 Q Thousands of them?

A I hadn't heard that, not with PCB's, heard it with another chemical.

709 Q Yes.

A PCB's?

MR. COCHRAN: Howard, I believe you are mistaken, I think you are--

710 Q PCB's. You wrote the--

MR. COCHRAN: What you are talking about, Howard, is PPB's.

MR. YOUNG: I am not, you know I am not asking you, John. You just forget that.

MR. COCHRAN: I am making an objection to your misleading statements.

MR. YOUNG: I am asking the witness.

711 Q Do you recall the question?

A Yes, I am not aware of any burial of cattle because of PCB contamination.

712 Q Well, I interrupted you with that, I was trying to help you a little bit.

But what my question was--

MR. REESE: With that kind of help, Bill, you got all the friends you can handle.

THE WITNESS: I can use all the help I can get.

713 Q But my question was, why you went to make these talks to meet these other dairy farmers, what was the occasion? You said you went to Michigan. Now then, I interrupted.

A Our Legal Department was contacted by attorneys in Michigan wanting to discuss PCB's in dairy cattle, and milk.

714 Q Where did you go?

A We made a visit of many cities in Michigan.

I remember Flint and Lansing, Michigan, and it seems to me there were a couple more other cities in Michigan.

We made a tour of several cities over several days.

715 Q What was the occasion you wanted to go talk to them, now why did you want to go talk to them?

A To find out what is the situation, what is it we can do to help that kind of approach.

716 Q What was the problem that they were having that you thought you might help them with?

A It appeared to be similar to the general problem, coatings, silage, contaminated milk kind of problem.

717 Q Okay.

A That was our understanding.

718 Q Now at the time, did you learn that the coating was Cumar in these silos that you were going to help these fellows with?

A I don't recall that the word Cumar was used.

719 Q What kind of coatings then?

A I never saw the coating.

They alleged that their silos were coated, and they thought that the contamination came from the coating.

720 Q Who was the manufacturer, or who put, made the silos?

A I don't know.

721 Q Was it Michigan Silo?

A I don't know, there were several silo companies mentioned, and I frankly have forgotten, there were so many mentioned.

722 Q When was that?

A 1975.

723 Q You made a report, I assume of this? You remember a Mr. Bassert up there?

A Yes, I believe he was an employee of a silo company, that we met with in one of those towns or cities.

724 Q Well, he was the owner, wasn't he?

A I don't remember.

725 Q Well, at any rate, did you make a report of this?

A I personally did not make a report.

726 Q Who was with you on that trip?

A A Mr. Lon MacFarland.

727 Q L-o how?

A L-o-n is his first name. M-a-c-F-a-r-l-a-n-d.

728 Q Who else?

A That is all.

729 Q Who made the report?

A Mr. MacFarland made the report.

730 Q To whom?

A I think to his own file. He is an attorney.

731 Q Was he with your company?

A He was working for my company, and as to, he is an independant attorney.

I don't know what the right words are--in Columbia, Tennessee.

732 Q What was he doing up in Michigan?

A Well, he is the attorney that up until then had been involved with silos in Tennessee, and had experience with silos, and he was asked by Kennamb to look into the Michigan situation.

733 Q Now you were requested by the Legal Department to make that trip. Did you not make a report to them?

A No, Mr. MacFarland made the report.

734 Q To your Legal Department?

A Yes.

735 Q You think that was '75? You remember what period of the year it was?

A Not really, no.

736 Q All right, you made speeches around here and there, did you not?

A Yes, sir.

737 Q Where all have you made speeches?

A Have I made them?

738 Q Regarding--where all have you made speeches regarding PCB's?

A For the entire period of time, I don't remember all of them.

739 Q Well, just do the best you can.

A I made presentations before a group of interested individuals, government and university in North Carolina, as I remember the place was called Quail Roost, Quail's Roost. I have forgotten just where that was located.

740 Q Sounds like a weekend hideaway?

A Yes, that was very pleasant, that is why I remember that, first.

That was one of the early meetings on PCB's.

I have made presentations before the Wisconsin, I believe it is called the Department of Natural Resources.

I made a presentation before the Associated Garden Clubs of Michigan, or some such title. I am not certain of these titles.

741 Q Well, you made numerous speeches then?

A Yes.

742 Q Did you make substantially the same speech everywhere?

A It depended upon the period of time, and what new information I could add to it.

743 Q Now if your attorneys approve, may we have a copy of your speech?

A I have never put it in writing.

744 Q You do have a copy of your speech?

A No, it was off the top of my head kind of an approach.

745 Q Now you did have one speech written out, did you not?

A There was a presentation I made before Congress that was written out.

746 Q All right, when was that?

A '74-'75.

747 Q What was that before, was that this talk presentation to Congress? Was it a Committee, or--?

Was it before the full House; or what?

A It was a Committee of Congress.

748 Q Which Committee?

A I have forgotten the full title, but it had something to do with the Merchant Marines that was chaired by a Representative from Massachusetts in whose district

there were some electrical apparatus manufacturers, and he was most interested in the continued use of PCB's in electrical apparatus.

And he asked me for this.

749 Q Was that published in the Congressional Record?

A I don't know.

750 Q You didn't receive a copy of it?

A I didn't personally see the Congressional Record.

751 Q But anyway, you think that was in '74. What season of the year?

A I don't remember.

752 Q All right now, you recall the occasion in Michigan in 1970 to 1971 when a large number of cattle got some feed in which had been mixed, mingled or mixed with PCB's?

A That is not truthful.

753 Q Well, you recall that occasion?

A I recall--

754 Q That occurrence?

A I recall an occasion where another chemical was reported to have been mixed in with feed.

755 Q Was that--now tell me about that, please?

A As I understood it from reading the trade journals and

popular press, and in talking to a representative of the Michigan Chemical Company, the chemical was Polybrominated Biphenyls.

756 Q Polybrominated, what was the last word?

A Biphenyl, B-i-p-h-e-n-y-l.

757 Q What was the difference between the Polybrominated and the PCB's?

A Chlorinated, where PCB's have a chlorine attached, the brominated has a bromine attached.

758 Q Instead of this--

A Instead of chlorine.

759 Q In the same amount?

A It could be. I don't know how much bromine they added to the chemical.

760 Q How much difference did that make to the product as between PCB and this Polybrominated Biphenyl?

A In what regard?

761 Q As to its character, or characteristics?

A I am told by our Medical Department that the brominated version is more toxic.

762 Q How much more?

A I don't know.

763 Q Was that your product?

A No, sir.

764 Q Whose product was it?

A Michigan Chemical Company.

765 Q How many times have you testified in Court regarding PCB's?

A In two cases.

766 Q Where were they?

A In Knoxville, Tennessee, and in Concord, New Hampshire.

767 Q When?

A I believe the New Hampshire was 1974, and the Knoxville case 1973.

768 Q Okay, what were the names of the plaintiffs?

A I don't recall the individuals in Tennessee.

New Hampshire it was the, there were three mink ranchers that were the plaintiffs.

769 Q That had to do with the ducks?

A Yes, yes.

770 Q All right, now what was the result in those cases?

A In Tennessee, Monsanto was, and I don't know the right legal expression, was released by the Judge as not being--

771 Q Found for the company?

A He just dismissed me and sent us home.

772 Q Well--

A Dismissed Monsanto.

773 Q I see, you sat through the trial on behalf of Monsanto?

A Yes, sir, and I testified for Monsanto.

774 Q Was this a jury trial or a Judge trial?

A Jury trial.

775 Q Did the company put in any evidence, or was it dismissed before the company put in any evidence?

Did you testify, in other words?

A I testified, but I was a witness for the General Electric attorney.

776 Q I see.

A And I submitted Monsanto labels and Monsanto letters and the like.

777 Q Was General Electric released?

A No.

778 Q In that case?

A No, sir.

779 Q Were they held liable?

A It is my understanding they were.

780 Q Now what did that involve?

A There was a transformer delivered from the General Electric plant in Rome, Georgia on its way to a customer traveling through Tennessee and the

transformer developed a leak at the opening which was not tightly capped.

781 Q That was GE's transformer?

A GE's transformer, and the material was alleged to have sprayed on some farmland, on the shoulder of the highway, and sprayed on some individuals driving by in a truck, and the truck driver was asked to get off the road by a State trooper, and he got instructions from his dispatcher to unload the rest of the oil, and he released it on the shoulder of the road, and that is the story.

782 Q Were any cattle or anything of this sort involved?

A I believe some of the testimony did indicate that the animals on that particular farm were either affected or their value had been reduced.

783 Q Were they slaughtered?

A No, no.

784 Q And the plaintiff won in this case as against GE?

A I really don't know.

785 Q Do you know any other cases where you have testified in Court?

A No, sir.

786 Q What was the outcome of the mink case?

A That was a very complex decision.

The primary, and I am not going to use the right legal terms, but Ag-Way Company, which was the feed formulator was judged by the jury to have been the principal, and I don't know the right words here, but they are the ones that paid the greater amount to three plaintiffs.

787 Q Was it settled, or did it go to verdict?

A It went to a verdict.

788 Q What was the verdict?

A Gosh, I don't know that I can repeat it. There were, as I remember, four of us found guilty in varying degrees, and the awards were calculated by some complex mathematical formula the Judge worked out, and Monsanto was one of the four.

Ag-Way Chemical was the one judged to be most in the position to have been--

789 Q Was the judgment paid?

A I don't know.

790 Q Was it appealed?

A It was not appealed, to my knowledge.

791 Q Not appealed.

When was that verdict?

A In '74.

792 Q What was the complaint against, was that the case in which the minks got some duck--

A Yes, sir.

793 Q You said offal?

A That is the intestines and whatever they clean up out of it.

794 Q So Ag-Way processed that. Ag-Way had processed the intestines?

A No, Ag-Way prepared the feed. The feed was delivered to the Long Island duck farm, and I forgot their names--the two brothers ran the farm--and when they would slaughter the birds, they would save the intestines and what have you, and freeze them in blocks and deliver them to these mink farmers who in turn would feed them to the mink over a period of time.

795 Q And Ag-Way then fed the ducks?

A No.

796 Q Furnished the feed for the ducks?

A Yes--okay, yes.

797 Q You remember some, a problem with turkeys?

A Yes. Now that you mention it, there was something about turkeys.

798 Q Big trouble, big trouble with turkeys, wasn't it?

A Couldn't have been too big. I don't remember anything about it.

799 Q Well, let me refresh your recollection.

Didn't you have complaints concerning turkeys in Missouri and in Minnesota and in Maine?

A I remember something about turkeys, but I don't remember anything developing from that.

800 Q You would have records on that if there was, your Legal Department, anyway?

A They might. I don't know.

MR. YOUNG: That is all, thank you.

THE WITNESS: Thank you.

MR. GRAY: I have just a few questions.

THE WITNESS: Okay.

CROSS EXAMINATION,

QUESTIONS BY MR. DAVID W. GRAY:

801 Q To your knowledge, were PCB's ever used in any sort of insecticides?

A Yes.

802 Q Do you know which ones?

A I do not know the insecticides by name.

I know that the Department of Agriculture in articles published by representatives of the Department had recommended using PCB's in insecticides particularly with an attempt to get at the gypsy moth, as I remember.

The PCB's were found to extend the effectiveness of the pesticide over a longer period of time.

803 Q You don't know, or recall the trade names of any of these insecticides?

A No, I don't.

804 Q Their manufacturers?

A No.

805 Q To your knowledge, were PCB's ever used in any sort of fertilizers?

A Not to my knowledge.

806 Q How about were they ever used in weed killers?

A Yes, I mentioned earlier the use in which the PCB's in a weed-killing formulation.

807 Q Do you recall the trade name of those weed killers that may have contained PCB's?

A No, I don't.

808 Q To the best of your knowledge, could any PCB loaded hydraulic systems be found on any farm machinery?

A It is possible.

809 Q Do you know what type of machinery they could be found on, perhaps?

A It is possible that they would be found in any device that needs a fluid to function the mechanism.

810 Q Could that be for example a farm tractor?

A Could be.

811 Q Or perhaps other farm implement equipment?

A Could be.

812 Q How about an electrical system containing PCB's, might that be found on a farm?

A It is possible.

813 Q Could you describe briefly what sort of electrical systems that could be found on a farm that might contain PCB's?

A That assumes I know quite a bit about farm equipment, and I--

814 Q To the best of your knowledge.

A It is quite likely that there are motors that have motor starters and capacitors that contain PCB's in them.

It is possible that there are transformers present in an installation.

Of course, all of these fluorescent fixtures have little capacitors in them, that contain PCB's in them.

815 Q Do you know if other domestic producers of PCB's besides Monsanto have made or did make PCB's to be used as the term plasticizers?

A I do not know where their PCB's are sold.

816 Q Or for what function?

A Or for what function, yes.

MR. GRAY: That is all I have, thank you.

QUESTIONS BY MR. KEITH C. REESE:

817 Q Mr. Papageorge, my recollection of some of the testimony here today, I think Mr. Young did inquire of you as to whether Monsanto had made certain studies concerning the effects on the environment of PCB's. You remember that question?

A Yes.

818 Q And you indicated that some studies had been made?

A Yes, I remember that.

819 Q My recollection is that you did not say anything about a biodegradation study. Was that study done by Monsanto?

A Yes.

You may recall I mentioned there were some studies made in which we simulated in the laboratory a municipal waste treatment system where the PCB's were found to be consumed or disappeared. Yes, that would fit under environment treatment studies.

820 Q And that would be another study then that you would add to your answer to that question, is that right?

A Yes, I would. I should have, yes.

821 Q And I have just one other question.

I recall Mr. Young asking you about certain instructions or letters to Monsanto distributors.

In essence, what did we tell our distributors when this letter went out which was in '70, I think you testified to February-March of '70?

A I am trying to recall.

It seems to me there were at least two letters; one informing them of a developing situation in the discovery of PCB's in the environment, and that we should not release these materials in the environment and we attached to that, as I remember, a copy of an article that appeared in a trade journal, one of the chemical journals which talked about water pollution

and the like.

That was in February.

Then later, after the corporate management committee approved the withdrawal program, we sent letters to distributors informing them that as of August 30, 1970, we would no longer sell them, ship them any PCB's, and I believe--I am not too sure at this point whether with that letter or an additional letter, we also included a program where we would buy back material that they had in inventory, still with Monsanto's label on it.

In other words, our material at some schedule.

822 Q Mr. Young I think then asked you in connection with that inquiry one of his summary questions was, in essence, did Monsanto tell the distributors to get it back from their customers, and send it back to Monsanto, and I think perhaps you agreed with that summary of a question by Mr. Young.

Is that accurate, do you agree?

A No, I misunderstood that.

We did not tell them you go out and contact all of your customers and bring back any material they had, no.

MR. REESE: I have nothing further.

REDIRECT EXAMINATION,

QUESTIONS BY MR. HOWARD S. YOUNG, JR.:

823 Q What did you tell them in that respect?

A I don't recall we told them anything specific. We relied on their good judgment as to how to handle their customers.

824 Q You told them that you would buy back any of the stuff that they would send back?

A Correct.

825 Q All right, now then, this biodegradation study, what was the result of it?

A The study showed that the, and I don't mean to confuse too much here, the PCB's with the lower amount of chlorine would vanish from the system, would disappear.

826 Q The lower the chlorine the quicker?

A The lower the chlorine the quicker they would be digested or consumed by the bacteria which was most encouraging to show that it was not, these particular PCB's were not persistent.

The higher chlorinated would persist.

827 Q How long?

A This particular study, as I remember, was six months.

828 Q Now by "higher", how high?

A We are talking now about five chlorines and higher per group.

829 Q In percentages?

A In percentages, the five chlorines were roughly 50% or more.

830 Q 50% or more of the entire volume?

A No, where the chlorine was 50% of the total weight?

831 Q Yes.

A Of that group.

832 Q That would last longer, is that what you are saying?

A That would last longer.

833 Q That would last up to six months?

A At least in this case, yes.

834 Q In that case.

What was the date of that study?

A 1971?

835 Q I don't know.

A '72--about '71-'72.

836 Q There would be a record of that, wouldn't there?

A Yes.

837 Q Who made that study?

A Monsanto research chemists.

838 Q What department, in your department?

A In the Research Department of Monsanto Industrial Chemicals Company, and as I recall--

839 Q Go ahead, I am sorry.

MR. REESE: Go ahead.

A This was reported to the government agency representatives who were part of that interagency task force that put together a report that they issued, finally issued in May of 1972.

840 Q Was that a government program?

A Yes, sir.

841 Q Funded by the government?

A Yes, sir.

842 Q Was it EPA or what agency?

A It was, it included EPA, USDA, FDA, Department of Commerce. That is all.

843 Q Any other study of a biodegradable nature?

A Not to my knowledge.

844 Q What did you do, what did you do later?

What was the nature of the study?

A The system is designed to simulate a large community system.

845 Q Okay, sewage?

A Sewage system in which you take--well, actually we went to a sewage system and got a culture, and introduced it into the equipment, glass equipment, and bubble air through it, and then studied it to see what is left after so many hours.

846 Q I see, how long would it take to degrade it if you put it through a sewage treatment plant?

A Correct, that is the intent.

847 Q That is all that was?

A Right.

848 Q Did you do any other biodegradable studies?

A There were some studies done in whales by a university professor.

849 Q Do any in silage?

A There were some studies made by the Department of Agriculture, Dr. George Frease, and the Ohio Agriculture Research Station in Wooster, by Don Willet on the nature of--

850 Q What is the name of this Wooster, Ohio thing?

A It is the, it is the Ohio Agriculture Research

Station, or some such words.

851 Q Was that done with what kind of animals, did you say?

A Cattle.

852 Q Cattle?

A Dr. Willet.

853 Q What was the conclusion?

A I have forgotten the exact data, but in time, the PCB's in cattle do diminish in the cattle themselves, and in their milk. That is it.

854 Q Never disappear?

A Yes.

855 Q Just diminishes?

A With time.

856 Q Never goes away?

A I think they reached the point where he couldn't detect it any longer.

857 Q Now Mr. Papageorge, if a PCB will stay in a silo 30-40-50 years, what is the formula of the PCB that would be so long-lasting as all that?

MR. GRAY: I am going to object to the form of the question, because I think it assumes things that haven't been proven.

MR. COCHRAN: Join in the objection.

A I don't think I understand the wording of the question in that if PCB's stay in a silo 30 years. That will depend an awful lot on what is happening to those PCB's.

858 Q Sure it would, but what I want to get at is the formula that is the longest lasting of the PCB's that would last that long under the most lasting conditions?

A Well, that is very difficult to answer, because if nothing is present to react with or consume, etc., or what have you, no matter what material you put under it, it will last forever.

859 Q That is what I thought.

A But if you put a material in there such as some of these bacteria I talked about earlier, and give them a chance to get at that PCB, they will start eating and consuming it, or if you put in there--

860 Q Well, what is the formula of the PCB that is most resistant to that type of degradation?

A The most resistant PCB is the one with the highest chlorine.

861 Q Highest chlorine?

A That would be the ten chlorines, that is the maximum.

862 Q What about 5460?

A That would have in it some of the resistant ones, not the whole.

863 Q 60%?

MR. COCHRAN: Wait a minute. Would you repeat the question?

Chlorine, the particular chemical you are interested in, you say 5460?

864 Q 5460?

A That is not a PCB.

865 Q That is Therminal, isn't it?

A No, that is a solid waxy kind of material that is--

866 Q What about 1254?

A All right, that is what I thought you had meant, 1254.

867 Q Well, thanks for correcting me. That is what I meant.

MR. REESE: That is all right.

A Now in that material Monsanto called 1254, there are some PCB's that have six, seven and eight chlorines per--

868 Q Ring?

A Per double ring.

869 Q The higher the chlorine contents the more resistant it becomes.

The more fire resistant the more degradation and so on.

870 Q You have seen the formula for Cumar, that is the 1254, what is used in Cumar?

A That is a recipe I saw somewhere.

871 Q Formula?

A Well, all right.

872 Q 1254, that was used in it, was it not?

A That is my--that is what I am told.

873 Q Okay, all right.

Who are your distributors in Indiana?

A I don't know.

874 Q Who knows?

A I would, it would have to be the marketing people, marketing.

875 Q Who were the distributors in Indiana in 1970 when you put out this letter or these two or three letters?

A I recall the list, but I don't recall the names any longer.

876 Q Whom should we ask, did you say, I mean, an individual?

I don't mean a whole department.

A It would have to be one of three people, Mr. Walter Shalk.

877 Q S-h-a-l-k?

A S-h-a-l-k. Or Mr. Willis Clark, and Dr. Cumming Paton.

878 Q Are they all St. Louis people?

A Mr. Shalk is in St. Louis; I believe the other two are overseas on some assignment overseas.

879 Q All right, they will be back one of these days, I assume? They will be in St. Louis when they return to St. Louis?

A I don't know.

AND FURTHER DEPONENT SAITH NOT

William B. Papageorge

STATE OF INDIANA )
) SS:
COUNTY OF MARION )

I, Herman F. Tierney, a Notary Public and Stenotype Reporter in and for the County of Marion, State of Indiana, do hereby certify that WILLIAM B. PAPAGEORGE, deponent herein, was by me first sworn to tell the truth, the whole truth and nothing but the truth, in a cause in which C. M. Bottema, Jr., d/b/a Bottema Farms is plaintiff, and Monsanto Company, Bloomfield Silo Company, Concrete Silo Company, Indiana Brand Company, Madison Brand Company, John Doe, and John Doe, Inc. are defendants, now pending in the Superior Court of Marion County, Indiana; that the foregoing deposition was taken at the instance of the plaintiff, at the offices of Tierney Reporting Co., 928 Circle Tower Building, in the City of Indianapolis, County of Marion, State of Indiana, on the 6th day of August, 1981, between the hours of 8:00 A.M. and 6:00 P.M.; that the above is a true and accurate transcript of my notes so taken; that the deposition was taken in stenotypy and afterwards reduced to typewriting under my direction, and that the deposition of the deponent was presented to Counsel for the deponent for his signature; that plaintiff was present and represented by his attorneys, Mr. Howard S.

Young, Jr., and Mr. Joseph Stevenson; that defendant Monsanto Company was represented by its attorneys, Mr. Keith C. Reese, Mr. John D. Cochran and Mr. James Gale; and that defendant Bloomfield Silo Company was represented by its attorney, Mr. David W. Gray.

I further testify that I am a disinterested person in this cause of action; that I am not a relative or attorney of any of the parties, or otherwise interested in the event of this action, and am not in the employ of the attorneys for either the plaintiff or defendants.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal this 21st day of August, 1981.

Notary Public

My Commission Expires:

October 8, 1984