UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF NEW HAMPSHIRE

BETHLEHEM MINK FARM, INC., et al	:	Deposition of
vs.	:	William B. Papageorge
JURGIELEWICZ, et al	:	THIRD DAY

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Deposition taken by agreement of the parties at the offices of Wadleigh, Starr, Peters, Dunn & Kohls; 95 Market Street; Manchester, New Hampshire; Thursday, February 14, 1974; commencing at nine-thirty in the forenoon.

PRESENT:

For Bethlehem Mink and Jubilee Food Supply:

McLane, Graf, Greene & Brown, by James R. Muirhead, Esq., and Richard S. Snierson, Esq.

For Jurgielewicz and Related Interests:

Sulloway, Hollis, Godfrey & Soden, by Lawrence E. Spellman, Esq.

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For Defendant Monsanto:

Wadleigh, Starr, Peters, Dunn & Kohls, by Philip G. Peters, Esq., and Robert L. Chiesa, Esq.

For Agway and Related Interests:

Faulkner, Plaut, Hanna and Zimmerman, by N. Michael Plaut, Esq., and Stillman D. Rogers, Esq.

For Rozansky Feed Company:

Sheehan, Phinney, Bass & Green, by Thomas H. Richards, Esq.

Stenotype Reporter:

Ronald J. Hayward

It is stipulated and agreed that the deposition may be taken in the first instance by stenograph, and when transcribed and then signed by the deponent, may be used for all purposes for which depositions are competent under the Federal Rules of Civil Procedure. Form, filing, notice and caption expressly waived. Copy of deposition to be furnished deponent's counsel.

It is further stipulated and agreed that if the deposition remains unsigned

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thirty (30) days after delivery to deponent's counsel, signature shall be deemed waived; and the deposition may be used the same as if signed.

WILLIAM B. PAPAGEORGE

called as a witness, having been previously sworn, was further examined and continued his testimony as follows:

MR. PETERS: I want to state for the record that after we finished last night, there were questions asked by Mr. Rogers of Mr. Papageorge as to whether he had any correspondence with Agway; and after the break, Mr. Papageorge asked me to go through my voluminous file to see if there really was. He didn't recall any, but he thought there may have been one. And I have gone through my file and I find one letter from William Papageorge to Dr. Richard Rice of Agway, dated January 15, 1971, a copy of the letter. And, in going through the file, I took out everything I could find; and in addition to the Plaintiff's Exhibit 1 for identification where we have correspondence with Mueller and Rozansky, there is

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a letter from Scott Tucker to Rozansky dated February 12, 1971, whereby Mr. Tucker at Rozansky's request sent him samples of Aroclor 1242, 1248, 1254 and 1260. And, on the same date, Mr. Tucker sent the same information to Mr. Cecil Shiery of Eastern Research Associates. Then, lastly, over my objection yesterday, Mr. Papageorge was asked about any correspondence from Inter-County and there is no correspondence we can find from Inter-County that went to Mr. Papageorge; but, in going through all of my records, I find there is a letter from Inter-County to Dr. Romoser of Monsanto dated May 13, 1971, whereby Inter-County asked analysis made of some of their samples and we have the results of those findings for Inter-County and there is one in there for Rozansky. These are all going to be given to you right now. Then we have marked yesterday for identification the results of the Agway analysis. These are the actual lab records that were marked yesterday of the samples that Agway sent in in mid-January of '71 and I find just a compilation in typing of those same results. It

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doesn't add anything to it, but since I have it I am willing to make these available to everyone.

MR. SPELLMAN: May I suggest that these be marked for identification as an exhibit?

MR. PETERS: All right.

(Whereupon, Papageorge Exhibit 2 was marked for identification.)

(Interrogatories by Mr. Rogers.)

1 Q. Mr. Papageorge, now, referring to the document that has been marked Papageorge No. 2 for identification, the top document is a letter to Dr. Richard Rice from yourself; do you recall this letter?

A. Yes, sir.

2 Q. Was there any other correspondence that you had with Dr. Rice other than this particular letter?

A. Not that I recall, sir.

3 Q. Had you had any other contact with Dr. Rice prior to the writing of this letter?

A. Yes, I met with Dr. Rice personally when he was in

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St. Louis and as best as I can recall, I had at least one telephone conversation with him.

Q. Just for the record, this letter is dated January 15, 1971?

A. Yes, sir.

Q. Then, I take it, the meeting that Dr. Rice had in St. Louis was prior to January 15?

A. Yes, sir.

Q. Do you recall when he was in St. Louis?

A. I believe it was two or three days before this letter. About January 10 through 12, somewhere in there, the 13th.

Q. Was he the one that Monsanto trained in the methodology?

A. Yes.

Q. And his entire training took two days?

A. Training involves considerably more time than that. The two days in St. Louis was, in my opinion, a beginning of this training exposure.

Q. Did he come back?

A. No.

Q. Now, referring to the next to last paragraph, the

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last full paragraph of this letter, it reveals a telephone conference with Dr. Hans Crump?

A. Yes.

11 Q. Who is Dr. Crump?

A. He is a scientist at that time with the water quality office with the United States Geodetic Survey and they concern themselves, as I understand it, with the quality of natural waters throughout the country.

12 Q. When was that telephone conversation held?

A. I don't remember exactly, but it would have occurred sometime between the time that Dr. Rice was in St. Louis and the time that I wrote this letter.

13 Q. What was the substance of your telephone conversation with Dr. Crump?

MR. PETERS: Objection, please, but you may answer.

THE WITNESS: I do not remember all of the details, but it was a general type of discussion of polychlorinated biphenyls and an idea as to what they were, where they were used, why would they appear in certain parts of the

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country. Sort of a general discussion about polychlorinated biphenyls.

14 Q. Did he mention any particular problem with their presence in waters in New York?

MR. PETERS: Objection, please.

THE WITNESS: He mentioned that he had heard something about polychlorinated biphenyls having been found in some chickens in New York.

15 Q. Did he mention anything about waters?

MR. PETERS: Objection, please.

THE WITNESS: No, sir, not that I remember.

16 Q. Did he indicate in any way that he believed that the presence of PCB's in the chickens was related to waters?

A. No, sir.

17 Q. Was it your statement during your prior testimony in this deposition that you did not consider that there had been any showing of any effect of PCB's on chickens?

A. I don't recall making that statement, sir. Under

what context?

18 Q. Well, when you were talking with Mr. Spellman about adverse effects upon - I believe the terms he used were beasts, fish, fowl and other living creatures.

A. I remember that discussion; and, as I recall, my response had to do with wild creatures out in the environment and the fact that I have yet to find any reports that specifically and definitely attribute an observed harmful effect on the fact that PCB's are present and are responsible. I haven't found that yet.

19 Q. Have you received any reports that PCB's are harmful or have an adverse effect upon domesticated animals of any type? Animals or birds or commercially grown fish.

MR. PETERS: Objection.

THE WITNESS: Yes, sir.

20 Q. Are these reports written?

A. Yes, there are some reports that are written.

21 Q. Are these included in the stack of reports which have been - which are to be given to us?

A. The reports which were sponsored by Monsanto

referring to domestic animals are really their test animals in this instance and are in that material that was made available to you.

22 Q. How about reports other than sponsored by Monsanto, do you have the reports on those?

MR. PETERS: Objection; you may answer.

THE WITNESS: I have reports. I don't recall if they are in this material, though.

23 Q. What are those reports?

MR. PETERS: Objection again.

THE WITNESS: Reports on domestic animals. As I remember, there is some chicken work performed at some research center. I don't remember at this point the date or the authors, but I do recall the leghorn chickens were involved.

MR. SPELLMAN: Was it at Cornell?

THE WITNESS: It could well be, although in my thinking I am a little confused

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because I heard a doctor from Cornell give a talk once and I don't know if I read that material or it was this talk.

MR. PETERS: Mr. Peakall?

THE WITNESS: No, it wasn't Mr. Peakall. A Dr. Scott, as I remember, who is from Cornell, whom I am led to believe is a poultry expert, has done some studies with chickens.

24 Q. (By Mr. Rogers) Will you make those reports available to us?

MR. PETERS: Well, if we have them.

THE WITNESS: Yes, I can make available to you copies of those reports dealing with domestic animals that I have in my possession, yes.

25 Q. Are there any other types of reports that you have dealing with domestic animals other than the one from Dr. Scott?

A. I don't know if it is Dr. Scott, it is the report dealing with the leghorn chickens.

26 Q. Other than the report that you recall?

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A. I recall a report in which ducks were involved.

27 Q. Who did that report?

A. I don't remember the authors, it had to do with the susceptibility of these ducks to a virus after exposure to polychlorinated biphenyls.

28 Q. Do you have that reportin your files?

A. I believe I do, yes.

29 Q. I will ask you to make that report available to us.

A. All right.

30 Q. When was that report done, do you recall?

A. I don't recall specifically, but it was more likely late 1971 or early 1972.

MR. PETERS: What are you talking about, his studies done by others and articles written which, to my knowledge, all counsel here all have?

MR. PLAUT: The only way we know whether we have them or not, I suppose, is for you to produce what you have got.

MR. PETERS: Well, I asked you to produce what you got and you didn't.

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MR. SPELLMAN: I don't recall any on ducks.

MR. PETERS: That is right.

31 Q. (By Mr. Rogers) Do you know where that study was accomplished?

A. I don't remember, no, sir.

32 Q. This letter of January 15, 1971, notes that a collection of scientific literature relating to polychlorinated biphenyls was enclosed; what scientific literature was that? What did it consist of?

A. I can't recall all the articles that were in the collection, but I would say that from the date of this letter, it consisted of those articles that I had personally set aside as relating to polychlorinated biphenyls during the year 1970 and Dr. Rice had asked if I had anything on polychlorinated biphenyls and I offered to have those articles copied and sent him the collection. I do not remember the specific titles, authors and how many there were.

33 Q. Is the status report referred to in that letter of

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January 15 included in the reports which have been given to us?

MR. PETERS: What is that, I am sorry, I didn't get the question.

MR. ROGERS: Read it back.

(Whereupon, the previous question was read back by the reporter.)

THE WITNESS: The status report itself is not included in that material you received; however, the more detailed information from which the status report was composed as time went on is in that final report that you received.

34 Q. Can we have a copy of that status report referred to in the letter of January 15?

MR. PETERS: I have no objection. We will get a copy for you, but you have already got one. We sent it to you. You say you don't know whether you got one?

THE WITNESS: The status report, gentlemen, was a changing document as we

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got results from the laboratory. I do not know at this time whether I kept this changing document in the records at all.

35 Q. Would the laboratory have a record of it? Would they have one?

A. No, this was a report composed by our medical department personally from inputs received over the telephone as a status report from the laboratory.

36 Q. Well, does your medical department retain records of such reports as this that they might draw up?

A. I do not know, but I will try to get a copy.

MR. PETERS: We will check. If we can't find it, we would like yours.

37 Q. Who would be the person at the medical department who would have charge of making these status reports?

A. At that time it was Mr. Elmer P. Wheeler.

38 Q. Is Mr. Wheeler still with the company?

A. Yes, sir.

39 Q. What is his title today?

A. Director-environmental hygiene, I believe it is. I am not very positive, but it is very close

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to that.

40 Q. Did you have a department of veterinary medicine in your medical department?

A. No, sir.

41 Q. Are there any veterinarians on your medical staff at all?

A. No, sir.

42 Q. Are there any specialists in problems dealing with animals?

A. Where?

43 Q. In your medical department?

A. I don't know whether - I don't know enough about animal medical practices to be able to determine whether there are experts, but there are individuals in the medical department to whom I go when I have questions in these areas. In many instances they are able to respond to my questions. In other instances, they go to outside consulting firms to get answers.

44 Q. What outside consulting firms did Monsanto use in 1969 through 1971 relative to veterinary medicine?

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A. The expression "veterinary medicine" has never been used in my presence in Monsanto.

45 Q. Well, relative to animals and the effects of the products of Monsanto on animals.

A. These are the laboratories listed in Appendix A, as I remember, which was supplied the other day to you; and, as I recall, they include Younger Laboratories, Industrial Bio-Test Laboratories, Shelanski Associates - strike that, Shelanski was not involved with polychlorinated biphenyls. Those are the only two, then, Industrial Bio-Test Laboratories and Younger Laboratories.

46 Q. What sort of work did Shelanski do?

A. Shelanski Laboratories are used by Monsanto interchangeably with the Younger Laboratories to conduct what we at Monsanto refer to as the acute toxicity studies.

47 Q. Did you review your files of the Shelanski reports to determine whether or not they might have done some testing for Monsanto on the PCB problem?

A. I personally do not review any of those files. I rely on the medical department to do this for me.

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48 Q. Who is the person in the medical department that you deal with with regard to review of these records?

A. Mr. Wheeler.

49 Q. Do you have any memoranda written - memoranda or notes or documents of any type between yourself and Mr. Wheeler or copies of documents from Mr. Wheeler to other persons in your file which relate to PCB's?

A. Yes.

50 Q. Are those memoranda, notes or other documents included in the documents given to us?

A. Yes.

MR. ROGERS: Which exhibit are they in, do you know, Phil?

MR. PETERS: Are they in the studies?

THE WITNESS: Yes, it is in the studies, Exhibit B, is it?

51 Q. (By Mr. Rogers) Have any of those memoranda or notes or documents been removed from the file by counsel or any other person?

A. No, sir.

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MR. ROGERS: Excuse me, I think Appendix B is labels and warnings.

MR. CHIESA: It is the studies.

(Discussion off the record.)

MR. CHIESA: Actually they are the backup of Appendix A.

52 Q. (By Mr. Rogers) Do you have any other correspondence, interoffice memos, notes or any other documents relative to the papers that Mr. Wheeler gave you that you have been referring to?

A. No, sir.

53 Q. Do you have any written requests for information that you made to Mr. Wheeler?

A. No, sir.

54 Q. In doing these studies, to whom would Mr. Wheeler make his initial report? Who in the Monsanto organization?

A. I don't quite understand the question. In making the studies, Mr. Wheeler doesn't personally make studies.

55 Q. Well, Mr. Wheeler's staff. Let me rephrase it.

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After Mr. Wheeler's staff has made a study or has received the results of a study from another laboratory, to whom would he in the normal course of business make a report of the results of those studies?

A. He would make the results of those studies known to several individuals including his supervisor and to me and to the director of the business group that markets the material involved, to the people in the research function that are developing the material.

56 Q. Who in the research department would he report to, the name?

A. Dr. Richard.

57 Q. And who is the manager of the group that he would report to by name?

A. Mr. Howard Bergen.

58 Q. And what is his title?

A. He is business director, specialty products group.

59 Q. Would any report be made to Mr. Throdahl?

A. I have no way of knowing this. I suspect that the information is conveyed to Mr. Throdahl somehow,

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but I do not see copies nor am I present.

60 Q. Is there any one person responsible for coordinating the activities of the medical department, the research department, the management department, and sales as related to PCB's?

A. That was my assignment.

61 Q. Did you organize any conferences among Monsanto people on an in-house basis for the discussion of these problems?

A. From time to time, yes.

62 Q. When was the first of these conferences held?

A. I don't recall the date. It was shortly after I was given the assignment.

63 Q. Who was in attendance at that first meeting?

A. I am certain I can't remember all of the individuals present. It involved the representatives from the research function whose names we mentioned previously.

64 Q. Why don't you state the names.

A. I will attempt as best I can. Keep in mind there are many, many meetings held. The same faces are involved and sometimes they would be invited and

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sometimes they wouldn't. As best I can remember, Dr. Richard representing the research function; Dr. Keller representing the analytical services function; Mr. Wheeler representing the medical department; Mr. Bergen representing the business group; a Mr. Olson who was the marketing director for the business group.

65 Q. What is his first name?

A. Donald Olson. Mr. Robert Kountz representing the engineering function. Mr. William Kuhn representing the manufacturing function. Now, it could be that some of these individuals brought along members of their staffs, I don't remember specifically every one that was present in the room at the time and there are people coming and going throughout the session.

66 Q. Were there any minutes kept of those meetings?

A. No, sir.

67 Q. Did you make any notes during the course of the meetings?

A. No, sir.

68 Q. Do you know if any of the other persons whom you

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have mentioned ever made any notes of those meetings?

A. Not that I am aware of.

69 Q. Are the persons that you mentioned, of the persons that you have mentioned, did they represent personnel from other divisions of Monsanto other than the organic chemicals division?

A. Mr. Wheeler was not a member of that division. He is a member of the corporate medical department. Mr. Kountz was a member of our central engineering department which was not a part of the division involved. I believe all other attendees were present members of the division that we are speaking of.

70 Q. Now, it is my understanding that under your present organization, several different companies would be involved in the same - in the operation of a particular plant. One in sales, one in manufacturing, did that condition exist at that time?

A. Again I am confused when you say several different companies and then you say sales. Each company has its own group organization and each group has its own marketing organization.

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MR. PLAUT: Off the record.

(Discussion off the record.)

71 Q. (By Mr. Rogers) Mr. Papageorge, can you explain the organization of Monsanto that existed during the period roughly from 1968 to the reorganization of 1971-72 that you have spoken of already?

A. During that period of time, Monsanto was organized as best as I can remember into ten divisions and a number of central departments. I will attempt to recall the names of all of these divisions.

MR. PLAUT: Can we just limit it insofar as it concerns producing PCB's? As it relates to Sauget and Anniston rather than going through the whole thing.

THE WITNESS: Of these divisions, the one that was involved with polychlorinated biphenyls was the organic chemicals division. Within the organic chemicals division there were units referred to as business groups. There were two of these business groups that were involved with the polychlorinated biphenyls. The

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principal group in terms in amount of polychlorinated biphenyls marketed was called the specialty products group. The second group which was involved to a lesser degree was called the plasticizers group. In addition to the marketing groups within the organic chemicals division, there was a manufacturing function which had the responsibility for the administration and operation of the manufacturing units that manufactured chemicals for this organic chemicals division. At that time two of the plants were involved in the manufacture of polychlorinated biphenyls. One of them was located at Anniston, Alabama, and this was the original and older operating unit. The second is located at Sauget, Illinois. The administration and operation of the producing units are the direct responsibility of the personnel located at the manufacturing sites. The guidance in terms of planning for expansions and planning for the future, let's say, and guidance relating to efficiencies and costs is provided by a member of the business group directors staff who carries the

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title - who has the title of manager-manufacturing. I hope that description helps in your understanding.

72 Q. Now, if during that period, say, from 1967 to 1971, a complaint about the presence of PCB's in an animal or a complaint about damage done to animals or other creatures were to be received by a plant manager, how would that complaint be handled?

A. The period of time I recall was 1971, that was the earlier date?

73 Q. No, 1967 to '71.

A. '67 to '71?

74 Q. Yes.

A. From 1967 until 1970, that type of inquiry or complaint would be handled in any one of numerous ways and I suspect it would eventually find its way to someone who felt that he was qualified to respond. Starting in 1970, the intent was that these kinds of inquiries would be directed to my office. I'd like to think they all end up in my office, but I suspect I am getting help elsewhere. I do not know in many instances what

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responses are given and how they are handled.

75 Q. Was there a procedure from 1967 to 1970 for the handling of complaints of this sort? Was it a written procedure?

A. No, sir.

76 Q. Was there an oral procedure?

A. Yes, in terms of by word of mouth people were told to send it to my office.

77 Q. Was there a written procedure dealing with claims of the presence or adverse effect of any Monsanto product upon any living creature?

A. Not that I am aware of.

78 Q. Was such a procedure established on January 1, 1970, or thereafter?

A. For any product, sir, within Monsanto?

79 Q. For any product.

A. Not that I am aware of.

80 Q. Or for products generally?

A. Not that I am aware of.

81 Q. For PCB products?

A. No, sir.

82 Q. Is there a draft of such a procedure?

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A. I am not aware of any.

83 Q. Have you initiated any recommendations for the drafting of such a procedure?

A. No, sir.

84 Q. Has anyone within Monsanto suggested to you that such a procedure be developed?

A. No, sir.

85 Q. Does the legal department handle complaints independently of your office?

A. Oh, yes.

86 Q. The legal department involved in these meetings that we talked about a little bit earlier this morning following your assumption of your new position in 1970?

A. On occasion, yes.

87 Q. And who would be the person from the legal department that would have bean there?

A. This would vary depending on the availability of personnel within the department.

88 Q. Was Mr. Putzell there?

A. No.

89 Q. How many samples, different samples of

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polychlorinated biphenyls, were sent to Agway, if you know?

A. It is shown in that letter that is attached to Papageorge Exhibit 2. In there you will note - that is my error, I thought there was.

(Discussion off the record.)

MR. PETERS: We have no document, but the best evidence is Agway itself.

THE WITNESS: I do not know how many were, but normally we would send out samples of three of our Aroclor mixtures.

90 Q. What was the quantity of each sample?

A. I don't have that information here. It was either 8 ounces or 16 ounces each.

91 Q. Now, with regard to the second page of Papageorge Exhibit 2, does this document dated February 12, 1971, relate to the third page?

A. Does it relate to the third page, these are individual letters to two different addressees.

92 Q. Let me rephrase the question, Does the reference to the sending of samples of Aroclor made in the

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letter from Dr. Tucker to John Rozansky dated February 12, is that reference to the samples mentioned in the letter of February 12 from Dr. Tucker to Cecil Shirey?

A. I don't understand the question.

93 Q. I will rephrase it again. Are the three samples mentioned in the letter to John Rozansky, the same three samples that are mentioned in the letter to Cecil Shirey?

A. I am sorry, there are four samples mentioned and samples of the same type were sent to both of these addressees.

94 Q. Did you have any discussions with John Rozansky as to which laboratories he was going to be using?

A. We had discussions about laboratories. He asked me for my recommendations. I mentioned a few that I had had some experience with. In subsequent conversations, he mentioned a laboratory he had found. He asked me if I knew anything about that particular laboratory. I told him that that is the first I had heard of it. That laboratory, by

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the way, was Eastern Research Associates. And, as I recall, there were some difficulties experienced with this laboratory's ability to perform the proper tests.

95 Q. When were you made aware of that difficulty?

A. Sometime in the spring of '71, as I remember. As I recall, Mr. Rozansky - - - On the results that our laboratory obtained, they were very different from the information that Mr. Rozansky's laboratory had given him and I recall now that he had mentioned that he was getting the services for a bargain price and I made the comment that it didn't sound right, that this analysis is so complex that he can't possibly be getting good service for the very low price he mentioned, and I forget the magnitude. This began to raise some questions about the competence of that particular lab as it relates to polychlorinated biphenyls.

96 Q. Did you subsequent to February 12, 1971, send samples of your Aroclors to any other laboratory at the request of Mr. Rozansky?

A. I don't believe so, no, sir; I don't remember that.

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97 Q. Do you recall sending any samples to a laboratory called Woodson-Tenet?

A. Yes, Woodson-Tenet, we have sent them many samples throughout the years, but we never know for which client of Woodson-Tenet these samples are used.

98 Q. Do you have a record of samples sent to Woodson-Tenet since 1960?

MR. PETERS: Since 1960?

THE WITNESS: If there is anything in my files, it would have to start in early 1970 and I have not looked at them recently, but it is possible that in my files I have some reference to those samples being sent to Woodson-Tenet Laboratories.

99 Q. When you sent samples to a laboratory, does the laboratory usually send you the results or a copy of the results?

A. Not usually, no, sir.

100 Q. If a result were sent to Monsanto, to whom would it be addressed in 1970?

A. That could go to most anybody involved with polychlorinated biphenyls. It depends who asks for

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the answer, the result.

101 Q. Do you have any follow-up on the - a procedure for follow-up on samples of Aroclors sent to laboratories?

A. No, sir.

102 Q. Do you make any inquiry as to the purpose for which they are going to be used?

A. Yes.

103 Q. Is there a record of the stated purposes for which samples sent are going to be used?

A. No, sir.

104 Q. Prior to 1970, who would have been the person responsible for the distribution of these samples upon request?

A. The sample material can only be obtained from the plant at which it was manufactured or from the research laboratory personnel who had quantities of this material on hand. Now, which of these three points shipped out samples depends on which received the request from a marketing man, from a secretary, from most anybody that answered the telephone or opened the mail in which the sample

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request was made.

105 Q. Would it be fair to characterize the system of distribution of samples, then, as uncontrolled in 1968-69?

MR. PETERS: Objection, please.

THE WITNESS: I don't know what you mean by the word "uncontrolled." It is an informal method that is aimed at helping anyone that makes a reasonable request and individuals in Monsanto are coached and trained to do the best they can to do what is proper.

106 Q. Prior to 1970, were there any reports received by Monsanto of the presence of PCB's in living creatures that resulted from one of these laboratory requests?

MR. PETERS: Prior to 1970?

MR. ROGERS: Yes.

THE WITNESS: If by reports, you mean a document or a telephone call or a conversation directed to Monsanto, I don't believe there were any. If by reports you were talking

about scientific articles, presentations at meetings and conferences and all, there is no way that these tests could have been made without a sample from Monsanto, so obviously the laboratory making the report had to approach Monsanto to get a sample, so my answer under those conditions would have to be yes to your question.

107 Q. But the laboratory would have to approach Monsanto for a sample?

A. That is correct.

108 Q. And it wasn't available generally on the marketplace?

MR. PETERS: What wasn't, PCB's?

MR. ROGERS: PCB's, Aroclors.

THE WITNESS: Aroclor PCB's were available on the marketplace. There is another source. I shouldn't say another source, there are other sources that are indirect. For example, the Food and Drug Administration requests a sample from Monsanto. We send them the normal 8-ounce or 16-ounce bottle off the shelf. There were some independent and academic laboratories

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that would approach the Food and Drug Administration for samples which the Food and Drug Administration would share with them, so that that is another route by which a laboratory could get samples, yes.

109 Q. Who is Dr. G. L. Romoser?

A. Dr. Romoser is a Monsanto employee, an animal nutrition specialist, who is the market - I am sorry, he is the product manager for Monsanto's animal feed products.

110 Q. Dr. Romoser's job, then, deals primarily with animals as they relate to Monsanto products?

A. I don't know whether he deals directly with the animals so much as he deals with the products that Monsanto sells to the animal feed business.

111 Q. What are those products?

A. I don't know an awful lot about them, but I do know that they are referred to as Calcium MHA and Santoquin, those are two of their products.

112 Q. What is the nature of Santoquin?

A. I don't know it chemically, but I understand it is an antioxidant. It is added to feed formulations.

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113 Q. Did you ever discuss the allegations of PCB presence of animals with Dr. Romoser?

A. Yes, sir.

114 Q. When did the first of these discussions occur?

A. I don't remember. There were many and quite sporadic.

115 Q. During the course of these discussions with Dr. Romoser, did he discuss specific incidents of the presence of PCB's that he was aware of?

A. During these discussions, yes, sir.

116 Q. Did he discuss all reports of allegations of presence of PCB in animals with you?

A. I do not know if he discussed all with me.

117 Q. Was it the intent of your conversations with Dr. Romoser to share all of your mutually available information with one another relative to that problem?

A. I don't know that we had anything formally established and agreed to, because of his area of activity Dr. Romoser would hear about allegations of polychlorinated biphenyls and he found out that I was the individual that was concerned with

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polychlorinated biphenyls and he would give me a call occasionally to report what he had heard relating to polychlorinated biphenyls.

118 Q. Did Dr. Romoser give you copies of any written complaints or allegations which he received relative to the presence of PCB's in animals?

A. No, sir.

119 Q. Did Dr. Romoser give you any documents or papers, notes, memoranda of any sort?

A. Not that I remember, no, sir.

120 Q. Did you have any discussions regarding the Campbell Soup cases with Dr. Romoser?

MR. PETERS: Objection.

THE WITNESS: I do not remember specifically, but I did discuss these reports I got out of the state of New York with many individuals and it could well be that sometime in my many discussions with Dr. Romoser this matter did come up.

121 Q. Did you discuss the various feed manufacturers involved in those incidents with Dr. Romoser?

MR. PETERS: Objection, please.

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THE WITNESS: I believe I did, yes, sir.

122 Q. Did you discuss Inter-County Farmers Cooperative Association with Dr. Romoser?

MR. PETERS: Objection, please.

THE WITNESS: I was not aware of Inter-County until Dr. Romoser mentioned them to me.

123 Q. What was the substance of Dr. Romoser's comments to you?

MR. PETERS: Objection, please.

THE WITNESS: As best as I recall, he said, I have got a good customer in a county up in New York. They have a polychlorinated biphenyl problem and they are asking for some help, can we give it to them? This is the kind of remarks, as best as I remember, that Dr. Romoser made and my answer was along the lines just like everyone else, we would like to help as best we can; what do they need? Dr. Romoser apparently went back and discussed further with Inter-County

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what their needs were.

124 Q. And what did he report to you what those needs were?

MR. PETERS: Objection, please.

THE WITNESS: As best as I recall, he said something about they want us - Inter-County would like Monsanto to analyze many, many samples and I told Dr. Romoser that we would like to help, but we certainly can't tie up our laboratory with just one customer with all of that work on a high-priority basis, that we would prefer assisting in terms of training analytical chemists, supplying samples, perhaps running a few samples just to make sure that their chemist or laboratory is getting the same information we are and if they don't have a laboratory, we would like to suggest private laboratories as a better way to go. This kind of conversation took place.

125 Q. Did you give him any suggestions or instructions as to communications with Inter-County?

MR. PETERS: Objection, please.

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THE WITNESS: It is along the lines that we can't do everything that Inter-County requested of us, but we would do some of this for them. We would like to help out. It is along the lines I just reviewed; private laboratories, training chemists, offering to look at a few samples.

126 Q. Did Dr. Romoser report back to Inter-County orally or in writing?

A. I don't know.

127 Q. Who would have the records that would indicate this?

MR. PETERS: Objection.

THE WITNESS: If any records do exist, it would have to be Dr. Romoser.

128 Q. Was this Inter-County matter referred to anyone else for handling or correspondence?

MR. PETERS: Objection.

THE WITNESS: Not that I know of.

129 Q. Were any tests run for Inter-County Farmers Cooperative?

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MR. PETERS: Objection, please.

THE WITNESS: As I remember, we did run a few tests for Inter-County, yes.

130 Q. Were those tests included in the documents that have been given to us?

A. Yes.

MR. PETERS: In Papageorge Exhibit for identification No. 2, over my objection.

131 Q. This is the final page?

A. This is the final page of that collection.

132 Q. Does this bear a number in the upper right-hand corner 157486?

A. That is correct.

133 Q. What was the nature of the samples submitted to Monsanto to Inter-County?

MR. PETERS: Objection.

THE WITNESS: I did not personally see these samples.

134 Q. Does this document that we are referring to now as part of Papageorge 2 reveal the type of sample

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submitted?

MR. PETERS: Objection.

THE WITNESS: It describes samples as coming or I guess they are coming from pullets and breeders and layers and something referred to as high-density and something referred to as Rozansky Feed.

135 Q. Are these numbers - what are these numbers at the end of each of the labeled columns? The number below the line.

MR. PETERS: Objection. Do you understand the question?

THE WITNESS: There are numbers below each of these descriptions.

136 Q. Well, let me start over again, then. Under this in the right-hand side in the top section it says peak out layer.

A. Yes, sir.

137 Q. And then there is apparently a date of 5-24-71.

MR. PETERS: I would like to, so I won't keep interrupting you, make an objection to all evidence concerning Inter-County

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for the record and that way I won't have to keep interrupting your questions at this time.

138 Q. Below that date there are two numbers, are there not?

A. Yes, sir.

139 Q. And below those two numbers there is a line?

A. Yes, sir.

140 Q. Below that there appears the No. 27.69?

A. Yes, sir.

141 Q. What does that number represent?

A. The numbers represent the gross tear and net weight of the samples and its container. Such that the number below the line represents in grams the weight of that sample.

142 Q. Now, going down to the bottom column, the bottom section of that page, the bottom half - - -

A. Yes, sir.

143 Q. What other figures and words - what do they represent?

A. Well, the left-hand column is the description of the samples we just referred to. The second column under the general description total weights is

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entitled "Weight." That is the weight of the sample as received in grams. The third column is entitled "Lipid," that is the weight of the fat that was extracted from the total sample. The fourth and fifth columns are under the general heading "Analysis."

(Discussion off the record.)

There are two columns, wet and lipid; these are the weights of the portions of the sample that was actually analyzed in grams and the column on the far right entitled the "Results as A-1242" means that the polychlorinated biphenyl is quantified as resembling Aroclor 1242 and the results are then expressed as two numbers separated by a slash. The first number refers to the concentration in the material as received and after the slash, the second number refers to the concentration in the material on the lipid or fat basis.

144 Q. Now, in the same section of this document that we are referring to in the last column, excuse me, the first column the last name, Rozansky; under

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the results column there is a figure 19.7, is that parts per million or parts per billion, do you know?

A. It is not designated, but by simple arithmetic, I believe you would arrive at the parts per million.

145 Q. The date in the upper right-hand corner of the page, June 22, 1971, would that be the date of the test?

A. Very likely.

146 Q. Were any tests made for Inter-County Farmers Cooperative Association earlier than that date?

A. I do not know of any other tests for Inter-County.

147 Q. I am going to ask you to see if you can find out and supply to us copies of tests made before that date, if any were made?

MR. PETERS: We have looked for them. Off the record.

(Discussion off the record.)

MR. PETERS: For the record, I have been asked to produce any inquiry or request by Inter-County prior to the letter of

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May 13, 1971, and I am willing to produce that subject to my objection.

(Whereupon, a recess was taken.)

148 Q. (By Mr. Rogers) Mr. Papageorge, again referring to Papageorge No. 2, with reference to a memo dated 2-15-71 addressed to yourself from Scott, was this the only message of this sort that you received from Dr. Scott?

A. As best as I recall, yes.

149 Q. This is Dr. Tucker?

A. That is correct.

150 Q. Do you have the results of the analysis of the sample referred to in that document?

A. I believe it is included in the information presented previously.

MR. PETERS: Papageorge Exhibit 1 for identification.

151 Q. Would you see if you could find it in there, Mr. Papageorge?

A. This is referring to bakery meal from Mr. Rice.

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I can't seem to find it.

(Discussion off the record.)

152 Q. (By Mr. Rogers) Mr. Papageorge, have you been able to locate the test results?

A. As best as I can determine, the test results are shown in that report which is included in Papageorge Exhibit No. 1 on a page which is marked in the upper right-hand corner as 157451.

153 Q. What is the date of the test shown on there?

A. The date shown is March 9, 1971.

154 Q. And what is the name of the person that prepared the report?

A. W. J. Litschgi.

155 Q. Is he still with the company?

A. Yes, sir.

156 Q. And what was his position in March of 1971?

A. He is an analytical technician.

157 Q. What group or department is he associated with?

A. He is a member of the analytical services group and works for Dr. Tucker.

158 Q. Would he have given this report to Dr. Tucker?

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A. Yes, sir.

159 Q. Did Dr. Tucker give this report to you?

A. Not this specific page, no, sir.

160 Q. In what form did you receive the results of this particular test?

A. As best as I can remember, it was a telephone call.

161 Q. Did you ever receive any written communication from Dr. Tucker?

A. I don't remember on this particular one.

162 Q. What were the comments of Dr. Tucker on the telephone?

A. I cannot, of course, recall the exact words; but for samples such as these which are a fairly normal way of communicating, Dr. Tucker would call me and remind me of the sample by describing it, do you recall the sample that we received from so-and-so back a few weeks ago, well, we finished analyzing it and we find such a level of polychlorinated biphenyls.

163 Q. Did he make any comment as to the level found in those samples?

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A. Not that I recall specifically.

164 Q. Did he express any concern as to the level in view of the type of material involved?

A. I don't remember a discussion which addressed itself specifically to that level. All the discussions we have had on so many different samples, I would only be speculating as to what did take place for this specific sample.

165 Q. Given the nature of the sample, was this - how would you characterize this sample as to the level of PCB's found; high, low, medium?

A. From the few samples - and by few I mean less than a dozen of this kind of material - that was the highest number that we had seen.

166 Q. What was the next highest number?

A. I don't remember specifically, but normally they are below a hundred. Thirty, forty, fifty, fifteen, the range is quite broad.

167 Q. Now, having in mind your previous testimony with regard to the manner of preparation of wafer meal, bakery byproduct by Rozansky, is this result consistent; or this level of contamination consistent

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with the presence of extraneous material in the food product contained in the wafer meal?

MR. RICHARDS: Please note my objection to the question, I think it calls for a complete speculation.

MR. PETERS: Objection; you can answer only if you know.

MR. SNIERSON: We will also object.

MR. PETERS: Do you understand the question?

THE WITNESS: I don't know that I understand it.

168 Q. (By Mr. Rogers) Let me go back again. You have had discussions with Mr. Rozansky about the manner in which he prepared his product?

A. Yes, sir.

169 Q. And I believe - was it your testimony that he left portions of the wrappers in the product as he prepared it for distribution to food manufacturers?

MR. RICHARDS: Please note

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my objection.

THE WITNESS: That is my understanding.

170 Q. Now, based upon your knowledge of polychlorinated biphenyls, would a sample achieve a reading such as that revealed by this page numbered 157451 of Aroclor 1248 as a result of the inclusion of those wrappers in the product?

MR. RICHARDS: Again note my objection to the question.

MR. PETERS: Objection again.

THE WITNESS: You are asking me to speculate and I would like to add that one sample of any material - from my understanding of polychlorinated biphenyls - one sample of any material taken at random is not enough to base any conclusions on of any kind.

171 Q. Well, let me rephrase it. If there were pieces of cardboard, pieces of cellophane, wrappers, mixed with a bakery product - also spaghetti and candy - with the polychlorinated biphenyls, would any polychlorinated biphenyls that might be in the

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packaging material that I referred to transmit to the bakery product?

MR. PETERS: Note my objection again.

MR. RICHARDS: Again note my objection.

THE WITNESS: Not knowing how the sample was taken, it is conceivable that as a sample is taken, the source of the polychlorinated biphenyl, whether it be part of the packaging or what have you, that is in this mixture, could contain a high level of polychlorinated biphenyl.

172 Q. What do you mean by a high level?

A. Well, I think I can make myself clearer if I can assume some things here.

MR. PETERS: Well, I object and I instruct you not to assume anything.

MR. PLAUT: This is part of his answer.

MR. PETERS: Also not to speculate.

THE WITNESS: All it is is

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speculation. Anyone can speculate as I can.

MR. PETERS: Your answer is speculation?

THE WITNESS: Yes.

MR. PETERS: Then I instruct you not to answer.

173 Q. (By Mr. Rogers) Is your answer based upon your knowledge of polychlorinated biphenyls?

A. Yes, sir.

174 Q. Is it based upon your knowledge of the properties?

A. Yes, sir.

175 Q. Is it based upon your study of the ability of these substances to migrate?

A. Yes.

176 Q. Then I will ask you again, based upon your knowledge whether polychlorinated biphenyls would migrate from packaging materials to the bakery product in sufficient quantity to cause a reading of this magnitude?

MR. RICHARDS: Note my objection.

MR. SNIERSON: Objection.

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MR. PETERS: I object again to the question and instruct the witness not to answer if his answer is speculation.

MR. SPELLMAN: Well, Phil, it seems to me that even though it calls for a speculation answer, conceivably based on this man's expertise, it could lead to other information. I will agree that it would be inadmissible at trial against Monsanto, but I think it is proper at the deposition.

MR. PETERS: I don't think it is proper anywhere to speculate, so my instruction to the witness is if his answer is based on possibilities, he can answer it. If it is based on speculation, he cannot answer it.

MR. PLAUT: Well, he already said that he is familiar with the migratory properties of PCB's, that is what we are getting at; and this is what the question is directed to and I think it is a proper question.

MR. PETERS: I am still instructing you that if it is based on speculation,

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I instruct you not to answer. If it is based on probability, you may answer.

MR. PLAUT: If it is based on his knowledge, he may answer?

MR. SPELLMAN: Well, it strikes me that this term "speculation" rather than possibilities is semantic. If he has any judgment on it, I think Tim is entitled to the answer.

MR. PETERS: If he has a judgment based on the probabilities.

MR. PLAUT: It doesn't have to be based on his knowledge. He has already testified that he has his expertise - - -

MR. PETERS: I am still instructing the witness that if it is based on "speculation," I am instructing him notto answer. I don't know what his answer is. If it isn't, I have no objection to him answering subject to my objection.

MR. SPELLMAN: Has anybody speculated what the Court's phone number is in

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Puerto Rico?

MR. PETERS: If I am wrong, you can get it.

THE WITNESS: As I understand the question I was asked; if from my knowledge of polychlorinated biphenyls and their properties and their migration, and what have you, whether this level could have appeared in the sample, the degree of migration is - - -

177 Q. (By Mr. Rogers) Is it likely to?

A. It is dependent on so many things such as the level of concentration of the initial source, the nearness of the adjacent material, the amount of agitation that has taken place, the amount of fat material that is present, the temperatures that these materials have been exposed to; there are so many factors involved that I just don't know how to answer that question. If the conditions are right, this number is possible.

178 Q. Has Monsanto Company done any testing of plastic wrapping materials since 1968?

MR. RICHARDS: I am sorry, I

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didn't hear the whole question.

179 Q. Has Monsanto Company done any testing of plastic wrapping materials for polychlorinated biphenyls since 1968?

A. I am not aware of any analytical tests made on plastic materials of the type you referred to.

180 Q. Has Monsanto Company done any analysis of inks, printing inks for the presence of polychlorinated biphenyls since 1968?

A. No, sir, not to my knowledge.

181 Q. Has Monsanto Company done any testing of craft paper or cardboard for the presence of polychlorinated biphenyls since 1968?

A. Not to my knowledge.

182 Q. In the document referred to as part of Papageorge Exhibit No. 1, page 157451 - - -

A. Yes, sir.

183 Q. Was any attempt made to - - - Do you have any knowledge as to whether or not there were any substances in that sample other than bakery product, spaghetti, candy and that sort of thing?

A. I know nothing about the sample.

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MR. RICHARDS: Just for the records, I would note that the sample is noted to be chicken meal used to feed PCB-contaminated chickens and there is no evidence that that was bakery product or anything else.

MR. ROGERS: For the record, I would like to note that this document relates to the memo of Scott to Papageorge dated February 15, '71.

184 Q. Mr. Papageorge, was any test done or any analysis made of the samples submitted by Agway at any time to determine the presence of foreign material such as craft paper, plastic, cardboard, cellophane, inks, and that sort of thing?

A. No, sir.

185 Q. Who would be the person within the research department that would have physically examined the samples prior to testing?

A. I do not know who would physically examine them. I do know who acknowledged receipt of the sample. From this point on, I don't know who handled the material personally, who stored it, who packaged

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it, other than what the documents already tell us. Dr. Tucker acknowledged receipt of the sample and Mr. Litschgi analyzed it.

186 Q. Is any portion of the sample submitted to you by Agway still available?

A. I do not know.

187 Q. Who would know?

A. Dr. Tucker.

188 Q. Would you determine that for us and let us know?

MR. PETERS: Yes, we will.

189 Q. Are any portions of the samples submitted to you by Rozansky still available?

A. I do not know.

190 Q. Would Dr. Tucker have that information?

A. Yes.

191 Q. I would like you to find that out.

MR. PETERS: We will.

192 Q. Any portion of the samples of Inter-County as well?

A. We will get that for you.

193 Q. And any portion of the samples by C. F. Mueller Company.

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A. We will get that information.

194 Q. Mr. Papageorge, referring to Papageorge No. 1, did you personally have conversations with Mr. Bremer of the Mueller Company?

A. No, sir.

195 Q. Did you speak with Dr. Tucker about the Mueller Company samples?

A. Yes, sir.

196 Q. Did you ever receive any indication from Dr. Tucker of inquiries by other food manufacturers?

MR. PETERS: Objection.

THE WITNESS: Yes, through the years whatever Dr. Tucker was requested to analyze, he would somehow inform me.

197 Q. Do you have a list of the other companies, food manufacturing companies, who made inquiries with regard to PCB's?

A. No, sir.

198 Q. Do you have any that - would Dr. Tucker have such a list?

A. I do not know.

199 Q. Did you receive any telephone reports from

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Dr. Tucker with regard to results of analysis of any samples submitted by other food manufacturing companies?

MR. PETERS: Objection, please.

THE WITNESS: Yes, I received information off and on time and again.

200 Q. Do you recall the names of any of these food manufacturing companies?

MR. PETERS: Objection, it is not limited as to time.

201 Q. From 1968 to 1971, April.

MR. PETERS: Note my objection to that, too.

THE WITNESS: I just right offhand can't recall specifically the names of food companies as they relate to polychlorinated biphenyl analyses. I would have to somehow refresh my memory on these.

202 Q. Who would have the test results?

A. It would be in the laboratory.

203 Q. Would they be in Dr. Tucker's lab?

A. In that laboratory, yes, sir.

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204 Q. Did you have any discussions with Mr. Wheeler about claims of presence of polychlorinated biphenyls in food products manufactured by other food manufacturers than C. F. Mueller?

MR. PETERS: Objection.

THE WITNESS: I don't recall specific instances, but the very nature of the subject, that is the kind of thing I would review with Mr. Wheeler.

205 Q. Would Mr. Wheeler have records independent of those of Dr. Tucker concerning such inquiries and complaints?

MR. PETERS: Objection.

THE WITNESS: I don't know. I would be surprised if he does.

MR. SPELLMAN: For clarity, I thought Wheeler was a doctor?

THE WITNESS: No, sir.

206 Q. Would Dr. Romoser have any such records?

MR. PETERS: Objection.

THE WITNESS: I don't know. I don't think so.

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207 Q. Did you have any discussions with Dr. Romoser about complaints of the presence of polychlorinated biphenyls in food products manufactured by manufacturers other than C F. Mueller?

MR. PETERS: Objection, please. I assume you are not counting Agway?

MR. ROGERS: Yes, excluding Agway.

208 Q. Do you recall a receipt of any inquiries or complaints concerning the presence of polychlorinated biphenyls in the products of A & P or the Atlantic and Pacific Tea Company?

MR. PETERS: Objection, please.

THE WITNESS: There were none.

209 Q. Do you recall any with regard to the products prepared by a company known as Burry Biscuit Company?

MR. PETERS: Objection.

THE WITNESS: None to my knowledge.

210 Q. Did you have any discussions with Mr. Wheeler,

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Dr. Tucker, or receive any direct communication from anyone in the Bond Baking Corporation with regard to the presence of PCB's in their product?

MR. PETERS: Objection.

THE WITNESS: There were none.

211 Q. Did you have any discussions with Dr. Tucker or Mr. Wheeler or receive any direct communication from anyone in the Bellacicco & Son Bakery regarding the presence of polychlorinated biphenyls in their product?

MR. PETERS: Objection.

THE WITNESS: There were none.

212 Q. Did you have any discussions with Dr. Tucker or Mr. Wheeler or receive any direct communications from anyone directly in an organization known as Duvernoy & Sons of New York City concerning PCB's in their product?

MR. PETERS: Objection.

THE WITNESS: There were none.

213 Q. Did you have any discussions with Dr. Tucker or Mr. Wheeler or anyone directly in the Edren Corporation in Jersey City, New Jersey, concerning

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polychlorinated biphenyls in their product?

MR. PETERS: Objection.

THE WITNESS: There were none.

214 Q. Did you have any discussions with anyone from the Fields Bakery or Mr. Wheeler or Dr. Tucker relative to PCB's in the products of Fields Bakery of New York City?

MR. PETERS: Objection.

THE WITNESS: There were no discussions.

215 Q. Have you had any discussions with Mr. Wheeler or Dr. Tucker or with anyone in General Foods Corporation of Dover, Delaware, relating to PCB's in their product?

MR. PETERS: Objection.

THE WITNESS: There were no discussions.

216 Q. With regard to the same persons, did you have any discussions or do you know of any discussions between Dr. Tucker and Mr. Wheeler with the General Foods Division manufacturing milk?

MR. PETERS: Objection.

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THE WITNESS: There weren't any discussions of this type.

MR. ROGERS: Off the record.

(Discussion off the record.)

217 Q. Did you have any discussions of the type that I have just referred to with Dr. Tucker or Mr. Wheeler for Gnome Bakers of New York City?

MR. PETERS: Objection.

THE WITNESS: No, sir.

218 Q. Did you have any discussions of that nature or communications with Heights Feed Company of New Jersey?

MR. PETERS: Objection.

THE WITNESS: No, sir.

219 Q. Did you have any such discussions with Charles Henkel, Incorporated, of Secaucus, New Jersey?

MR. PETERS: Objection.

THE WITNESS: No, sir.

220 Q. Did you have any such discussions with David Kahn & Sons of Guttenberg, New Jersey?

MR. PETERS: Objection.

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THE WITNESS: No, sir.

221 Q. Did you have any such discussions with Henry S. Levy & Son, Incorporated?

MR. PETERS: Objection.

THE WITNESS: No, sir.

222 Q. Did you have any such discussions with National Biscuit Company of Fair Lawn, New Jersey?

MR. PETERS: Objection.

THE WITNESS: No, sir.

223 Q. Did you have any such discussions with National Biscuit Company Research of Fair Lawn, New Jersey?

MR. PETERS: Objection.

THE WITNESS: No, sir.

224 Q. Would you be aware of any discussions which your research department might have had with the research department of National Biscuit Company in Fair Lawn, New Jersey.

MR. PETERS: Objection.

THE WITNESS: I would be aware if the discussion involved polychlorinated biphenyls, but there were no such discussions.

225 Q. Would you be aware of discussions between Monsanto

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Company and National Biscuit Research relative to the design and development of new cooking machinery?

MR. PETERS: Objection.

THE WITNESS: I am not aware of such a discussion.

226 Q. Who would be aware of whether or not such a discussion took place?

MR. PETERS: Objection.

THE WITNESS: If the use of Monsanto's heat transfer fluids were involved, then it would be our marketing representative. If these materials were not being considered, then I doubt if anyone in Monsanto would have been involved.

227 Q. Well, what would be the name of the person in the marketing organization that would have dealt with National Biscuit?

MR. PETERS: Objection.

THE WITNESS: If we are still referring to the period '70-71, it would be Mr. Jack Falon or his field sales representatives.

228 Q. How many field salesmen or representatives does

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he have?

A. I don't know the number, sir.

229 Q. Is Mr. Falon still with the company?

A. No, sir.

230 Q. Would his records be maintained at the corporation headquarters?

A. Well, his records should have been maintained according to Monsanto's record-keeping policy. Whether this was done or not, I can't say.

231 Q. Would those records be in St. Louis, if they still exist?

A. Yes, sir.

232 Q. Does Monsanto have a policy of assisting other corporations in the design of machinery utilizing Monsanto products?

MR. PETERS: Objection.

THE WITNESS: Yes, sir.

233 Q. If this involved heat transfer units, what organizations as of 1969-1971 would be involved in the giving of this assistance?

MR. PETERS: Objection.

THE WITNESS: This is

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organizations within Monsanto, I assume?

234 Q. Yes.

A. Well, this again would be our marketing organization which is responsible for these products.

235 Q. Would they assist in the design of these instruments, of the machines?

MR. PETERS: Objection.

THE WITNESS: Yes, when requested.

236 Q. Is there a particular individual in charge of design function?

MR. PETERS: Objection.

THE WITNESS: I don't know that I would say that he is in charge, but in general there is one individual that would be consulted first.

237 Q. As of 1969-1971, what was the name of that individual?

A. Donald Roush.

238 Q. What was his title?

A. I am not positive, I believe it was marketing specialist.

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239 Q. Was it also part of Mr. Roush's function or job to assist in the correction of defects which might be found in heat transfer ovens?

MR. PETERS: Objection.

THE WITNESS: Well, as I understood or understand Mr. Roush's function, it is to provide engineering assistance to our customers who request this assistance and this assistance does apply to the application of Monsanto's heat transfer fluids to heating systems.

240 Q. Is Mr. Roush still with the company?

A. Yes, sir.

241 Q. Is he still in the same position?

A. Yes, sir.

242 Q. Is his office in St. Louis?

A. Yes, sir.

243 Q. Did you consult with Mr. Roush in connection with your studies involving the methods by which polychlorinated biphenyls wereapparently getting into the environment?

A. Yes, sir.

244 Q. Did Mr. Roush submit to you any written reports?

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A. No, sir.

245 Q. Did he submit to you any correspondence relative to those inquiries?

A. No, sir.

246 Q. Did he submit any other memoranda or handwritten notes relative to those inquiries?

A. The only notes I recall receiving from Mr. Roush are with respect to responding to telephone inquiries of the type that we referred to earlier as complaints relating to the presence of polychlorinated biphenyls.

247 Q. Have you maintained those notes?

A. No, sir.

248 Q. When were they destroyed?

A. As soon as I completed the telephone call. These are the normal telephone message-type notes.

249 Q. Did you have any conversations with Mr. Wheeler or Dr. Tucker or any person from National Biscuit Company of Philadelphia relative to the presence of PCB's in their product?

MR. PETERS: Objection.

THE WITNESS: I don't

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remember any conversations with anyone regarding National Biscuit Company.

250 Q. With regard to the same people and the same sort of communications, did you have any with an organization known as Pectors Bakery?

MR. PETERS: Objection.

THE WITNESS: No, sir.

251 Q. Did you have the same sort of communications with the same persons with Old London Foods, a division of Borden, Incorporated?

MR PETERS: Objection.

THE WITNESS: No, sir.

252 Q. Now, did you have any with Borden's at all?

MR. PETERS: Objection.

THE WITNESS: No, sir.

253 Q. Now, the documents contained in Papageorge No. 1 for identification, all of the communications with C. F. Mueller Company - - -

MR. PETERS: Objection, you may answer.

THE WITNESS: What about them, sir?

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254 Q. Are those documents all of the communications with C. F. Mueller?

A. That is all that I am aware of.

255 Q. Are you aware of any other testing or requests for testing done by those people?

MR. PETERS: Objection.

THE WITNESS: No, sir.

256 Q. With regards to conversations or reports of Mr. Wheeler or Dr. Tucker or directly with yourself, have you had any contact with Proctor & Gamble of Port Ivory, Staten Island, New York?

MR. PETERS: Objection.

THE WITNESS: No, sir.

257 Q. With regard to Dr. Tucker and Mr. Wheeler and conversations or reports between yourself and them or directly, have you had any with Wards Food or Tiptop Bread Company?

MR. PETERS: Objection.

THE WITNESS: No, sir.

258 Q. With regard to Mr. Wheeler and Dr. Tucker, any conversations or reports which you have had with them or directly with Thomas's Bakeries?

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MR. PETERS: Objection.

THE WITNESS: No, sir.

259 Q. With regard to Mr. Wheeler and Dr. Tucker and conversations and reports which you have had with them or directly with VanDutch Bakeries of 3rd Avenue, New York City?

MR. PETERS: Objection.

THE WITNESS: No, sir.

260 Q. With regard to Mr. Wheeler and Dr. Tucker, have you had - or directly - any with Webster Baking Corporation of New York City?

MR. PETERS: Objection.

THE WITNESS: No, sir.

261 Q. Again with regard to Mr. Wheeler and Dr. Tucker, have you had any reports or conversations or directly with the Arnold Bakery of Grenich, Connecticut?

MR. PETERS: Objection.

THE WITNESS: No, sir.

262 Q. Have you received any report or had any conversations with anyone within the Monsanto organization indicating any complaint or any claim of the presence

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of polychlorinated biphenyls in the product of Carman River Duck Farm of Brookhaven, New York?

MR. PETERS: Objection.

THE WITNESS: No, sir.

263 Q. Has Carman River Duck Farm, to your knowledge, ever submitted any samples of their material to Monsanto Company for analysis relative to the presence of PCB's?

MR. PETERS: Objection.

THE WITNESS: No, sir.

264 Q. Have you received any communication from any person, whether in Monsanto or without Monsanto relative to indications of the presence of polychlorinated biphenyls in any ducks or any duck byproduct on Long Island other than the individuals involved in this case?

MR. PETERS: Objection.

THE WITNESS: No, sir.

265 Q. Would any inquiries concerning the presence of polychlorinated biphenyls in ducks or duck by-product be directed to you or would it be directed to someone else?

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A. Very likely eventually it would reach my office.

MR. SPELLMAN: You mean if one were directed to Monsanto in the first place?

MR. ROGERS: Yes.

266 Q. Would Dr. Romoser have any records of inquiries made to him by such individuals?

MR. PETERS: Objection.

THE WITNESS: I do not know.

267 Q. Does Monsanto Corporation sell polychlorinated biphenyls to Sears, Roebuck and Company?

A. Not to my knowledge.

268 Q. Does Monsanto Corporation sell polychlorinated biphenyls to the City Service Company or now CITGO?

MR. PETERS: Objection.

THE WITNESS: My hesitation is due to the fact that your question is in the present tense.

269 Q. Or did they in 1968 through '71?

MR. PETERS: Objection.

THE WITNESS: I do not know.

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(Whereupon, the luncheon recess was taken.)

270 Q. (By Mr. Rogers) Was it your testimony yesterday, Mr. Papageorge, that all of the Therminol compounds containing PCB's were sold directly by Monsanto Corporation?

A. Yes, sir.

MR. PETERS: Directly to whom?

MR. ROGERS: I didn't say to whom.

MR. PETERS: I didn't get the last word of your question; sold directly, period?

MR. ROGERS: Was sold directly by Monsanto.

271 Q. None of these fluids were sold through distributors?

A. None of the Therminols, that is correct.

272 Q. How many distributors were handling the Therminol fluids during the period 1968 to 1971?

A. None.

273 Q. Excuse me, how many customers did Monsanto have for the Therminol FR series fluids during 1971?

A. I do not have the number.

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MR. PETERS: Roughly.

THE WITNESS: Hundreds, maybe in the thousands.

274 Q. Was there a separate listing of customers purchasing Therminol fluids for heat transfer in the production of food products?

A. Separate from what?

275 Q. Separate from heat transfer uses for other purposes.

A. No, sir.

276 Q. Can you give us the general nature of the customers purchasing Therminol fluids during 1968-1971? The types of corporations or companies or individuals.

A. I can give you some examples that come to mind. In general it appears to cover virtually every spectrum of industry imaginable. Metal-treating companies, chemical processing companies, petroleum people, barges - we mentioned the food people, textile people; all of the many fabricators of equipment and supplies such as people who make plastic items or coating of wires, anywhere, really, where heat is needed at very high

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temperatures.

277 Q. Was PCB used directly in the manufacture of plastic as an ingredient?

A. In some instances, yes, sir.

278 Q. What types of plastics would those be?

A. I have heard, but I have not substantiated that some of the polychlorinated biphenyls were used in some polyvinyl chloride products, but I don't know. I have never been able to determine just what types.

279 Q. What are the uses of those polyvinyl chlorides?

A. Just about every plastic use that the average man on the street is aware of has used polyvinyl chlorides from floor tiles to coatings on electrical wire to use in paints as an ingredient in a painting formulation, varnishes and lacquers; upholstery materials, molded forms of many types and shapes. The types that are used in the interior of automobiles or the types used in the housing of TV sets, that kind of thing.

280 Q. Did the petroleum industry use polychlorinated biphenyls as an ingredient in any product

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manufactured by them?

A. On some occasions I understand polyvinyl chlorides were used as an ingredient in some lubricants. That has not, to my knowledge, been a steady and continued use; it appears to have been rather spotty. I don't know how to account for this on-again off-again type of thing.

281 Q. Did you say polyvinyl chlorides or polychlorinated biphenyls?

A. I meant polychlorinated biphenyls; I don't know what I said.

282 Q. Do you have any information as to whether or not they might have been used in fuel oils?

A. No, sir, I have never heard of that application; and since these materials are fire resistant, I do not see the logic in using it in fuel oil.

283 Q. Do you or does anyone in Monsanto have a list of the manufacturers of heat transfer units?

A. I am not aware of a list of that nature; I do not know.

284 Q. Would Mr. Roush have superior information on that?

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A. I would assume that he does, yes.

MR. PETERS: I assume you mean our customers?

MR. ROGERS: Your customers.

MR. PETERS: Because there may be some that don't deal or didn't deal with us.

MR. ROGERS: Your customers, yes.

285 Q. Will you obtain for us from Mr. Roush the listing of the manufacturers of these heat exchange units that are customers of Monsanto?

MR. PETERS: All right.

286 Q. Did Monsanto during the period 1968 to 1971 sell the FR fluids - the FR series fluids of Therminol - directly to such people as the list that I read to you this morning?

MR. PETERS: Objection.

THE WITNESS: On occasion, yes. I am sorry, the list this morning; there were several lists.

287 Q. Excuse me. Of the list of persons that we reviewed this morning with regard to whether or

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not you had had any conversations with Mr. Wheeler or Dr. Tucker or with those individuals or corporations starting with A & P Tea Company, the Burry Company - - -

A. I remember that.

288 Q. Did Monsanto sell polychlorinated biphenyls to any of those businesses?

A. Yes.

289 Q. If I give you this list, would you indicate those who were purchasers of the polychlorinated biphenyls?

MR. PETERS: Please note my objection to the line of questioning now concerning this list so I won't have to do it with every name on the list.

MR. MUIRHEAD: To the form of the question?

MR. PETERS: Both to the form and to the question itself.

MR. MUIRHEAD: Is your question related to any specific time period, Tim?

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MR. ROGERS: Yes, '68-71.

MR. PETERS: Until April.

MR. MUIRHEAD: Prior to April 1, '71?

MR. ROGERS: Yes.

THE WITNESS: As I look over this list, I recognize some names as having appeared on customer list names that I have seen at Monsanto. I can't vouch for the locations that are shown on this paper that I am looking at, so if I mention a particular company, I don't know if we deliver to that location of that company.

290 Q. All right.

A. But the names on this list that I recognize are Bond Baking Corporation, General Foods Corporation, National Biscuit Company, Ward Foods; I believe City Service Company, but I am not sure of that. Those are the only names I recall as having appeared on a customer list of Therminols.

MR. MUIRHEAD: Just for the record, is that list a list of all the companies that you mentioned this morning on the record?

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MR. ROGERS: Yes, it is.

MR. MUIRHEAD: So that by identifying those, we can assume that he doesn't recognize the others that were mentioned this morning?

MR. ROGERS: Yes.

291 Q. Now, prior to January of 1970, say between 1967 and January 1, 1970, did Monsanto Corporation have any system for the review of records received from such corporations as Bond Baking, General Foods and National Biscuit, Ward Foods, to monitor their use of polychlorinated biphenyl fluids?

A. I do not know.

292 Q. Is there any individual in Monsanto who would have that information?

A. Again I don't know, I would have to assume that it is the marketing people responsible for that product line.

293 Q. Since January 1, 1970, has there been any system for the monitoring of the use of polychlorinated biphenyl fluids by such corporations as those that I have just mentioned?

MR. PETERS: Objection.

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THE WITNESS: There wasn't, to my knowledge, a formal system established and documented; however, I am aware that representatives of our marketing group were very much aware of the movement or sales of Therminols to customers of the type we just discussed. However, if you remember, it was not too long after the early part of 1970 that we arrived at a decision to discontinue selling to human food-type applications, so monitoring after a point became really - well, it wasn't necessary. We just didn't sell.

294 Q. What procedure has Monsanto Corporation established to assure that there is no sale of these polychlorinated biphenyl fluids to the food processing industry?

A. Well, as you remember, the polychlorinated biphenyls are sold only to dielectric fluid applications on record and approved who have signed those harmless letters and who are financially responsible. So if the name of the customer doesn't appear on that list, the order is not honored.

295 Q. Would Mr. Roush have records of any inquiries or

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requests for assistance in the solution of leakage problems relating to heat exchange units?

MR. PETERS: Objection, please.

THE WITNESS: I do not know. And since you mentioned Mr. Roush, I don't want to give you the impression that Mr. Roush designs total systems, all he does is he assists the designer of the system in those areas where questions about our fluids are involved.

296 Q. Do you know the names of any of the designers to whom he has given assistance?

MR. PETERS: Objection; you may answer.

THE WITNESS: I have heard some mentioned and I just can't remember them now. I just don't remember any right now.

297 Q. Are there any records in Monsanto Company prior to January 1, 1970, relative to inquiries as to the proper method of or disposal of PCB fluids?

MR. PETERS: Objection.

THE WITNESS: Records of inquiries on the proper disposal?

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298 Q. As to the proper method of disposal.

A. I am not aware of any. I doubt if the subject ever came up.

299 Q. Are there any records in Monsanto Company prior to January 1, 1970, relative to inquiries concerning the proper method of disposal of contaminated products? Products contaminated by polychlorinated biphenyls.

MR. PETERS: Objection.

THE WITNESS: No, sir.

300 Q. Since January 1, 1970, have there been any inquiries concerning the proper method of disposal of products contaminated by polychlorinated biphenyls?

MR. PETERS: Objection.

THE WITNESS: Yes.

301 Q. And by whom were those inquiries made?

MR. PETERS: Objection again.

THE WITNESS: There have been many inquiries of that nature from virtually every segment of our society; the government, academic, industry, all sorts of organizations and

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people.

302 Q. Have there been any from any corporations, individuals and persons involved in the food manufacturing business?

MR. PETERS: Objection.

THE WITNESS: Yes.

303 Q. By whom were these inquiries made?

MR. PETERS: Objection.

THE WITNESS: By whom, you mean by name and title and all?

304 Q. By name. By corporate name.

A. By corporation?

305 Q. Yes.

A. I have not - - -

MR. PETERS: Objection.

THE WITNESS: I have not kept a record. They represent the utility companies, food processing companies, petroleum companies. I mention the various governmental agencies who I believe are trying to help the people that they deal with, the states, the federal government, various laboratories who wish to dispose of their

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samples.

306 Q. Do you recall any names among the food processors?

MR. PETERS: Objection.

THE WITNESS: I would say over the period of years that virtually every major food and many minor companies that I don't recall or never knew at the time have called me. I can mention the names, we are all familiar with the Krafts, the Bordens, the Campbells, the General Mills, General Foods, Standard Brands, Pillsbury people, just about everyone. I should have put it that way, many people did; not everyone.

307 Q. Were any records kept of these inquiries?

MR. PETERS: Objection.

THE WITNESS: As a normal course of business, I do not keep records of telephone conversations or inquiries like this, no.

308 Q. What was your recommendation as to the disposition of these contaminated food products?

MR. PETERS: Objection; and also I don't believe you asked him contaminated

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food products in the question, I thought you asked him about disposition of PCB's.

309 Q. What is your understanding of the question that you have just been asked?

A. My understanding of the question is disposal of PCB's and materials contaminated with PCB's.

310 Q. All right.

A. My response varies depending upon when this question was asked because, as time went on, we were able to offer alternative ways of disposal and it varies with the material which is contaminated with PCB's. In general, we would recommend - I recommend strongly that polychlorinated biphenyls be kept away from water and I recommend that polychlorinated biphenyl liquids be disposed of by incineration and I mention the available commercial incinerators and I mention the availability of Monsanto's incinerator. When it comes to contaminated solid materials, I tell them that my preference would be incineration, but since this country does not have an incinerator capable of burning solid materials at the right

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temperatures, I am forced to reluctantly recommend burial in a sanitary land fill in which they are confident no water is involved.

311 Q. Were there any tests done on materials in conjunction with these inquiries by Monsanto?

MR. PETERS: Objection.

THE WITNESS: No, sir.

If by test you are talking about waste materials, contaminated materials and performing tests - - -

312 Q. Yes.

A. No, sir.

313 Q. Prior to January 1, 1970, did Monsanto have any statement of recommendation, whether oral or written, relative to the disposition of polychlorinated biphenyl liquids?

A. No, sir.

314 Q. Did they have any statement or recommendation, oral or written, relative to the disposition of any solid materials that might be contaminated by polychlorinated biphenyls?

A. No, sir.

315 Q. Did Monsanto have any warnings or suggest or

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recommend to any manufacturer of heat transfer units that there be warnings attached to the heat transfer units relative to caution with regard to leakage?

MR. PETERS: What time period was that?

316 Q. Prior to January of '70.

A. No, sir.

317 Q. Did Monsanto develop such a list or caution or warning or make a recommendation or suggestion as to warnings between January 1, 1970, and April 1, 1971?

A. When you say such warnings, are you talking about warnings on the heat transfer unit?

318 Q. Yes.

A. No, sir. Our warnings were intended to the attention of the operator of the unit. We did not tell him how to convey that information within his own operation, within his own plant.

319 Q. Was this warning in writing or this suggestion or recommendation of a warning?

A. This warning appeared in writing on labels and

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it appeared in technical bulletins and was also conveyed by our marketing representatives verbally.

320 Q. Was this warning incorporated into any operating manual prepared by a manufacturer of a heat exchange unit?

A. I do not know.

321 Q. Do you know the name of the town that the - is it Rollins Disposal Plant is located in New Jersey?

A. Gloucester City, New Jersey. The company's name at the time was Rollins-Purle. I believe today it is called Rollins Environmental Services, Incorporated.

322 Q. Do you know of any reports from manufacturers or designers or heat exchange units of leakage problems prior to the end of 1969?

MR. PETERS: Objection.

THE WITNESS: I don't know.

323 Q. Would Mr. Roush be aware of those reports?

A. I do not know.

324 Q. Can you obtain for us the names and locations of

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your food processing buyers who used polychlorinated biphenyls from 1968 to April of 1970?

MR. PETERS: Objection.

THE WITNESS: No, my company does not divulge customer names without the permission of the customer as a matter of company policy.

MR. ROGERS: I am going to ask you to produce that list, Philip?

MR. PETERS: Well, I will find out and see if they will. We will make a request and see what the answer is and I will communicate with you whether they will or they won't so you won't have to file a motion until you hear from me. I have been led to understand prior to this time the same as Mr. Papageorge that lists of customers aren't as a matter of policy given out without the customer's prior approval. Whether they will make an exception due to this litigation, I don't know.

MR. MUIRHEAD: They have made this exception in other cases.

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MR. PETERS: What other cases?

MR. MUIRHEAD: The one down in North Carolina they produced a computer print-out for customers of Therminol.

MR. PETERS: Well, it is quite possible that they will do it, but I don't want to commit myself until I communicate with them. I suspect that they will be willing to do it. That is my original impression.

325 Q. (By Mr. Rogers) Did I ask you for a list of the names of designers of heat transfer units that Monsanto has assisted?

MR. PETERS: Objection.

THE WITNESS: You asked me for the list and I do not personally have that information and I believe we talked about a possibility that Mr. Roush might have some of this information and we offered to try to get it, as I remember.

MR. PETERS: Right.

MR. SPELLMAN: I thought it wasn't limited in terms of the ones that they

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tried to assist, but the companies known to Monsanto. Maybe it is the same thing. I thought that is the way the thing was originally.

MR. PETERS: I thought it was restricted to the ones dealing with Monsanto.

MR. ROGERS: I will treat that as one category and I will ask you if you will produce a list of manufacturers of heat transfer units other than those who are Monsanto customers which are known to Monsanto to be manufacturers of heat transfer units using polychlorinated biphenyls in the fluid?

MR. PETERS: Note my objection and we will take that under advisement.

THE WITNESS: I would like that to be in the past tense, that used the FR fluids in the past.

MR. CHIESA: You want to know the names of the heat transfer designers and manufacturers who are known, even though they are not customers?

MR. ROGERS: Yes, known to use

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PCB fluids.

MR. PETERS: In heat transfer equipment?

MR. ROGERS: In heattransfer equipment.

326 Q. Was there a general mailing of some of the warning material referred to in Appendix B to poultry and feed manufacturers?

MR. PETERS: Warning letters so-called?

MR. ROGERS: Yes, the warning letters, so-called.

THE WITNESS: If the poultry and feed manufacturers were customers on record of Monsanto's at the time the mailing was made, they received copies of it.

327 Q. Customers of what type?

A. Customers of the polychlorinated biphenyl line of products.

328 Q. Did you mail it to customers other than those purchasing polychlorinated biphenyl products?

A. No, sir.

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329 Q. Is that warning letter included in Appendix B?

A. Yes, sir. Well, there are several warning letters.

330 Q. As I recall Appendix B, some of them were labeled "Distributors" and another group was labeled something else, how was that letter labeled in this appendix?

A. It is probably one of about three letters that were addressed to customers. If you read the letters carefully, there is much similarity but there is still differences. One letter was designed for the dielectric user, another letter was designed for the user of hydraulic fluids, heat transfer fluids, these kinds of fluids; and a third letter was addressed to the customer who used the polychlorinated biphenyls in these uses we refer to as plastercizer uses. So if these poultry and feed customers, the companies that we mentioned, are on any one of these three lists, they would have gotten one or three of those letters.

329 Q. Do you recall if Ralston-Purina Company was one of these listed?

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MR. PETERS: Objection.

THE WITNESS: Yes, sir.

330 Q. Was Beacon Feeds one of those listed?

MR. PETERS: Objection.

THE WITNESS: I am not familiar with Beacon Feeds.

MR. MUIRHEAD: Do I understand that you said Ralston-Purina was one of them?

THE WITNESS: Ralson-Purina's name appears on our customer list.

MR. MUIRHEAD: And did get a letter?

THE WITNESS: Yes, sir.

331 Q. (By Mr. Rogers) Were these sent to each plant using this fluid or were these sent to the company headquarters?

A. It was sent to the address that appears on our business list. In some instances, it is the company headquarters, in some instances it is a plant location. I cannot speak specifically for which of these instances occurred for any of these.

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332 Q. Would you produce the list of feed manufacturers to whom this letter was sent or these letters were sent?

MR. PETERS: Objection.

THE WITNESS: My hesitation is due to the fact that this is very close to this exposure of customers again which we are going to look into.

MR. PETERS: I will look into the matter and advise you on this list. You are obviously not going to try this case in April.

MR. SPELLMAN: Nobody plans to.

333 Q. (By Mr. Rogers) Who was charged with the responsibility at Monsanto of developing the methodology in developing the detection of polychlorinated biphenyls in a given analysis?

A. Dr. Robert Keller.

334 Q. And what is his title?

A. Manager of - I believe it is manager analytical services department.

335 Q. Did you work with Dr. Keller on the development

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of the methodology?

A. No, sir.

336 Q. Did he develop the methodology himself?

A. No, sir.

337 Q. Who assisted him in the development of the methodology?

A. He assigned Dr. Scott Tucker and members of Dr. Tuckers' group to work on this problem.

338 Q. When you came on board on January 1, 1970, did you have discussions with Dr. Keller about the development of the methodology?

A. Yes, sir.

339 Q. Was the methodology completely developed at that point?

A. At that point, the methodology was developed to the degree that it was acceptable for everyday use and we were convinced that the results obtainable were reproducible and meaningful.

340 Q. What do you mean by acceptable?

A. A method is not considered acceptable if the results obtained are erratic or if the recovery as is known in that field does not exceed a

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respectable level of, say, 90 percent. Now, what that means is that if a sample is known to contain a given amount of material and the analysis does not detect all of that amount or beyond 90 percent of that amount, it is not considered acceptable.

341 Q. Had Monsanto published this methodology at the time that you arrived in your present position?

A. No, sir.

342 Q. Was this methodology developed entirely by Monsanto?

A. No, sir.

343 Q. Whose work was it based upon?

A. It was based upon the work of Dr. Jensen and Widmark in the University of Stockholm.

344 Q. What refinements did Monsanto make in the process?

A. I don't know that I am qualified to really respond. I understand that refinements were made in what is referred to as the clean-up process which are those steps in the procedure during which the sample is prepared such that interferences from other similar chemicals are removed.

345 Q. Is this the same Jensen and Widmark that produced

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the 1967 study in Sweden?

A. Yes, sir.

346 Q. Did you assist Dr. Tucker in the development of this methodology at all?

A. No, sir.

347 Q. Did you have any discussion with him at all about the development of it?

A. Yes, sir.

348 Q. What was your role in those discussions?

A. My role was really one of keeping abreast of the experiences he had had, the confidence he was gaining in the method; the dialogues he might be having with other laboratories, both academic and governmental. My objective was to keep abreast of developments in the analytical area.

349 Q. Is this method developed by Dr. Keller and Dr. Tucker the same method used by the United States government, Department of Agriculture?

A. I understand there are slight differences. I personally have not followed it close enough to know what these differences are.

350 Q. Did you receive a request for your methodology

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from the federal government at any level?

A. Yes, I have.

351 Q. To whom - which organs of government has this methodology been given to? Federal, I mean.

A. We have shared it with the Food and Drug Administration, the United States Department of Agriculture, the United States Department of Interior, the United States Department of Commerce, various state agencies both in the environmental areas and in the food regulatory areas.

352 Q. In particular, was it given to the state of New York?

A. I don't remember an individual or an agency within the state, so I don't know.

353 Q. Was this methodology given to Campbell Soup Company?

MR. PETERS: Objection.

THE WITNESS: I don't recall.

354 Q. Is there a federal task force on PCB's?

A. I believe that a group formed back in 1971 still calls itself an interdepartmental task force on PCB's, but I also know that they have not met to

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discuss PCB's for over a year, so I don't know if they consider themselves still active or not.

355 Q. Do you know when that group was formed? Do you know what date?

MR. PETERS: Objection, please.

THE WITNESS: About September, October, 1971.

356 Q. Now, who is Dr. Edward Burger?

A. Dr. Edward Burger was a member of the office of science and technology in the executive offices of the president.

357 Q. Did you have any conversations with Dr. Burger?

A. Yes, sir.

358 Q. When were those conversations?

MR. PETERS: Objection.

THE WITNESS: In the period of time from the latter part of 1970-1971 to the first part of '72. I am guessing a bit on those dates, but it is roughly that period of time.

359 Q. Who else attended the meeting with you from Monsanto?

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A. This would vary from time to time. There was a Mr. John Mason from Monsanto; there was a Mr. - I believe a Mr. Jack Early from Monsanto; I believe Mr. Elmer Wheeler was present. That is all I can remember at present.

360 Q. Was there a presentation made to them? Was it in writing, if it was?

MR. PETERS: Objection, please.

THE WITNESS: To them, who is them?

361 Q. To Dr. Burger.

A. There was a presentation made to the inter-departmental task force on polychlorinated biphenyls.

362 Q. That is what is part of the exhibit?

A. Yes.

MR. SPELLMAN: This is the one which we referred to this morning which appears to be somewhat incomplete and Phil is going to take care of it?

THE WITNESS: I don't now remember if Dr. Burger was present in the audience

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when this presentation was made.

363 Q. (By Mr. Rogers) Who was the person in Monsanto - let me start with a different question. What was your title prior to being manager of product acceptability?

A. Manager-environmental protection.

364 Q. Who was the person who was responsible for the creation of that position?

A. I don't know that any one person was responsible for the creation of the position.

365 Q. Well, what organ of Monsanto was responsible?

A. Let me respond in this fashion. Starting in January, '70, I had the title manager-environmental control; and I addressed myself entirely to matters concerning polychlorinated biphenyls. About April, May or June thereabouts in 1971, I was asked to take on responsibilities for all products which were marketed by the organic chemicals division. At that time, I was put under the supervision of one of two assistant general managers. Also at that time my title was changed to manager-environmental protection.

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366 Q. As manager of environmental control, to whom did you report?

A. I reported to Mr. Howard Bergen, business director of the specialty products group.

367 Q. Was Mr. Bergen responsible for the creation of your position as manager of environmental control?

A. I do not know; I wasn't there when the decision was made to create the position.

368 Q. Have you since found out or determined who was responsible for the creation of that position?

A. No, sir. I am under the impression that the need for one individual to oversee the polychlorinated biphenyl problem became rather obvious to many people in the management of the organic chemicals division and somehow the consensus was arrived at rather easily that one person should be appointed and that person should report to the business director of the business group that sold most of the polychlorinated biphenyls. So Mr. Bergen became the supervisor of that individual and I was appointed to that assignment.

369 Q. Did Mr. Keller or Mr. Wheeler or Dr. Tucker also

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report to him?

A. No, sir.

370 Q. Was there a written job description or outline of the duties that were expected of you at the time of the creation of the position of manager of environmental control?

A. Yes, sir.

371 Q. Does that still exist?

A. I believe so.

372 Q. Would you produce it for us?

A. All right.

373 Q. In addition to your position, your title; at the time of the creation of manager-environmental control, was there any additional staff - were there any additional staff positions created to assist you in your job?

A. No, sir.

374 Q. What additional positions - - - What people were made available to you for the completion of your work?

A. Anybody in the entire Monsanto organization who could contribute was available. It was up to me to

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decide where I go for my information and my needs.

375 Q. Was there a list of priorities or objectives presented to you?

A. No, sir.

376 Q. Was there a statement of various problems made to you?

A. None other than the general discussion of polychlorinated biphenyls and reports we were getting. The need for some coordination and my task was to pull it all together somehow, do the best I could.

377 Q. Were you given a budget figure?

A. No, sir.

378 Q. Was this office ever included as a budget item in Monsanto?

A. I don't know if we use the word "budget" alike here. The cost incurred in my operation was included in Mr. Bergen's group budget as just another item among many. Activities relating to polychlorinated biphenyls that generated costs were picked up by the appropriate groups within their normal budget. The research budget would pick up its share and

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the medical department its share and the manufacturing department's budget its share. There was no particular budget.

379 Q. Has a figure ever been arrived at for the cost of the operation of your office?

A. I at one time got a rough estimate of what our activities were costing us in this area, yes.

380 Q. What was that figure?

MR. PETERS: Objection, please, but you may answer.

THE WITNESS: As I remember, it was approaching a couple of million dollars at the end of 1970 when I attempted to get a feel of what all this was costing us.

381 Q. What were the various expenditures involved?

MR. PETERS: Objection, please.

THE WITNESS: There was the cost for example of refining analytical methodology; the cost of running samples for our customers; the cost for designing at that period of time an incinerator; the cost of all the research effort

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that went into finding alternative materials and the research effort that went into what it takes to make a refined polychlorinated biphenyl. In other words, research activity related to polychlorinated biphenyls.

382 Q. Was anyone or any group assigned to you or made available to you for the purpose of making investigations of fact relative to complaints or allegations of PCB contamination at the time of the creation of this office?

A. No, sir.

383 Q. Has such a group or capability ever been made available to you by Monsanto?

A. Are you referring to a special group that addresses itself only to the problem?

384 Q. Either way; either a special group or individuals within other groups who may make these factual investigations for you.

A. I am not aware of any unique activity. Unique to Monsanto that relates itself to this area. These are handled no different than any other information we receive on other products.

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385 Q. Was there anyone in Monsanto to go into the field and make inquiry or investigation of allegations of PCB contamination?

MR. PETERS: Objection as to time.

THE WITNESS: I did a little bit of it and on occasion I might ask some of the other people that are available, but no one was specifically assigned to do this kind of work.

386 Q. During 1970, what field investigation work did you do?

A. In 1970, that was the year when I visited some of these dairy farms in which it was alleged that the polychlorinated biphenyls were being found in milk produced at these farms.

MR. PETERS: I move to have the answer stricken and I object to the question.

387 Q. Did you make any examination of a dairy farm in West Virginia?

MR. PETERS: Objection.

THE WITNESS: No, sir.

MR. MUIRHEAD: Was the answer no?

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THE WITNESS: Right.

388 Q. (By Mr. Rogers) Did you inquire or have anyone from Monsanto Company make a field investigation in West Virginia?

MR. PETERS: Objection.

THE WITNESS: No, sir.

389 Q. Was there ever any investigation in West Virginia between the period 1968 and April 1, 1971?

MR. PETERS: Objection.

THE WITNESS: By Monsanto?

390 Q. Yes.

A. No, sir.

391 Q. Are you familiar with a claim relating to alleged presence of polychlorinated biphenyls in milk arising in West Virginia during the period 1968 to 1971?

MR. PETERS: Objection.

THE WITNESS: I recall - I believe it is the same case - and in my thinking I associate it with Maryland. I don't know if that is the one you have in mind.

392 Q. Why don't you relate the one in Maryland?

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MR. PETERS: Objection again.

THE WITNESS: I was told about a dairy case in which milk was contaminated because of dairy cattle grazing under utility power lines in an area in which a pesticide had been sprayed for weed control and the carrier liquid for this weed control consisted of a collection of scrap oils and apparently some of these oils were polychlorinated biphenyl oils from transformers. Now, I am somewhat confused as to whether it was produced in Maryland and attempted to be marketed in West Virginia or vice versa; I believe that is the same case.

393 Q. In connection with that case that you have just discussed, what was the name of the person applying the insecticide or defoliage?

MR. PETERS: Objection.

THE WITNESS: I do not know.

394 Q. Did Monsanto ever attempt to determine the name of that corporation or person?

MR. PETERS: Objection.

THE WITNESS: I do not know.

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(Whereupon, a recess was taken.)

395 Q. (By Mr. Rogers) Have you had any complaints or indications of the presence of polychlorinated biphenyls in any vegetative or living tissue arising from Canada?

MR. CHIESA: Objection; you may answer.

THE WITNESS: I don't recall any reference to polychlorinated biphenyls that is creating a problem in Canada, although I am aware of work studies being made in Canada to determine the presence in wildlife creatures.

396 Q. Who is doing that work?

A. There is a group in eastern Canada, Dr. Hutzinger and his group. I believe that is in Newfoundland or Nova Scotia, eastern Canada.

397 Q. Has a report been prepared on that study?

A. They have published several reports in the scientific journals through the recent years.

398 Q. Are those listed in the bibliography that has been given to us?

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A. I believe so, yes, sir.

399 Q. Have there been any particular - have you received any notification or any information of any sort, whether written or oral, relative to the presence of polychlorinated biphenyls in mink in Canada?

MR. CHIESA: Objection; you may answer.

THE WITNESS: No, sir.

400 Q. Have you received any inquiry or information, either oral or written, regarding the presence of polychlorinated biphenyls in any product of Ralston-Purina Company?

MR. PETERS: Objection, please.

THE WITNESS: Yes, sir.

401 Q. Has that information or those reports involved the finding of their presence in Canada?

MR. PETERS: Objection, please.

THE WITNESS: No, sir.

402 Q. Where did the report of the finding of polychlorinated biphenyls in Ralston-Purina products arise,

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if it was in the United States?

MR. PETERS: Objection.

THE WITNESS: I believe I recall three situations involving Ralston-Purina and alleged presence of polychlorinated biphenyls. One of them is located somewhere in the southeast related to poultry meal and poultry. Another was alleged to have occurred in turkeys in Missouri, I believe, and the third was related to poultry, I believe it was in Maine. In New England. Poultry in Maine.

403 Q. What additional information do you have on the report of the presence of polychlorinated biphenyls in turkeys in Missouri?

MR. PETERS: Objection.

THE WITNESS: That is all I know. The incident was reported and, as I recall, I was contacted and asked to offer my suggestion as to what could have caused it. I was at a loss to explain that.

404 Q. Who was the person that had contact with you?

MR. PETERS: Objection. Could

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we have a time roughly on this episode?

THE WITNESS: This is after 1971.

MR. PETERS: Note my objection.

THE WITNESS: I am trying to recall the name of the individual. It is a doctor, the initial is "M." I have forgotten the man's first name, the last name is Cover. I believe he was the man that called me to discuss this.

405 Q. Where was he located?

A. St. Louis.

MR. PETERS: Objection again.

406 Q. Have you had reported to you incidents involving turkeys in Detroit Lakes, Minnesota?

MR. PETERS: Objection.

THE WITNESS: I am not familiar with the Detroit Lakes location; I was aware of an incident involving turkeys in Minnesota sometime in the last half of '71, as I remember, and that is the extent of my knowledge. I don't remember

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any company name being mentioned or any possible source of polychlorinated biphenyls.

407 Q. Who informed you of this Minnesota problem?

MR. PETERS: Objection again.

THE WITNESS: If I recall correctly, I got that from the Food and Drug Administration.

408 Q. Did Monsanto make any tests or analyses as a result of either the Missouri or the Minnesota incident?

A. No, sir.

409 Q. Did Monsanto supply any samples to anyone as a result of those incidents?

MR. PETERS: Objection.

THE WITNESS: I don't recall any samples being supplied as a direct result of these incidences, no, sir.

410 Q. Do either of these incidents involve an action against Monsanto referred to in the earlier exhibits?

MR. PETERS: Objection. Do you understand the question? He is talking about lawsuits.

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THE WITNESS: Yes, but I don't know. No, there aren't any lawsuits. Any formal allegations of any sort relating to those two instances, no, sir.

411 Q. Are there any informal allegations relating to Monsanto in connection with those two incidents?

MR. PETERS: Objection.

THE WITNESS: The discussions that we had relating to those incidences did not appear to be allegations so much as to inquiries as to what could have caused it. Since we could be of no help, the matter seemed to drop.

412 Q. Did Dr. Cover, when you discussed the Missouri turkey incident with him, reveal the results of his inquiry as to the source of the polychlorinated biphenyl?

A. No, sir.

413 Q. Did you question him concerning the source?

MR. PETERS: Objection.

THE WITNESS: Yes. In fact, the conversation really was one of Dr. Cover searching for the source and seeking my advice as to where to look and the man at no time indicated

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that he knew where it came from - where the source of polychlorinated biphenyl could be found.

414 Q. Did he reveal how the presence of polychlorinated biphenyl in the turkeys was discovered?

MR. PETERS: Objection.

THE WITNESS: No, sir.

MR. PETERS: Could I ask for those reports from you, please since you questioned him on it?

MR. ROGERS: What reports?

MR. PETERS: Any communications or reports that you have, that Agway has, concerning the Ralston-Purina alleged episodes in the southeast United States, turkeys in Missouri and poultry in Maine.

MR. ROGERS: I didn't say I have them.

MR. PETERS: I am asking you if you have them?

MR. ROGERS: No,I don't.

MR. PETERS: We are going to turn the tables from now on, so any time you ask

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a question, I want to get the written report.

415 Q. Have you ever had any inquiries or has Monsanto ever had any inquiries from Dr. Arnold Polonsky or Bethlehem Mink Farm or Jubilee Foods, Incorporated?

A. I am not aware of any inquiries from those three persons or companies.

416 Q. Have you ever had any samples submitted to Monsanto by any of those persons or companies?

A. No, sir.

MR. MUIRHEAD: Although for the record, I would like to point out that I have offered samples to counsel for Monsanto as I have to counsel for Agway and Rozansky and Jurgielewicz.

417 Q. (By Mr. Rogers) Were any studies undertaken by Agway or funded or partially funded by Agway in Wales?

MR. SPELLMAN: By Agway?

MR. ROGERS: Excuse me, by Monsanto in Wales.

MR. PETERS: I object to that.

THE WITNESS: Yes, sir.

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418 Q. By whom were they conducted?

MR. PETERS: What kind of studies?

THE WITNESS: I was about to ask him that.

THE WITNESS: He said any studies, there were studies.

MR. PETERS: Note my objection.

THE WITNESS: Sponsored by Monsanto conducted at the University of Bangor, which is located in Wales, under the direction of Dr. Charles Evans to study the degradation of polychlorinated biphenyls.

MR. PETERS: Bio-degradation?

THE WITNESS: Bio-degradation which are naturally occurring types.

418 Q. Were those studies ever submitted to Monsanto in writing?

A. Yes, sir, there were reports submitted to Monsanto, yes.

419 Q. Turning back to the previous subject for a minute, have you ever - has Monsanto ever received inquiries

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from Messrs. Pettersson and Poole who are mink farmers in Massachusetts?

A. I have no knowledge of any inquiries from Pettersson and Poole. I am not aware of any inquiries from them.

420 Q. Getting back to the studies by Dr. Charles Evans, have those reports been included in the documents given to us?

A. I don't think so, have they? I don't think so.

MR. PETERS: I don't really know.

MR. ROGERS: Will you make copies of those reports available to us?

MR. PETERS: I want to note my objection for the record and I will communicate with Monsanto and get them and then I will communicate with you.

421 Q. What was the nature of the studies undertaken by Dr. Evans?

MR. PETERS: Objection.

THE WITNESS: As I recall, Dr. Evans obtained some bacteria and I believe

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he got it from his garden. He took them to the laboratory - from the soil near his home, anyway - and took it to his laboratory and exposed the polychlorinated biphenyls to bacteria which he had grew from the soil culture which he had taken from his garden; and I recall the net result of these studies are that there are bacteria in nature that can bio-degrade polychlorinated biphenyls in varying degrees depending on the chlorine content. That is the essence of that study.

422 Q. Have you ever been employed by Monsanto at Sauget?

A. Yes, sir.

423 Q. When was that in point of time?

A. From about April, 1964, to April, 1965.

424 Q. Were you connected with the manufacture of polychlorinated biphenyls at Sauget?

A. No, sir.

425 Q. When was the Sauget polychlorinated biphenyl facility built?

A. Mid-1950s.

426 Q. When was the incinerator built?

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A. It was being constructed the latter part of 1970, the early part of 1971.

427 Q. When was the decision made to build the incinerator?

A. As I remember, it was about April, 1970.

428 Q. By whom was the decision made?

A. The decision was made by the business director of the specialty products group and forwarded as a recommendation to the corporate management committee who approved that decision.

429 Q. Who was on the corporate management committee at the time of the approval of the construction of the incinerator?

A. I will try to recall all of their names, but I don't know that I will recall all of them. There was Mr. Charles Sommer, Mr. John Eck.

430 Q. Why don't you give their titles while you are doing this.

A. All right, Mr. Sommer was chairman of the board, Mr. Eck - I believe at that time he was a group vice-president. Mr. Edward Bock was president. Mr. Monty Throdahl, vice-presdent; Mr. Edward Putzell, vice-president and general counsel;

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Mr. Harold Bible, group vice-president. I believe that is all of them.

431 Q. Which of those people are still at Monsanto?

A. They are all still with Monsanto except Mr. Edward Bock.

432 Q. Are they still in the same positions?

A. No, sir, not all of them. Mr. Harold Bible is now vice-president and managing director of Monsanto Industrial Chemicals Company. Mr. John Eck is vice-president and managing director of Monsanto Plastics and Polymers Company; the others have the same titles and positions.

433 Q. Is that the same Mr. Throdahl that we referred to earlier in these discussions?

A. Yes, sir.

434 Q. Did you make a presentation to the corporate management committee with Mr. Throdahl present on polychlorinated biphenyls?

A. I believe Mr. Throdahl was present when I made that presentation to the corporate management committee.

435 Q. What was the cost of the design and construction

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of the incinerator?

A. I believe it approached three-quarter million dollars.

436 Q. Was there a method devised for cost recovery?

A. I don't know that I quite understand the expression. You mean was there a means whereby we would try to somehow get the money back somewhere?

437 Q. Yes, from its operation.

A. I think I best respond to that by saying we do charge a nominal fee to companies and individuals who wish to dispose of polychlorinated biphenyl waste, but that cost is not adequate enough to cover the current operating costs, let alone the investment in the facility.

438 Q. What is the charge made?

A. Three cents for each pound of liquid received.

439 Q. What was the cost in the 1970-71 period for polychlorinated biphenyl?

A. It was approaching 5 cents per pound and the last I heard it had climbed to over 7 cents per pound. I don't know where it is today with increased costs.

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440 Q. What was the sale price of the product?

A. At what time?

441 Q. 1970-71.

A. About 1970, it was about, if memory serves me right, 15 to 18 cents per pound.

442 Q. How many pounds annually were produced in the 1968 to '71 period at Anniston?

A. I don't recall the exact numbers, but in the full year of operation in '68, '69 and '70, the Anniston production approached approximately 40 million pounds a year. In 1971, the unit was shut down; therefore, the amount produced there was substantially less.

443 Q. In the full years of production immediately prior to 1970, what was the production in pounds at Sauget?

A. About the same, 40 million pounds a year.

444 Q. What is Sauget producing now?

A. It is approaching that, about the same rate.

445 Q. What was the date of the shutdown of the Anniston plant, as far as PCB's are concerned?

A. I believe it was about April, '71, early '71; I

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think it was April.

446 Q. Why did the management of Monsanto authorize this expenditure of three-quarters of a million dollars for the incinerator when its costs could not be recovered?

A. When we were considering the installation of such a unit, we were not aware of any unit in the world that could do this disposal job properly and we found our customers completely frustrated as to what to do with scrap liquid waste and we felt that the only way we could reasonably expect to destroy these things was to take the initiative and install a unit like this as long as the volume of material would justify an ongoing type of operation. Deciding on what to charge a customer became a very difficult decision and no one in the business group wanted to make any profit from this operation. And when we arrived at the three-cents-per-pound figure, this was the estimated cost for operating the unit and we chose to stay with that number at least until today. I don't know what to predict for the future. As to why we went ahead and spent

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that sort of money, I guess it is just a case of if we are going to stay in this business even to the limited degree, we felt that we should do something a little bit more in helping our customer dispose of this material.

447 Q. Now, turning back to the corporate management committee, does that committee maintain minutes of its meetings?

A. I have never seen any. I don't know.

448 Q. Who would know whether there are minutes kept of those meetings?

A. I guess, of course, the members of the committee. I am not made privy to their documents, so I don't know.

449 Q. Prior to your taking your position as manager of environmental control, were any presentations made to your knowledge to the corporate management committee concerning the polychlorinated biphenyl problem?

A. This committee was aware of the polychlorinated biphenyl problem. I do not know howthey were made aware of this.

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Normally these matters are brought to their attention via some sort of presentation. I don't know who presented this data to them.

450 Q. Were there any recordings manually by stenotype, by shorthand, by tape or otherwise made of these meetings and the discussions that took place during these meetings?

A. I was present only at one session at which I made my presentation. Then I was asked to leave the room. I did not see anyone taking notes. The room was dark, I just did not see any evidence of a recording machine or anything of that type. I don't know.

451 Q. Was your presentation to the corporate management committee in writing or did you have notes or documentation of any sort with you?

A. I had notes.

452 Q. Are those notes still in existence?

A. I don't know. They were very sketchy notes; I don't know. We can look for them.

453 Q. Would you look for them and if you have them, present us with copies of them?

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MR. PETERS: All right.

MR. ROGERS: I would also make a request that Monsanto produce copies of any minutes of the corporate management committee from the 1st of January, 1967, through April of 1971, at which the matter of the presence of polychlorinated biphenyls in the environment was discussed or at which there were a discussion or presentation of any sort relating to claims or assertions of damages resulting from the presence of polychlorinated biphenyls in vegetative or living tissue and also the minutes of meetings of which the discontinuance of PCB's in any product was discussed and including the discontinuance of the Anniston Plant and the construction of the incinerator.

MR. PETERS: I object to the request and I will take it under advisement. In the first place, I will find out if there are any and then we will let you know.

454 Q. Mr. Papageorge, what would happen to a polychlorinated biphenyl in the event that it were contained in an oil mixture fired through a regular oil burner?

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Would that achieve the temperature necessary to destroy it?

A. I doubt if a regular oil burner is capable of achieving a high enough temperature and a long enough retention time to result in complete destruction.

455 Q. Do you have a file of letters of your responses to inquiries by customers referred to you by the customer inquiry services group?

MR. PETERS: Objection.

THE WITNESS: Yes, I keep copies of the incoming letters, yes, sir.

456 Q. Has that correspondence been made available to us?

A. No, sir.

MR. ROGERS: I'd ask you to produce that, Phil, for our inspection.

MR. CHIESA: What do you want now?

MR. ROGERS: The correspondence, ingoing and outgoing, in his file of correspondence relating to inquiries referred to him by the customer inquiries service group.

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MR. PETERS: Note my objection. We will respond to it.

MR. ROGERS: Off the record.

(Discussion off the record.)

457 Q. (By Mr. Rogers) Do you have a file entitled "Legal File"?

A. Yes, sir.

458 Q. Has that been made available to us in the documents presented thus far?

A. No, sir.

MR. ROGERS: I would ask you to produce that, Phil, for us?

MR. CHIESA: The legal file you want now, too?

MR. ROGERS: Yes.

MR. PETERS: My objection to that, too, and we will respond in the same manner.

459 Q. (By Mr. Rogers) I believe yesterday in response to an inquiry by Mr. Spellman, you said that users - this question concerned PCB's found in rivers and streams - you said that users could be careless;

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did Monsanto take any steps from 1968 to April of '71 to investigate what the users were doing with their old fluid or their used fluids?

MR. PETERS: Objection.

THE WITNESS: Yes, we, of course, did not cover the many thousands of customers involved, but we did take steps.

460 Q. What steps were taken?

MR. PETERS: Objection.

THE WITNESS: For example, our sales representatives would make calls, personal calls to customers; or where appropriate, they would accomplish this by telephone calls. I was personally involved in personal conferences and visits to some of the accounts to discuss this matter.

461 Q. Was any written report made to you by your field representatives or sales representatives or other persons making these investigations?

A. I believe I received a few reports from field representatives, yes, sir.

462 Q. What file are they located in?

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A. It is probably filed under a file that I had marked - I believe it is the file marked "customers."

463 Q. Is this file in your filing cabinet?

A. Yes, sir.

464 Q. Can you identify from that file those reports from your representatives or investigators doing this work in the New York City-Philadelphia area and New Jersey areas and Connecticut?

A. I believe so, although I can't recall any specific documents at the moment, no.

465 Q. I would ask you to produce those reports from individuals relating to customer disposal of PCB fluids in the New York City, eastern New York state, New Jersey, Pennsylvania, and Connecticut area?

MR. PETERS: My objection is noted.

466 Q. Who gave the instructions to the sales representatives and other individuals to make these inspections?

A. I would assume it came from their supervisor, the marketing director. That would be the normal

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way that this would happen.

467 Q. And who would have given the instructions to the marketing directors?

A. That would have come from his supervisor who is the business director.

468 Q. And where would he get his instructions in this regard?

A. That would be his own idea. That is his responsibility to manage the business and if he felt that this was the right thing to do, he would ask his team to set it up to do it.

469 Q. Did you make any requests to these individuals to initiate such a procedure?

A. I don't know about the request. It was a strong recommendation.

470 Q. Was this done under your signature?

A. My recommendation was an oral discussion in the business director's office. There is no signature involved.

471 Q. When was this done?

A. Early '70.

472 Q. What was the substance of your conversation with

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this person?

A. It was along the lines that since we sent out these letters to our customers, we could add emphasis if our marketing people wherever possible and in as many instances as possible give it personal emphasis by making calls either in person or by telephone and make sure that the letter that we had mailed had been understood and that it got into the right hands and the right people in each of these organizations. And as a result of that kind of discussion, it was decided that this would be something that our marketing people would do as a part of their normal business is to cover this subject of polychlorinated biphenyls.

473 Q. As a result of these inquiries, was there a general pattern of disposal of these fluids that you discovered?

A. At what point in time?

474 Q. At the point in time when you began to get reports back after this early 1970 letter.

A. As I understood the question that was asked, as a result of these inquiries by Monsanto's marketing

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representatives, what were the methods of disposal by the customers of the scrap polychlorinated biphenyls. I do not know if you are talking about prior to our discussion or subsequent to each of these discussions.

475 Q. Prior to your discussions, what was the general nature of the method of disposal that you found had been occurring?

A. In general, prior to this new knowledge we had about polychlorinated biphenyls, the normal method of disposal was that followed for many thousands of other industrial-type chemicals and oils, and what have you, that industry encounters every day. In other words, no particular attention was given to polychlorinated biphenyls.

476 Q. Did you at that time develop a recommended method of disposal for submission to these users?

MR. PETERS: At what time?

MR. ROGERS: At that time that they made these inquiries subsequent to early 1970.

MR. PETERS: We have that in

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our exhibit. They asked to send it back and put it in the incinerator.

MR. PLAUT: Is this your answer or the witness's answer?

MR. PETERS: He has already answered it more than once.

THE WITNESS: Recommended disposal was via incineration. Now, we did not put that into any brochure at the moment and send it out in the mail. That came later as time went on and we revised our bulletins and our labels, and what have you.

477 Q. (By Mr. Rogers) After you discovered that they were disposing of their polychlorinated liquids in early 1970 and prior to the completion of the construction of the incinerator, did you create any writing or any instruction of any sort for submission to these users relative to the destruction of PCB fluids?

A. We informed the users of these materials to attempt to locate an incinerator that would reach the right conditions. If they couldn't find an incinerator, we suggested to them that they put the

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liquid in suitable storage tanks, drums and whatever other containers they had at their disposal. In those instances where we had information that the customer was accumulating too much of the material to the point where he had no place to store it, we offered that he send the material to us and we would store it for him until our incinerator became operable.

478 Q. When was the first decision made to construct the - to build the incinerator?

A. The operating management committee gave its tacit approval in April, 1970, and gave its formal approval that year and I don't remember how many months later when the formal documents in which we described the unit and the necessary capital to be appropriated was.

479 Q. What do you mean by tacit approval? Was this oral, in writing, what sort of approval was it?

A. An oral approval. The tacit approval I referred to indicated that the corporate management committee told the vice-president who was the general manager of the organic chemicals division to proceed at

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proper speed, to go ahead with his plans to get this incinerator installed and to submit the necessary paperwork later at which they would give it the formal approval with the appropriate signatures and all.

480 Q. Was there a time schedule devised at that point for the construction of this incinerator?

A. I don't believe in April we had enough information to definitely establish a time. That came later.

481 Q. Is there someone in the legal department who was in a position similar to yours or whose primary or major secondary duty is the handling of complaints or information or allegations of the presence of polychlorinated biphenyls in any vegetative or living tissue?

MR. PETERS: Objection.

THE WITNESS: I am not aware of any assignment of that sort in the legal department.

482 Q. Is there a particular individual in the legal department with whom you have consulted more frequently than any other in connection with these matters?

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MR. PETERS: Objection.

THE WITNESS: I have never attempted to keep score, so to speak, but I would guess that a Mr. Phocian Park has been most often involved with polychlorinated biphenyls.

483 Q. What is his title?

A. Senior attorney.

484 Q. Is he still in the legal department?

A. Yes, sir.

485 Q. Mr. Papageorge, have you brought any other records with you or have you forwarded on to counsel any other records prepared in the ordinary course of business or received in the ordinary course of business of Monsanto Company relative to polychlorinated biphenyls, their presence in the environment or claims and allegations made against Monsanto relative to polychlorinated biphenyls which have not been shown to us?

MR. PLAUT: Off the record.

(Discussion off the record.)

THE WITNESS: I don't believe so.

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As best as I understand it, the requests that have been made we have tried to fulfill. Now, you have brought out some documents that weren't here and we will attempt to get them.

486 Q. (By Mr. Rogers) Has Mr. Peters in his possession any files relating to these matters concerning polychlorinated biphenyls that we have been discussing in this deposition?

A. I don't know what he has in his files.

487 Q. Does he have any files originated by you or from your filing cabinets or from Monsanto, from any portion of Monsanto, that were given to him in this connection?

A. I believe all he has has been offered. I have no other way of knowing. I don't know.

488 Q. Do you have files in your office filed under the names of particular business customers?

A. No, sir.

489 Q. How is your filing system organized?

A. The polychlorinated biphenyl material that I started to accumulate when I first arrived on the scene in 1970 was filed according to function; and,

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by that, I mean the different functions within Monsanto that were involved with polychlorinated biphenyls such as manufacturing, marketing, engineering and the like. In addition to that, I began adding such files as the one I referred to earlier as the customer file. Then I ended up really with what I thought would be a small file which was the so-called general file into which I would put in these articles that I ran across in the technical journals and the like. And that was basically the system and they are filed by year, 1970, 1971, 1972. Starting in '73 when I assumed responsibility for other products and the activity relating to polychlorinated biphenyls reduced considerably, I then switched over into a system and now I file things primarily by product. That is my filing system as it exists today.

490 Q. Was your assignment to this particular project in January of 1970 a promotion from your former position?

A. I don't think so, no, sir.

491 Q. Was this a position that you requested or was it

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requested that you take it on?

A. I was asked if I would mind returning to St. Louis to take on an assignment which would probably last six months, at the most a year, in which I might be of some help in pulling together this confusing mass of information that was coming in from all over the world regarding polychlorinated biphenyls or alleged polychlorinated biphenyls, and I said then if I can be of any help, all right. And that is how I found myself in this position.

(Whereupon, the deposition in the above-entitled matter was continued.)

_____
Deponent

THE STATE OF _____)
) SS.
COUNTY OF _____)

Subscribed and sworn to before me this _____ day of _____ 19_____.

_____
Justice of the Peace and/or
Notary Public

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UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF NEW HAMPSHIRE

BETHLEHEM MINK FARM, INC., et al	:	Deposition of
vs.	:	William B. Papageorge
JURGIELEWICZ, et al	:	FOURTH DAY

- - - - - - - - - - - - - - - - -

Deposition taken by agreement of the parties at the offices of Wadleigh, Starr, Peters, Dunn & Kohls; 95 Market Street; Manchester, New Hampshire; Friday, February 14, 1974; commencing at nine-thirty in the forenoon.

PRESENT:

For Bethlehem Mink and Jubilee Food Supply:

McLane, Graf, Greene & Brown, by James R. Muirhead, Esq.

For Jurgielewicz and Related Interests:

Sulloway, Hollis, Godfrey & Soden, by Lawrence E. Spellman, Esq.

ERNEST W. NOLIN & ASSOCIATES
General Stenographic Reporters
369 ELGIN AVE., MANCHESTER, N. H. 03104
TELEPHONE: 623-6906

ORIGINAL

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For Defendant Monsanto:

Wadleigh, Starr, Peters, Dunn & Kohls, by Philip G. Peters, Esq., and Robert L. Chiesa, Esq.

For Agway and Related Interests:

Faulkner, Plaut, Hanna and Zimmerman, by N. Michael Plaut, Esq., and Stillman D. Rogers, Esq.

For Rozansky Feed Company:

Sheehan, Phinney, Bass & Green, by Thomas H. Richards, Esq.

Stenotype Reporter:

Ronald J. Hayward

It is stipulated and agreed that the deposition may be taken in the first instance by stenograph, and when transcribed and then signed by the deponent, may be used for all purposes for which depositions are competent under the Federal Rules of Civil Procedure. Form, filing, notice and caption expressly waived. Copy of deposition to be furnished deponent's counsel.

It is further stipulated and agreed that if the deposition remains unsigned thirty (30)

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days after delivery to deponent's counsel, signature shall be deemed waived; and the deposition may be used the same as if signed.

WILLIAM B. PAPAGEORGE

called as a witness, having been previously sworn, was further examined and continued his testimony as follows:

(Interrogatories by Mr. Rogers.)

1 Q. Mr. Papageorge, are you familiar with the cases known as Holly Farm cases?

MR. PETERS: Objection, please.

THE WITNESS: Yes, sir.

2 Q. Did you testify in those cases?

MR. PETERS: Objection, please.

THE WITNESS: I was involved with interrogatories and a deposition.

3 Q. You were deposed in that case?

MR. PETERS: Objection, please.

THE WITNESS: Yes, sir.

4 Q. Are you familiar with the events that occurred or allegedly occurred in connection with that case involving polychlorinated biphenyls?

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MR. PETERS: Objection; you can go ahead and answer.

THE WITNESS: I am familiar with some of the events. I don't know that I know of everything that took place.

MR. PETERS: Well, of course you don't.

5 Q. What was the nature of the allegations made against Eastern Terminals in those cases?

MR. PETERS: Well, I object and instruct the witness not to answer. That lawsuit was one which occurred after April or October of 1971 and has no bearing or materiality in this case and the allegations and complaints are matters of public record available to you to get and which I am sure you already have.

6 Q. Do you have the pleadings in that case in your file?

MR. PETERS: Objection.

THE WITNESS: I don't know. I have some documents. I don't know if you would refer to them as pleadings. I am not familiar with

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the term "pleadings."

MR. PETERS: By the way, if I had them here, I would give them to you; but I don't have them.

7 Q. When did the leak in the heat transfer unit of the Eastern Terminals Corporation begin?

MR. PETERS: Objection.

THE WITNESS: I don't know.

8 Q. Do you have an estimate of when it began?

MR. PETERS: Objection.

THE WITNESS: It is a very broad estimate, sir. This operation had an inventory of fluid on hand and they consumed that inventory sometime during 1970, as best as I recall. When the leak occurred, I do not know.

9 Q. At any point during the litigation, was an estimate established by anyone as to the duration of the leak?

MR. PETERS: My objection, please, and I instruct the witness not to answer the question. Don't answer it. I am not going to try two cases at once here.

MR. PLAUT: Why not?

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(Discussion off the record.)

10 Q. (By Mr. Rogers) Who was the manufacturer of the heat exchange unit involved in that case?

MR. PETERS: Objection. You can answer, if you know.

THE WITNESS: I used to know, but the name escapes me. I suspect that if I saw a list of them, I could pick it out; but I don't remember now.

11 Q. Will you supply us with the name of the manufacturer of that unit?

MR. PETERS: I object to it. Put it down, Bob.

THE WITNESS: Yes.

MR. PETERS: The manufacturer of the heat exchange unit in North Carolina?

MR. ROGERS: Yes.

MR. PETERS: You know that.

12 Q. At what point in the unit did the leak occur?

MR. PETERS: My objection, please, and I instruct the witness not to answer.

MR. ROGERS: I think we are

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entitled to have this information, Brother Peters.

MR. PETERS: Well, maybe, if the judge says so you can have it.

13 Q. Did Monsanto Company do any testing of any of the fish meal produced by the Eastern Terminals?

MR. PETERS: Objection.

THE WITNESS: I believe we did look at a sample of fish meal which was alleged to have come from the East Coast Terminals Unit.

14 Q. What was the level of PCB's found in that sample?

MR. PETERS: Objection and I instruct the witness not to answer.

15 Q. Was that sample that you received tested in your own laboratories?

MR. PETERS: Objection.

THE WITNESS: Yes, sir.

16 Q. I ask you to produce for us all tests done on samples of fish meal and poultry feed conducted in connection with the so-called Holly Farm cases?

MR. PETERS: I object to it and we will consider it along with your other twenty-eight requests.

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MR. PLAUT: Well, we reserve the right to resume with the witness, of course, after this has been produced. If it is not going to be produced, we will take other steps.

MR. SPELLMAN: Let me note for clarity that, as I understand it, the inventory was consumed in 1970 and we are concerned with a problem apparently occurring at the terminal in 1970, so it seems to me it is abundantly material.

MR. PETERS: The problem didn't occur, it occurred in '71.

MR. SPELLMAN: Well, the witness testified that the inventory was used up in 1970.

MR. PETERS: Well, I am still instructing him not to answer anything on North Carolina.

MR. CHIESA: What do you want now?

MR. ROGERS: The tests of all fish meal or poultry feeds made in the

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North Carolina litigation, the Holly Farms cases.

(Discussion off the record.)

17 Q. (By Mr. Rogers) Did Monsanto develop as part of its investigation of the Holly Farm cases a list of customers of East Coast Terminals?

MR. PETERS: Objection.

THE WITNESS: I don't know.

18 Q. Who in the Monsanto organization would know?

MR. PETERS: What was the question?

THE WITNESS: I can guess.

19 Q. Well, who?

MR. PETERS: Note my objection; you may answer.

THE WITNESS: I would guess that someone in our legal department is aware of such a list, if such a list was prepared.

20 Q. I will ask you to produce the list of customers of East Coast Terminals relative to their sales of fish meal during the year of 1970 and early 1971.

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MR. PETERS: You are asking us to produce the list of customers that East Coast Terminals had?

MR. ROGERS: Any list of customers of East Coast that is available to Monsanto.

MR. PETERS: Well, I object to that on the record and we will take it up.

21 Q. Summarizing your testimony, Mr. Papageorge - - -

MR. PETERS: All this testimony?

MR. PLAUT: Why don't you give him a chance to finish the question.

MR. PETERS: He is summarizing the testimony.

22 Q. Who are the people that you have worked most closely with in the Monsanto organization concerning complaints or allegations of the presence of polychlorinated biphenyls in the environment or in vegetative or living tissue - - -

A. You want these described by functions or by name?

23 Q. By name.

MR. PLAUT: Off the record.

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(Discussion off the record.)

THE WITNESS: I will give you the names of the key individuals; now, they in turn have staffs that assist them. I don't know in many cases to whom they delegated some of this work. Dr. William Richard, manager-research. Mr. William Kuhn, manager of manufacturing. Mr. Earl Potter, manager of distribution. Mr. Donald Olson, director of marketing. Mr. Robert Kountz, manager-engineering. Dr. Robert Keller, manager-analytical services. Dr. E. Scott Tucker, group leader, analytical services. Phocian Park, senior attorney; Elmer Wheeler, director of environmental hygiene. I believe that is all.

Q. Would Mr. Throdahl be one of the people that you worked most closely with?

A. No, sir.

Q. Of those people that you have just named, who were the four that you worked most closely with?

A. I find that difficult to answer because the degree of activity was influenced considerably by the problems at hand, but I would say the people that

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I worked most closely with were Mr. Wheeler, Mr. Tucker, Mr. Olson and Mr. Park.

26 Q. Was there any correspondence or memoranda or notes to you at the time that you were asked to come back to St. Louis to take on this assignment?

A. That was all oral.

27 Q. Between yourself and whom?

A. Between my supervisor at the time, Mr. Bergen, and very briefly a Mr. James Springgate, who was business director of the plastercizers group.

28 Q. Is he still with the company?

A. Yes.

29 Q. Is he still in the same job?

A. Yes, sir.

MR. ROGERS: That is it for me.

MR. PETERS: Off the record.

(Discussion off the record.)

(Interrogatories by Mr. Richards.)

30 Q. Mr. Papageorge, the other day you were testifying in regard to some conversations that you had with John Rozansky, is that correct?

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A. Yes.

31 Q. Do you recall approximately when it was when the first conversation or telephone conversation you had was with Mr. Rozansky?

A. I can't limit it very specifically; it was either January or February, '71.

32 Q. And I believe you testified that Mr. Rozansky in a fairly lengthy phone call explained to you essentially what his process of manufacture was or processing of breadcrumbs and soforth and ultimately brought across to you that he had some sort of a problem with PCB contamination, is that right?

MR. PETERS: I object to the question. You may answer. I don't think that was his testimony.

THE WITNESS: I don't recall, sir, that in the early conversations that the problem was specifically defined as being one related to polychlorinated biphenyls. Mr. Rozansky was totally confused. Others had told him that there was such a problem. He, of course, knew

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nothing about this material and was seeking some background information and this was the gist of our early rather lenthy telephone conversation.

33 Q. Now, what did you tell him in regard to PCB's in general as of that first telephone call, do you recall?

A. I recall the essence of the conversation. I attempted to describe to Mr. Rozansky what the polychlorinated biphenyls were. Something about their physical properties, the fact that some of them were liquid, one or two of them were solids. I described to him the kinds of uses that they were utilized in and this was, as I remember, in direct response to a question of where are these materials used. So I tried to help him. I believe he also asked me where in my operation might I find these things; are they in lubricating oils, are they in my truck engines; these kind of questions. And I then attempted to find out a little bit more about his operation so I could better give him some ideas as to where polychlorinated biphenyls might be.

34 Q. And what do you recall or would you describe for me

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again what he or what you recall of his description of his operation?

A. As I understood it, he has a fleet of trucks and the No. 17 comes to mind - I don't know if that is a good number or not - that continually are on the road going to certain sources of materials that they could use and he mentioned bakeries; he mentioned railroad salvage; he mentioned macaroni and spaghetti operations; and he mentioned that these truckloads of material are brought to his location and the material is not processed other than crushing and grinding, sifting and packaging type of operations. Then this material, once it is packaged, is then shipped to the customers.

35 Q. Now, did he describe to you the type of machinery that he had in his operation for purposes of crushing, grinding, sifting and packing?

A. No, sir, not in detail. He just mentioned the crushing operation.

36 Q. And you got the impression, as I understand it, from this that at least in the crushing and grinding stages, that the packing boxes and bags

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and soforth were ground up with the other contents?

MR. MUIRHEAD: Objection.

THE WITNESS: Yes, sir.

37 Q. Did Mr. Rozansky go on further to explain to you that after the crushing and grinding operation, that there is a screening and vacuuming process to remove the remaining bags and packages from the material?

A. I don't recall any reference to vacuuming. I do remember the word "sifting" used, but I don't remember the word "screening." Now, sifting and screening might be analogous, but I don't know.

38 Q. But you don't recall that there was anything mentioned in this regard?

A. Just that the material was sifted.

39 Q. Have you ever seen Mr. Rozansky's operation?

A. No, sir.

40 Q. Have you seen any plans of the layout or machinery?

A. No, sir.

41 Q. Now, after your initial conversation with Mr. Rozansky, I understand you had further conversations at a later date, is that correct?

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A. Yes, sir.

42 Q. And do you recall approximately when these conversations occurred?

A. In that period of time I mentioned, January, February; it might have gone on into March, I don't remember definitely.

43 Q. And, as best you can, would you relate what was discussed with Mr. Rozansky in these subsequent conversations?

A. The subsequent conversations were primarily devoted to sample testing, sample analyses, as I remember Mr. Rozansky requested that we help them with a rather extensive sampling and testing program and I couldn't offer him that service because I knew that our laboratory just could not handle that high of a workload. I do recall mentioning some laboratories to Mr. Rozansky that he might approach to help him. I also offered that on a sort of a spot check and confirmation basis, we would look at a few select samples that he could send us, but I could not offer him a service that would be continuing and too extensive.

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44 Q. Did you make any notes or memoranda of any of these calls?

A. No, sir.

45 Q. And do I understand that the total correspondence that you had with Mr. Rozansky is reflected in Papageorge Exhibit No. 1 for identification?

A. Yes, sir, that is all we have.

46 Q. Now, you mentioned that you referred Mr. Rozansky to several labs; do you recall the names of the laboratories that you suggested that he might be able to use?

A. At that time, I was familiar and had confidence in a few laboratories that I was able to recommend. And one of them was the Woodson-Tenet Laboratories located in Memphis, Tennessee; the Battelle Institute Laboratories in Columbus, Ohio; the WARF Laboratories in Madison, Wisconsin. I believe that at that time those were the only labs that I could recommend.

47 Q. Did he discuss with you an Eastern Research Lab or something of that name?

A. Yes, sir, eventually he did.

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48 Q. And did you have any knowledge or make any recommendations with regard to Eastern Research Labs?

A. I had no knowledge until Mr. Rozansky mentioned them.

49 Q. Did you subsequently send to Eastern Research Labs several samples of your PCB's and your methodology for analysis?

A. I personally did not.

50 Q. Do you know who did?

A. Yes, sir, Dr. Scott Tucker sent him the methodology and the samples.

51 Q. Now, once this was sent out and Mr. Rozansky had this particular lab performing his testing, did he have further conversations with you that spring?

A. I recall conversations, but I don't know if they were prior to the date when we sent samples to Eastern Research Laboratories or subsequent to that date.

52 Q. And what was the nature of those conversations?

A. I don't know if all of these thoughts that I recall occurred during any one conversation, it may be

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that they occurred over several. There were some comments by Mr. Rozansky that he was getting - he had found a laboratory that was charging him a very modest price for each sample.

53 Q. Do you recall what the price was?

A. Something in the order of $10 or $15 a sample, and I expressed my surprise thathe could get his testing done for that low a price and wondered out loud, really, as to the capability of the laboratory because I knew from personal exposure that the test is too sophisticated and is more costly than that.

54 Q. This was Eastern Research Labs that he was talking about?

A. Yes, sir. He at one time also - and this would have to be after we had looked at some of his samples - he compared our answers that we sent to him with answers he received from the other laboratory and there was a considerable difference in the two results.

55 Q. Difference in what respect?

A. I will have to refresh my memory; I don't recall

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which laboratory found the greater amount of polychlorinated biphenyl.

56 Q. Did Mr. Rozansky have any conversation with you in which he indicated that Eastern Research Labs was apparently contaminated with PCB's in part of their testing program and that he was going to have to change his labs to Woodson-Tenet?

A. Yes, we talked about this change and I think we mutually arrived at the conclusion that something was wrong in this laboratory and from my previous experience with these matters, most generally the problem is one of gross contamination of the laboratory such that all results are erroneous.

57 Q. The results, in other words, would show improperly high contents of PCB's in any given sample?

A. That is correct.

58 Q. And, to your knowledge, Mr. Rozansky then began to send him samples and have his testing done by Woodson-Tenet Labs?

A. Woodson-Tenet Labs were mentioned; I don't know if other laboratories were involved.

59 Q. Do you recall approximately when that occurred?

A. It is the same general period of time, the early part of '71.

60 Q. Have you had any conversation since that time with Mr. Rozansky?

A. It seems to me I had a call from Mr. Rozansky after some elapsed period of time. My memory is rather vague, but I am under the impression that Mr. Rozansky called me when he heard about the North Carolina situation, but I am not absolutely certain of this. Many people had called and I believe Mr. Rozansky was one of them.

61 Q. This wasn't in regard to any particular problem that he had at that time?

A. Not that I recall, sir.

62 Q. Now, Mr. Papageorge, in the exhibit numbered Papageorge 1 for identification and Papageorge No. 2 for identification, there are some tests that were performed which you have previously discussed in regard to Agway samples and also samples involving Mr. Rozansky. I believe in Papageorge No. 2 there is a note from Scott on 2-15-71 with regard to a sample of bakery meal.

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from Rice and they would analyze ASAP, and you indicated that this was the analysis represented by No. 157451 and Papageorge No. 1 for identification, is that correct?

A. That is correct, to the best of my knowledge, yes, sir.

63 Q. And this analysis is titled a duplicate analysis, is that right?

A. Yes, sir.

64 Q. What happened to the original analysis and the original analysis sheet that would have accompanied that particular test; do you have any idea?

A. I don't know that any original sheet exists, sir. I read this as the technician's notation to indicate he looked at two portions of the total sample, Sample 1 and Sample 2 is the way that he denoted it here. This is just that man's way of making his notes.

65 Q. Well, I note from this analysis 157451 that there appears - this is unlike the analysis that we have also in Papageorge 1, the analysis dated 1-15-71, No. 157445, in which it is laid out the

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weights of the materials, the lipid and wet weights, the analysis for each sample in parts per million by lipid and wet weights and soforth?

A. That is right.

66 Q. Is there any reason why there is a difference in this particular duplicate analysis of the Agway feed source?

A. I don't know of any reason. I am assuming you are talking about the method in which it is presented?

67 Q. The method in which it is presented, yes.

A. I do not know.

68 Q. Do you have any knowledge as to whether there would be a backup sheet for this duplicate analysis, 157451, that would give a breakdown of the sample weights and the lipid tests and wet tests and soforth?

A. I don't know if it still exists. All of these tests involve a chart that comes from the machine and I have seen in some cases the technicians put calculations right on the chart. It could be if that chart is available that that information is right on the slip.

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69 Q. Would you check and see if there is any particular information on that particular analysis and would you produce copies of any and all backup information?

MR. PETERS: Yes, we will.

70 Q. Now, Mr. Papageorge, referring to 157451, the analysis indicates 757.7 parts per million of Sample 1 of what I assume is Aroclor 1248?

A. Yes, that is what it shows.

71 Q. And referring to the other tests that were made also on 157445 of Agway and Rozansky samples - - - Referring now to, excuse me, 157486, that is in Papageorge No. 2, this is the test performed on 6-22-71 in which we have Inter-County Farms as well as chicken feed samples and Rozansky Feed, do you have that in front of you?

A. Yes, sir.

72 Q. The results on that down at the bottom indicating on Rozansky Feed 1.82 parts per million at the wet feed and what appears to be 19.7, which I believe you previously said was parts per million on the lipid; this is results showing Aroclor 1242, is that

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correct?

A. That is correct.

73 Q. Would it be fair to assume from that that the source of the PCB's in each of these two samples between 157486 and 157451 were from a different source of Aroclor or from a different source of contamination, if you like?

A. No, I don't believe you can safely assume that.

74 Q. What can you assume from that?

A. All this tells me is that to the experienced analyst who looked at the graphs that resulted from this test, in his judgment, the graph more closely resembled either Aroclor 1242 or Aroclor 1248 to that individual. And that is all we can really safely assume from this information.

75 Q. Well, assuming that determination is correct, that one was in fact 1242 and one was in fact 1248, would it be fair to assume that those would have come from different sources of contamination or different sources of Aroclors, if you like?

MR. MUIRHEAD: Objection.

THE WITNESS: Yes. I am

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assuming by your use of the word "source," you are talking about a specific application as distinguished from a class of applications?

76 Q. A specific type of application.

A. Yes, if we assume that these are truly what they are purported to be with no alterations, you could safely assume that the sources were different.

77 Q. And 1242 is used principally in what applications?

A. The principal applications for Aroclor 1242 is as a dielectric fluid in capacitors.

78 Q. And the 1248, what was its principal application?

A. Aroclor 1248 was never,relatively speaking, a high-volume product of Monsanto's and I don't know that any one application stands out as being a principal application. It found about equal use in coating applications, heat transfer applications, ink formulations, wax-extending formulations; those are the uses that come to mind now.

79 Q. But it was not used in capacitors as such?

A. Not to my knowledge, no, sir.

80 Q. Do you have any - would you have any opinion as

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to how Aroclor 1242 which is used principally in capacitors could find its way into a sample of bakery product?

MR. PETERS: Objection.

THE WITNESS: I can only speculate. I would suggest that the capacitor application would not appear to be the more likely source unless a ballast unit in a lighting fixture was located in such a way that when the ballast unit failed and leaked, it might have found itself in material where normally you wouldn't expect it.

MR. PLAUT: What is a ballast unit?

THE WITNESS: In the multiple tube fluorescent unit, there is a plastic package referred to as a ballast unit and in this plastic box there is a small transformer and a capacitor and it is my understanding that the purpose of this is to provide the initial surge of power required to illiminate the gas in the tube initially and the current that is normally present in the wiring system is enough to support that

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illuminescence.

81 Q. (By Mr. Richards) There would obviously not be enough Aroclor 1248 in a fluorescent unit such as the one in this room to contaminate a 40,000-pound load of breadcrumbs or bakery product, I assume, is that correct, Mr. Papageorge?

MR. PETERS: Objection.

THE WITNESS: There are two points in your question that confused me.

82 Q. To the levels shown on this particular sample, 157451.

MR. PETERS: Objection.

THE WITNESS: First of all, I don't know of the use of Aroclor 1248 in the ballast units that we talked about, but in a material that is as I visualize the product that you are speaking of, not truly homogeneous, it is conceivable that any presence of any material could be isolated such that one sample would not be typical of the entire mass that is involved.

83 Q. So that if I understand you correctly, what you are saying is that the fact that one small sample

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of, shall we say for purpose of the example 40,000 pounds of bakery product, a sample that would be measured in the amounts of ounces which might reflect this sort of a figure of 757 parts per million would not necessarily be an indication of what the PCB content of that entire 40,000-pound load would be?

MR. PETERS: Objection.

MR. MUIRHEAD: Objection.

THE WITNESS: That is correct.

84 Q. (By Mr. Richards) How could you determine what the actual or what the approximate content of PCB's would be in a load, say, of 40,000 pounds of bakery byproduct?

A. I would have to go to a statistician who would design for me a sampling program to tell me where to take the sample and how many samples to take before I could arrive at a number that would be accepted by the scientific communiity as being representative of that mass.

85 Q. At the very least, there would have to be considerably more than one sample taken?

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MR. PETERS: Objection.

THE WITNESS: Yes.

86 Q. Did Aroclor 1248 have any applications, to your knowledge, in pesticides in the period of 1968 through 1970?

A. Not to my knowledge.

87 Q. In regard to this sample or this analysis 157451, do you have any knowledge as to whether there is any sample remaining?

A. I do not.

88 Q. Can you determine from Mr. - what is his name, W. J. Litschgi, whether there would be any of that sample remaining?

A. Yes, I can.

89 Q. Would you please do so and would you let us know if there is such a sample?

MR. CHIESA: It has already been requested, I think.

MR. MUIRHEAD: And, if so, to assure that it is preserved.

MR. PETERS: We certainly will.

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90 Q. (By Mr. Richards) Now, in regard to this particular sample, Mr. Papageorge, would Mr. Litschgi know or would he be the individual who would know what the sample weighed, what its appearance was, how it was shipped and in what condition it arrived and soforth at the Monsanto labs?

A. He may know, sir. On the other hand, his supervisor, Dr. Tucker, may know.

91 Q. Would there be on the record or in their records any correspondence in regard to the forwarding of the sample and the request for testing and soforth?

A. I don't know.

92 Q. Could you determine for me if there is any correspondence in regard to this and if either of these gentlemen have any personal knowledge as to this particular sample as to its appearance, what it weighed, what they can recall about it?

MR. PETERS: We will produce that if there is anything.

MR. CHIESA: Off the record.

(Discussion off the record.)

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MR. RICHARDS: I would also like you to check and see whether there were any other types of tests made on this particular sample other than for PCB's?

MR. PETERS: All right, very well, we will comply with that.

93 Q. (By Mr. Richards) Did you at the time that this sample of Rozansky Feed arrived for testing, have any conversations with anybody from Agway in regard to this particular sample or in regard to the problems of PCB presence in general?

A. The presence in the sample?

94 Q. In this sample of problems that they had with reference to PCB's in any of their feed. I guess to rephrase it, Mr. Papageorge, let's take it step by step. What conversations, if any, did you have with representatives of Agway in regard to the presence of PCB's or any problems they were having with PCB's?

MR. PLAUT: Let's have this delineated as to time.

95 Q. (By Mr. Richards) Well, assuming you did have a

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conversation, what was the date of your first conversation?

A. As I thought I indicated yesterday, starting in early 1971, fairly early in January, I was communicating with representatives of the Agway Company. The conversation, as best I recall, followed the very typical type where the initial discussions are held relating to a description of polychlorinated biphenyls, the trademarks used, the applications, what effects theyhave on test animals. In general, what do I know about polychlorinated biphenyls and the discussions eventually end up with is there a test method, can we get samples, what laboratory service can Monsanto provide, are there other laboratories that can provide good service, this is the general gist of the discussion and with the Agway representatives we offered them test methodology, samples for their laboratory standards, offered to coach one of their analytical chemists, have them come to our laboratory and work with our people. We suggested he bring along a few samples so both

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our Monsanto chemists and Agways chemists could look at the same material. Then later after the Agway representative had visited with Monsanto and returned to his laboratory, there were still a few samples that both laboratories were testing in order to confirm each other as to how reproducible the results were in the two laboratories.

96 Q. Do you recall who your conversations were with principally in the Agway Company?

A. Initially it was with a Mr. Gary Rumsey and then with a Dick Rice. Finally back with Mr. Runsey because Mr. Rice was not made available to me any longer.

97 Q. What do you mean that Mr. Rice was not made available to you any longer?

A. I would try to reach him and my telephone calls weren't returned. I tried to find out where he was and I never did get to talk to Mr. Rice again.

98 Q. For what reason were you trying to reach Mr. Rice?

A. Well, we thought he had been established as our principal contact reporting back the results that we had and also we were asked to keep them abreast

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of any new developments that we might have heard and so in attempting to reach Mr. Rice, Dr. Rice, I don't recall which; I found that if - in fact, I recall being told that he was assigned to different work , different activity, and was no longer involved.

99 Q. What was Mr. Rice or Dr. Rice's position within Agway, if you know?

A. I was led to believe that he was an analytical chemist in the Agway Laboratories. I don't know which location.

100 Q. Other than Mr. Rice or Dr. Rice and Gary Rumsey, did you have any conversations with anyone else in the Agway Company?

A. My initial call, as I remember, was to another individual within the Agway organization and I can't recall the man's name. It was a fairly short exposure and he fairly quickly asked me to call Mr. Rumsey who apparently was more familiar with the problem.

101 Q. What was the problem as they related it to you?

A. As I recall, the problem was one of someone had

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alleged that a material known as polychlorinated biphenyls was present in feed delivered by Agway to some poultry people and the Agway people wanted to know more about polychlorinated biphenyls.

102 Q. Did they get beyond this point; did they get into specifics of their production and what went into their product and possible areas of contamination and soforth with you?

A. No, sir. I should qualify that. The only specifics that they mentioned was Mr. Rozansky's bakery meal.

103 Q. And what was your conversation with the Agway representative and who was it in regard to Mr. Rozansky, do you recall?

A. I don't know that it was much more than a situation where he mentioned that they used bakery meal, could it have polychlorinated biphenyls; and somewhere along the line, would we analyze some of this meal. These are the salient points that I recall.

104 Q. At the same time you had already been dealing with Mr. Rozansky himself, is that right?

A. During the conversation with the Agway individuals, during this period of time, I got this call from

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Mr. Rozansky. Now, I don't know just how time-wise they related.

105 Q. Did you inform the Agway - by Agway, who was it that you had these conversations with in regard to Mr. Rozansky?

A. It would have to be either Mr. Rumsey or Mr. Rice; I don't know just which of the two.

106 Q. Did you indicate to either Mr. Rumsey or Mr. Rice that Mr. Rozansky himself had been in touch with you with regard to problems that he felt that he was encountering with regard to PCB's being found in his bakery product?

A. As a matter of policy, I never mentioned other people during any conversations.

107 Q. Did you indicate to Mr. Rozansky that the Agway people were in contact with you with regard to problems with their feed?

A. No, sir.

(Whereupon, a recess was taken.)

108 Q. (By Mr. Richards) Mr. Papageorge, you indicated

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that sometime about the time you got into this particular program of trying to coordinate this whole issue for Monsanto, which I believe was around January of '71, is that correct, or is it January of '70?

A. January of '70.

109 Q. That at that time your research department had developed a practical method of determining the presence of PCB's in the environment, is that correct?

A. Yes, sir.

110 Q. So that prior to that time, is my understanding correct that there was no fixed analytical method for determining the presence of PCB's in the environment?

MR. MUIRHEAD: By whom?

MR. RICHARDS: By anyone.

THE WITNESS: Well, prior to 1970, there were very few laboratories in the world who claimed to have methods for testing polychlorinated biphenyls, but there was not enough evidence to support that these methods were

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reliable and the results were reproducible and the results were accurate.

111 Q. So that from the time that Monsanto first started selling this particular product in 1931 or thereabouts when you took over Swan Chemical until 1970, there was no accurate, reliable method for determining the presence of PCB's in the environment; is that correct?

A. That is correct.

112 Q. And is my understanding also correct that during this period of time, you developed more and more applications for this particular product starting with the dielectric industry and moving into all kinds of applications such as plastercizers, coverings and the other various sundry uses that you have described to us previously?

A. That is correct.

113 Q. So that it would be fair to say that during this period of some forty years in which many new applications were developed for the use of PCB's, Monsanto had no method for testing to determine whether PCB's were present or being emitted into

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the environment; is that correct?

A. Not entirely. The methodology that we are talking about involves the ability to detect in the parts per billion range, which is a range where at least up to now, industrial chemical testing had never achieved. There were tests prior to 1970 for detecting polychlorinated biphenyls down to the low percent or fractures of a percent level which was the accepted standard at that time.

114 Q. Monsanto was aware because of the applications of PCB's that PCB's were in fact being put out into the environment, into streams, into rivers, into sewers and soforth, into the atmosphere, simply because of the applications to which it was applied; is that correct, during this forty-year period?

A. Yes, our understanding was no different than it is and it was for the vast majority of industrial chemicals in these kinds of operations.

115 Q. But no environmental testing whatever was done to determine what the impact was on the environment of PCB's by Monsanto up until 1970, is that right?

A. That is correct.

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116 Q. So you had no knowledge and attempted to gain no knowledge as to what the impact might be on the environment as you have described it up until 1970?

MR. PETERS: No, I object to that, the Bio-Test was started in '68.

MR. RICHARDS: All right; well, until '68 or '70.

THE WITNESS: No more so than for thousands of other industrial chemicals.

117 Q. Now, once this methodology, the analytical methodology was developed, I believe you indicated that as people came to you with problems or came to you with inquiries as to the presence of PCB's, that you made this methodology available to them together with whatever samples of the pure product were necessary to run the various tests, is that right?

A. Yes, sir.

118 Q. This was a very informal sort of procedure, as I understand it? I mean, the distribution of samples and the literature and soforth, is that right?

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A. It was somewhat more formal than is normally practiced for industrial samples, the intent was - and it was highly successful - in that my office was made aware of the samples that were sent out.

119 Q. During this process or during this period, samples were sent to Agway and you have already discussed how Dr. Rice came out, I believe, and had some training in the use and the methodology of analysis?

A. That is correct.

120 Q. Do you have any record of how many samples were in fact sent to Agway or is there any record of samples that were sent out to various parties, independent parties?

A. Yes, I have a record.

121 Q. You do have records of the samples that have been sent out to various parties who have requested them?

A. Yes, sir.

122 Q. Do you have records of the samples that have been sent to Agway and the dates on which they were sent?

A. I believe so, yes.

123 Q. Could you produce those for us?

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A. Yes.

MR. MUIRHEAD: Just of Agway?

MR. RICHARDS: Yes.

124 Q. Do you recall, by the way, to whom these samples were sent when they were sent to Agway?

A. Not specifically, but I would suspect Dr. Rice.

125 Q. Do you know if any samples were sent to Mr. Foland in Callicoon, New York?

A. That is the first I have heard of the name or the location.

126 Q. Did you in the course of your conversations with Dr. Rice discuss with him the program that they had set up for analysis at Agway?

A. No, sir.

127 Q. Did you have any indications or any reports from Dr. Rice or anyone else at Agway that at any point they were having problems with their testing or testing procedures?

A. No, sir, in fact, as I indicated, the Agway people were not very free with their information.

128 Q. Did you get any reports from Agway or Agway people or from any other source that indicated that there

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might be any contamination of their testing facilities or their laboratory facilities?

A. No, sir.

129 Q. And you have already indicated that all of the testing, the sample testing that you did do for them and all of the correspondence that you have, is represented in Papageorge No. 1 and No. 2 for identification; is that correct?

A. Yes, sir.

130 Q. Would your laboratory personnel or your laboratory people have any additional records of tests that were performed for Agway or correspondence or memoranda in regard to testing done for or on behalf of Agway?

A. I am told not, no, sir.

131 Q. In your preparation for this deposition, Mr. Papageorge, did you have the opportunity to read any depositions that have previously been taken in this litigation?

A. No, sir.

132 Q. Mr. Papageorge, either yesterday or the day before you indicated that Monsanto produces certain

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ingredients that go into the manufacture of animal feeds, is that correct?

A. Yes, sir.

133 Q. And could you tell me essentially what those ingredients are or what part they play in the actual animal feed itself?

A. I am not qualified to describe these properly. I am just aware of two products which are sold under the tradenames of Santoquin and Calcium MHA. I understand that the material we sell as Santoquin is supposed to be a material that prevents spoilage or oxidation. Antioxidant, I believe, is the word I have heard. Other than that, I really don't know anything about animal feed.

134 Q. Where are these ingredients produced? What plant are they produced in? Or, let me put it this way, Are either of these ingredients made at the Sauget Plant in Illinois?

A. I don't believe so.

135 Q. Were any of these ingredients produced at the Anniston, Alabama, plant?

A. No, sir.

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136 Q. I believe that you indicated earlier, Mr. Papageorge, that you were not aware of any PCB's being used in any applications in the manufacture of plastic bags such as are used in the bakery industry, is that correct?

A. In the bag itself, that is correct.

137 Q. Would there be the presence or could there be present any PCB's in the inks or the markings or the identification used on the bags?

A. At one time, that is a possibility, yes.

138 Q. Do you have any records or does Monsanto have any records indicating - or any tests indicating whether there were in fact or have been in fact found PCB's in the bag markings of plastic bags?

MR.PETERS: Objection; you may answer.

THE WITNESS: We do not have any records of that nature.

139 Q. Are you aware of any tests that anyone has made in regards to the presence of PCB's in plastic bags or markings on the plastic bags?

MR. PETERS: From Monsanto?

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MR. RICHARDS: From Monsanto or any other source.

MR. PETERS: Objection.

THE WITNESS: I have heard information that could possibly be described as rumors to that effect. I do not know of any formal tests or any reports.

140 Q. What, if any, conversations or correspondence have you had with Agway since the spring of 1971?

A. Nothing.

MR. RICHARDS: I think I have come down to the end of my questions for the time being.

(Interrogatories by Mr. Muirhead.)

141 Q. Mr. Papageorge, when you were taking your undergraduate degree, your bachelor of science, did you do any work at all with PCB's?

A. No, sir.

142 Q. Did you do any work with PCB's while you were taking your master's?

A. No, sir.

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143 Q. In your Army experience, did you have any exposure to research or any other activity with PCB's?

A. No, sir.

144 Q. While you were working with Phillips petroleum, did you have any work related to polychlorinated biphenyls?

A. No, sir.

145 Q. While you were a process engineer in 1951 through '54, did you do any work with PCB's?

A. No, sir.

146 Q. Did you do any work with PCB's while you were supervisor of a manufacturing unit from '54 through '56?

A. No, sir.

147 Q. Did you do any work with PCB's while you were a supervisor of maintenance from 1956 through '59?

A. Indirectly, I was responsible for the managing and administration of a maintenance group that worked on units that used polychlorinated biphenyls.

148 Q. What would the type of work be with relation to those units?

A. It would be the normal maintenance activities

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involved with routine checkouts. They have compressors, heat transfer systems, replacing gaskets, replacing pumps, topping off the systems, miscellaneous kinds of activities relating to keeping the equipment functional.

149 Q. In terms of topping off a system, I understand these systems are completely closed?

A. They are designed to be completely closed, yes, sir.

150 Q. But there is some loss in the normal routine of use of them?

A. When there is a malfunction, it is possible to have a loss which requires makeup or even in correcting a malfunction it may require isolating sections of the system and deliberately draining it to get to the malfunctioning part which in turn involves making up when the system is placed back into service.

151 Q. And this was something that your unit in maintenance did routinely?

A. Yes, as the need arises, yes.

152 Q. And the need would have been in Monsanto's own plants?

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A. Correct.

153 Q. While you were in the position of supervisor of design in the technical group from 1959 to 1962, did you have any work related to PCB's?

A. No, sir.

154 Q. In 1962 through '64, you were supervisor of work and distribution?

A. Warehousing and distribution.

155 Q. Did that involve any work with PCB's?

A. Yes, it involved the shipment of products that contained polychlorinated biphenyls.

156 Q. And what exactly was your work relating to shipping PCB's?

A. My work was the administration of the group that in turn was involved in the storage of these materials and the labels and the preparation of orders, the loading of trucks, tank cars, railroad cars.

157 Q. What were the kinds of problems involved in storing and the loading of PCB material?

A. The normal problems that occur in any chemical.

158 Q. What are they?

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A. Finding space, properly marking, proper retrieval.

159 Q. You mean retrieval from the warehouse?

A. From the warehouse to the dock. Proper handling so you don't damage packages. Making certain that it is sent to the right destination, that the proper documents accompany the shipment, that the proper method of shipment is used depending on the customer needs. These kind of general problems.

160 Q. Your next position was supervisor of several manufacturing units?

A. Yes, sir. Superintendent, I believe.

161 Q. Superintendent?

A. Yes.

162 Q. What were your job responsibilities there as they related to PCB's?

A. There I was managing and administering those activities that were involved in producing chemicals in many chemical-producing facilities. Some of these facilities used polychlorinated biphenyls in operating the equipment.

163 Q. Then in 1965 through 1969, you became plant manager at Anniston?

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A. That is correct.

164 Q. What were your responsibilities as plant manager?

A. I suppose in the final essence, I was responsible for everything that happened at that plant in terms of producing chemicals, the safety of the employees, shipping the material, hiring employees, training employees, accounting for costs, the whole spectrum of activities involved with any industrial operation.

165 Q. There was one period that I neglected to ask you about which was in 1951 through 1954 when you were a processing engineer and designing equipment and soforth; did you have any involvement with PCB's during that period?

A. No, sir.

166 Q. Is it fair to say, then, that from 1954 through 1969, that your general job category would have been as an administrative person for Monsanto?

A. 1954 to '69, yes.

167 Q. You weren't doing actual research?

A. No, sir.

168 Q. So you have been involved in the design of machinery

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that Monsanto used, but not machinery that was used in the manufacture of PCB's?

A. That is correct.

169 Q. Your involvement prior to 1969 and your job function with Monsanto as related to PCB's was then limited to distribution of PCB's, storage of PCB's, servicing and maintaining some equipment that manufactured PCB's and running a plant which, among its other products, included the manufacture of PCB's?

A. That is correct.

170 Q. During all of your work activity from the time you graduated from college and to your master's degree through the time you took your new assignment in St. Louis in 1969, what experience did you have with environmental control as it relates to chemical products?

A. That experience that is related to plant affluence, waste streams, that is it.

171 Q. And with respect to that, it was simply a question of you being the manager and the supervisor of employees who were responsible for protecting

against spillage or something from the plant?

A. That is correct.

172 Q. You have never done any special research prior to 1969 on spillage or materials getting into the water or under the land?

A. That is correct.

173 Q. You have had no personal research at any time on PCB's?

A. That is correct.

174 Q. You have done no personal research of the distribution of PCB's in the environment or how they get there?

A. That is correct.

175 Q. You have done no personal research on the effect of PCB's on animal life?

A. That is correct.

176 Q. As a matter of fact, is it fair to say that all of your information on the effect or lack of effect of PCB's on animal life is what you read or what people have told you?

A. That is correct.

177 Q. What was your understanding of why you were

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selected in 1969 to undertake this task of accumulating information about PCB's and their effect on the environment?

MR. PETERS: Objection.

THE WITNESS: My understanding was that I had familiarity with the complete product line because of my responsibilities as plant manager of one of the two producing units; I was exposed to a very high degree to the total product line; therefore, I did have some general knowledge of polychlorinated biphenyls. I was also told that as a plant manager I had had some exposure to governmental agencies, legislative personnel and it was felt that this background would be helpful in learning to deal with the Food and Drug Administration, the Department of Agriculture, members of Congress, state agencies and all.

178 Q. Well, in a sense, then, was part of your understanding of your new job that you were to be for public relations concerning PCB's for Monsanto?

A. The words "public relations" was never used. I do have a public relations staff if I need their

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services. Of course, all of us in the company do represent the company in our actions.

179 Q. Well, after 1969, have you had a very broad exposure to people in the community and in government concerning PCB's?

A. I suspect I have the broadest in the world.

180 Q. Have you given speeches on the subject of PCB's?

A. Yes, sir.

181 Q. Where have you given speeches?

A. I have never kept a record; it has been many places in this country, Canada, Mexico, Europe.

182 Q. When did you give a speech in Mexico and to what group?

A. I can't remember the year, but in Mexico, as I recall, I gave a discussion before three different groups. As I recall, one group represented the dielectric fluid users; I believe a second group represented - consisted of representatives of governmental agencies.

183 Q. Mexican governmental agencies?

A. Yes, sir, and the third group I am not very clear on this, I believe they were representatives of

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A Mr. Donald Cameron, who is our European marketing representative, and Mr. H. A. Vodden, who was our European research representative. These agencies and laboratories, as best I can remember, included the laboratory of the Government Chemist spelled with a capital "G" and a capital "C," so it is definitely an office or an agency in England. We met with representatives of the Ministry of Agriculture and there was a group that represented the - I believe it is called the Ministry of Fisheries and Wildlife. I am not positive of the exact terminology.

190 Q. Approximately when was this trip to London?

A. This was in late April, early May, 1970.

191 Q. Did you go to other European countries or elsewhere in England?

A. Well, let's see, we visited these agencies I mentioned. We also visited the incinerator located in England. This is Purle Brothers, Limited, operation. Other cities in Europe that we visited, we visited with Professor Widmark at the University of Stockholm.

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192 Q. When did you do that?

A. This same period of time.

193 Q. What was the purpose of the visit with Professor Widmark?

A. To determine if he had any newer developments in the analytical procedures for polychlorinated biphenyls.

194 Q. Did he?

A. Nothing really new, no, sir. While in Sweden, we visited with the agency that, as I understood it, is equivalent to our perhaps Food and Drug Administration or Public Health Department that concerns itself with food and the general public.

195 Q. Before we leave Sweden, did you become familiar with any legislative activity or any laws that were in effect in Sweden at that time concerning the control or use of PCB's?

MR. PETERS: Objection.

This is in 1970?

MR. MUIRHEAD: Yes.

THE WITNESS: In early 1970, there were no laws. There was only an awareness of

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the presence of polychlorinated biphenyls in Sweden. It was later that laws were adopted.

196 Q. Do you know when they were adopted?

MR. PETERS: Objection.

THE WITNESS: I believe it was 1971 that Sweden adopted laws which restricted the use of polychlorinated biphenyls.

197 Q. To what did they restrict them?

A. It wasn't so much - it is my understanding that the law there is one of a permit system, so it wasn't a matter so much of restricting to an application, it was a matter of getting permission for using polychlorinated biphenyls from some governmental agency.

198 Q. What other European countries did you visit and have discussions in concerning PCB's?

A. We visited Belgium.

199 Q. What was your contact there?

A. We met with a trade organization, and the name of which I don't recall, which included users and manufacturers of polychlorinated biphenyls. This meeting was held in Brussels in May, 1970.

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200 Q. Where else in Europe?

A. We also went to Germany and visited the location at which the company we normally refer to as Bayer manufactures polychlorinated biphenyls.

201 Q. You don't have any specific group that you talked to about PCB's in Germany?

A. No, sir.

202 Q. Were there any other meetings or conferences which you attended in Europe?

A. I don't believe so, no, sir.

203 Q. And is it fair to say that all of this contact in Europe was in the spring of 1970?

A. Yes, sir.

204 Q. Did you ever go to Japan on any trips concerning PCB's?

A. No, sir.

(Discussion off the record.)

205 Q. (By Mr. Muirhead) Is there something you wanted to add about another country you went to?

A. I forgot, but we went to the Netherlands at the same time and visited the University of Utrecht and

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met with Dr. Vos and his staff.

206 Q. Who is Dr. Vos?

A. He was a member of the University staff who was conducting some poultry studies with polychlorinated biphenyls and we stopped by to review the status of his studies.

207 Q. What were you told about the status of his studies?

MR. PETERS: Objection.

THE WITNESS: I don't recall all the details, but in essence the higher levels of the lower chlorinated polycarbonated biphenyls seem to have an effect on the test birds, but to us more significantly - to us meaning Monsanto people - it appeared that the material produced in Europe had an effect on these birds that was not noticed with the Monsanto-produced material.

208 Q. What was that effect?

MR. PETERS: Objection.

THE WITNESS: As I recall, lower quantities of the polychlorinated biphenyls produced some effects in these birds and one of them I remember is the symptom referred to as

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chick edema which I understand is the collection of fluid in the animal that is abnormal. And this effect at these lower levels of the European-produced material was attributed to the presence of a contaminant which was identified as chlorinated dibenzofuran. I am told that these chlorinated dibenzofurans are extremely toxic, very poisonous materials, and that extremely low concentrations have been known to cause effects in test animals.

MR. SPELLMAN: Excuse me, I am not clear; when you use the lower range, do you mean the lower percentages of chlorine?

THE WITNESS: Lower range as to what reference, sir?

MR. SPELLMAN: When you were comparing the European-produced materials to the Monsanto materials and talking of the lower ranges.

THE WITNESS: I am talking about the lower dosages fed to the animals, to the birds. It took a smaller dose of the European-produced material to produce effects in the birds.

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MR. SPELLMAN: In that case, you are talking about parts per million?

THE WITNESS: Yes. When I am talking about furans, I am talking about fractions of parts per million and it is such a highly toxic material, that it doesn't take very much to produce effects.

MR. PLAUT: Let me just try to make it further clear. It has nothing to do with the number of chlorines in the range of the PCB's, I take it, whether it be your 1242 or your 1248 or - - - Off the record.

(Discussion off the record.)

209 Q. (By Mr. Muirhead) What is the chemical formula, if you can tell us, for chlorinated dibenzofuran?

A. If you recall in the interrogatories, there was a diagram shown of two benzine rings with chlorines affixed to each of the possible points. If you can just picture that double ring, remove two chlorines that are adjacent to the point of contact of two rings and replace that with an

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oxygen, that makes it a dibenzofuran.

210 Q. Could you draw a diagram of chlorinated dibenzofuran, an example of one?

A. Yes, sir. I have drawn a sketch showing the two hexagons representing the two benzine rings, the two phenyl rings. I have shown it at the points - at points where chlorine could be affixed, I have shown X's. I have also shown the addition in this case of an oxygen bridging the two benzine rings, this configuration represents the dibenzofurans. The number of chlorines that are affixed describe the particular chlorinated dibenzofuran. On it could be a monochlorine, a bichlorine, a trichlorine, a tetrachlorine and so on up to, I believe that is eight. A maximum of eight chlorines possible.

MR. ROGERS: That is one oxygen or one on each ring?

THE WITNESS: There is one oxygen attached to each of the rings. There is another ingredient that is suspected of being present which involves a second oxygen; this is

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called a dibenzodioxin. This material is one of the most toxic materials known to man.

211 Q. And that is what you have now changed the diagram to represent?

A. That is correct.

212 Q. If you would, could you label the one that now exists on your diagram and also diagram, if you would, in a separate diagram on the same page the chlorinated dibenzofuran?

A. All right; this one I now have is labeled "chlorinated dibenzodioxin." These materials I am told exist or it is possible to have these materials present when you have a mixture of chlorines and benzine rings and this is the material I am told - I don't know if it is relevant to this case - but just to give you an understanding, this is the material I am told that has been found to be present in that weed killer used in Vietnam that you may have heard about. The upper material.

MR. MUIRHEAD: Could we have this marked as an exhibit for identification?

(Whereupon, Papageorge

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Exhibit No. 3 was
marked for identification.)

THE WITNESS: We have all heard references to the Japanese cooking oil incident in which polychlorinated biphenyls were alleged to have been involved. In my conversations with representatives of the Food and Drug Administration, they have also had a very strong suspicion that either the chlorinated dibenzofurans or the chlorinated dibenzodioxins were involved. It is very difficult to definitely establish this because there is no sample available of the material that was involved in that incident back in 1968. I heard in the past year that the Food and Drug Administration got a sample of the polychlorinated biphenyl mixture that was similar to the mixture used in that particular cooking oil system and I also heard that they found in that sample the presence of these chlorinated dibenzofurans, so our FDA toxicologist, I am led to believe, has a very strong suspicion, but is unable to confirm it, that the symptoms noticed in Japan were probably

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due to the presence of these materials.

213 Q. (By Mr. Muirhead) This on your part is all something that you have been told?

A. Yes, sir.

214 Q. No personal knowledge at all?

A. That is correct.

215 Q. Have you ever read any specific articles or studies on this Japanese incident?

A. I have read one or two paragraph summaries in English. I have read a report that came out of the meeting held in North Carolina in December. I believe it was 1971.

MR. PETERS: Is this the Quails Roost?

THE WITNESS: The Quails Roost, at which the representative from Japan and Dr. Blumenthal spoke.

216 Q. Do you still have copies of those?

A. Yes.

MR. MUIRHEAD: Could we have copies of those?

MR. PETERS: Do you think we have

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a copy of that?

THE WITNESS: Yes, it is in that bibliography also.

217 Q. Again to the Japanese problem, was that at Yusho?

A. That is the common expression used to describe the incident.

218 Q. Have you ever read any of the studies or articles by M. Kuratsune?

A. I believe he is the individual that spoke in North Carolina, I am not positive. I am not familiar with these Japanese names, but I believe he is the man.

219 Q. And articles on this Yusho incident written by T. Yoshimura?

MR. PETERS: Objection, please.

THE WITNESS: I don't recall the names.

220 Q. Do you recall the name Matsazaka?

A. No, sir.

221 Q. Or a Yamaguchi?

A. No, sir.

222 Q. Do you have any of those Japanese studies?

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A. I have these articles I referred to earlier which we are going to try to give you copies of. I don't recall the authors, but I do recall that there were multiple authors and it could well be that the names that you mentioned are included in that listing.

MR. PLAUT: May I interrupt to inquire whether you have given us the date of this North Carolina meeting that you have alluded?

THE WITNESS: I believe it was in December, 1971.

MR. CHIESA: It is in the interrogatories.

223 Q. (By Mr. Muirhead) Getting back to the talks that you have given, you described with whom you have had conversations and where you have given talks in Canada, Mexico and Europe; what places have you given talks or participated in seminars in the United States?

A. I will try to recall as many as I can.

224 Q. Would you also try to give us the approximate date?

A. I will try.

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(Whereupon, the luncheon recess was taken.)

THE WITNESS: I will attempt to recall as best I can the many opportunities I had to discuss polychlorinated biphenyls with groups of people. Following my return from the European trip in May of 1970, I spent several months during that summer visiting customers who were major users of polychlorinated biphenyls. And, during these meetings, I would present to them what I knew about polychlorinated biphenyls. Also during that period of time, as best as I recall, I gave that same type of presentation to members of the U. S. Department of Agriculture in Bethesda, Maryland, and to members of the U. S. Food and Drug Administration in Rockville, Maryland. During the latter part of 1971, I spoke to a group of people called together, as I understood it, by an organization which I think goes under the name of the National Broiler Association. The group met in one of the Department of Agriculture buildings in Washington. I then spoke to two or

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three sessions arranged by the Egg and Poultry Institute. I remember clearly a meeting we held in Chicago and a meeting held in Kansas City and these, I believe, were something like October, '71, for the Chicago meeting and early December for the Kansas City meeting. It seems to me there was a third session, but I don't really recall where it was held. I had a meeting with - I believe the organization is called the American Grocery Manufacturers Association. This meeting was held in Washington, D. C. As best I can recall, it was late 1971, early 1972. I met with a group in Detroit, Michigan, which was called together by one of the trade associations and I don't know if it was the American Paper Institute or the Boxboard Institute, one of those two. This is in Detroit.

225 Q. (By Mr. Muirhead) Incidentally, could I just interrupt there a second to ask why would you be meeting with the American Paper Institute or the Boxboard Institute? Do they use PCB's in the process of making cardboard or box material?

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A. Well, our customers who used polychlorinated biphenyls in these coatings that we referred to earlier as appearing in the carbonless copy paper are members of the American Paper Institute. The Boxboard people, as I understand it, are large users of recycle paper. Some of this recycle paper contains this carbonless copy paper; therefore, the polychlorinated biphenyls could appear in their products, this is why the interest at that time.

226 Q. Let's go back, you were recalling some of the places that you have given these talks?

A. I spoke in Michigan, in Detroit, as I recall. Let me correct that, that was in Chicago to a group that was referred to as the Great Lakes States Governors Pesticide Council or a title similar to that.

227 Q. Does it refresh your recollection if I suggest to you the Michigan United Conservation Clubs?

A. Yes, in Michigan I also spoke to an organization that was an association which represented the conservation clubs of Michigan. I believe that was also December, '71. December, '71, as I remember,

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was a busy month making many of these talks.

228 Q. American National Standards Institute?

A. Yes, sir.

229 Q. The National Bureau of Standards?

A. Let me clarify that one. The Electrical Manufacturers Association formed a committee of capacitor and transformer manufacturers to address itself to the care and handling of polychlorinated biphenyls used in this industry by the manufacturer and the user. That activity was eventually placed under the auspices of the American National Standards Institute. So the first truly effective working meeting that we held was held at the National Bureau of Standards' facilities in Silver Springs, Maryland. It was at that meeting that I reviewed again for those in the audience that weren't familiar with the subject the polychlorinated biphenyls. I don't remember - I think that was about the fall of '71. I can't recall any others.

230 Q. When you took on this new assignment in approximately January of 1970, is it fair to say that you spent the first few months on the job reading all

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of the literature that you could find on PCB's?

A. Yes, sir, it was job familiarity until I went to Europe.

231 Q. Was the European trip also a job familiarity or a fact-finding information tour?

A. That was the idea.

232 Q. It wasn't so much that you were going to give talks, but that you were trying to get further information?

A. Well, it was to get further information, but it turned out that I was able to offer more than I got in return.

233 Q. That also turned out to be your experience in Sweden?

A. Yes, sir.

234 Q. Would you say that holds true with Professor Widmark?

A. Professor Widmark was quite knowledgeable about gas liquid chromatology, but he had very little information as to where they are used and how we handle them and what the numbers meant. He needed all of that information that he hadn't had up to that time.

235 Q. And beginning with your return in May, 1970, from

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Europe, you spent time visiting customers of Monsanto that used PCB's in the products in their own line?

A. That is right.

236 Q. Approximately how many customers did you visit in the summer of 1970?

A. About a dozen, I guess.

237 Q. Did you visit additional customers after the summer of 1970?

A. On occasion.

238 Q. Approximately how many have you visited in total concerning PCB's?

A. Approximately twenty, I would guess.

239 Q. Were any of them; that is, the customers, the ones that Mr. Rogers was inquiring about yesterday?

A. No, sir.

240 Q. So it is your testimony that you did not visit Bond Bakery?

A. No, sir.

241 Q. You did not visit General Foods?

A. I did not.

242 Q. You did not visit National Biscuit?

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A. I did not.

243 Q. Or Ward?

A. No.

244 Q. Or City Service?

A. No.

245 Q. Who suggested that you make these visits to customers?

A. As best I recall, I mentioned that for my own education and because of several telephone calls I had received from some of these customers, that it might be a good idea if I went and visited with some of the key accounts and I discussed this with the marketing director, Donald Olson, and he concurred and the field representatives then made the detailed arrangements for these meetings.

246 Q. What kind of customers did you consider were key accounts?

A. Primarily the dielectric fluid users.

247 Q. What are some of the manufacturers that you visited?

A. Well, again here I am faced with the problem of divulging customer names, although I did yesterday

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to a degree.

MR. PETERS: Well, do you have a policy of not revealing customer names?

A. That is my understanding.

MR. MUIRHEAD: Well, I am going to object to the witness being selective as to who he refers to and who he doesn't. He has divulged some customer names in the last few days and refused a few others. I would like to request the names of the customers he visited.

MR. PETERS: Well, I will object to that and we will put that down on our list. You want the list of customers that he visited?

MR. MUIRHEAD: That is right. I might say that I would have some questions if I knew which customers were involved or I could potentially have some.

248 Q. Other than customers and people you have talked to in foreign countries, approximately how many groups have you talked with in the United States concerning the PCB question?

A. Other than customers and foreign countries, I don't

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know, about a dozen. I mentioned them earlier; I guess I could recount them. A half dozen, a dozen.

MR. PLAUT: When you use the word "group," you are talking about something such as an address to a trade organization or something like that, is that it?

MR. MUIRHEAD: Right.

249 Q. Was the talk that you gave essentially the same for all of these groups and customers?

A. Yes, sir.

250 Q. Have you ever committed to writing the talk that you gave?

A. No, sir.

251 Q. You have notes from which you gave the talk?

A. No, sir.

252 Q. You have given that talk on many, many occasions?

A. Yes, sir.

253 Q. What information did you give these groups and these customers in your talk? Could you give us a digest of the talk?

A. Yes, I can. I started out with a definition of

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what polychlorinated biphenyls were, how they are manufactured, Monsanto's trademark and the terminology used to describe the commercial mixtures. The applications to which these polychlorinated biphenyls were applied and depending on the timing, the current status reports on our toxicity studies, some ideas as to the difficulties involved in sampling and analyzing and a review of Monsanto's marketing policy as it existed at that point in time and also my understanding of what producers in the rest of the world were contemplating or planning.

254 Q. Well, you have already described for us what polychlorinated biphenyls are as you understand them?

A. Yes.

255 Q. How are PCB's made? How were they made by Monsanto?

A. Well, Monsanto starts with a high purity benzine which is obtained from crude oil in the petroleum industry and exposes this benzine to high temperature and conditions are such that a mixture

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results in which we find two benzine groups joined - or three benzine groups - to form the biphenyl. The three forming the terphenyl and then we also have the fourth and fifth rings for the contra and soforth.

256 Q. This is as a result of the heat being applied?

A. Right. The benzine is put into what looks like a cracking furnace in the petroleum industry. This is put in a unit that separates the biphenyl from the other ingredients.

257 Q. Could you describe how that is done by the equipment?

A. This is a distillation in which the materials vaporize and is forced to go up a tall column, as we refer to it; and as it goes up the column, it is further refined until finally the vapors that come off the very top are of the high quality, high purity biphenyl.

258 Q. All of the others that you refer to would be taken off further down the column?

A. Yes. This bottom group forms the basis for the terphenyls that we have mentioned earlier.

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259 Q. And that is essentially because of the weight of the material?

A. It is primarily because of the boiling point. The ability to separate by distillation depends on the boiling points of the materials. The vaporization point.

260 Q. Which would reach the boiling point first, biphenyl or terphenyl?

A. The biphenyl boils off first. This biphenyl is then condensed because it is cooled and this liquid now is kept at a liquid state by keeping the right temperature.

261 Q. What temperature is necessary to do that?

A. I am guessing a bit here; it is about 100 to 150 degrees Fahrenheit. In that range. At normal ambient temperatures, it is a solid. It looks like a white wax. If you get over a hundred, it becomes a liquid which makes it easier to handle. This liquid is put into a tank in the presence of iron. It could be the walls of the tank. We used to use iron filings or nuts and bolts, any presence of iron. We then bubble chlorine gas through the

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molten biphenyl. The chlorine then attaches itself to this biphenyl group randomly and based on which of the Aroclor mixtures you hoped to produce - the operator is taught to take readings, take samples. And when his sample reaches a certain viscosity, which is the pourability of the liquid, the measure of the pourability, he knows from appearance when a certain type of viscosity is reached and he should finish the chlorination, turn off the chlorine, and his mixture is now ready for refining. The refining is again one of heating until vapors are formed and now because it is chlorinated, it takes higher temperatures and it also takes a vacuum to suck off the vapors. The vapors that are taken off are now the Aroclor that we sold as 1200-something.

262 Q. The amount of chlorine that you put through the molten liquid will determine which in the 1200 series you hoped to produce?

A. That is correct.

263 Q. Now, after the refining process, something that you are selling as Aroclor 1242 in fact may also

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include some that could be classified as 1248 or 1254?

A. Not under the way we classify. Some of the components in that 1242 mixture are also present in the 1248 mixture, the 1254 mixture, the 1260 mixture.

264 Q. It is the average weight of chlorine in the particular PCB that determines how you classify it?

A. That is correct.

265 Q. So within the same mixture, you might have some if by itself could be 1248 and some that could be 1242?

A. I don't want to confuse you. It is possible to take a mixture which we call Aroclor 1242, distill it in such a way that you take off those polychlorinated biphenyls that boil off easily and if this distillation was terminated at exactly the right point, what is left in your pot could resemble Aroclor 1254, the more viscous higher chlorinated material. Now, that portion which was distilled off could resemble a 1221, the other end

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of the spectrum. Does that help any? Let me try to describe it this way. The polychlorinated biphenyls, the word "polychlorinated biphenyls" is used to describe a family of chemicals and this family consists of 210 different members. These are members like in a family, some are blue-eyed, brown-eyed, light-haired, dark-haird, three-legged, two-legged. They all have their specific characteristics. When this commercial mixture is made, at no time are all the 210 representatives of that family in that mixture. It never happens this way, but the random manner in which chlorine will affix itself usually results in a mixture finally that may include 50 to 70 of these members of the family. And as you continue to introduce chlorine and keep adding chlorine, that 50 to 70 number of members of this family shift on to another 50 to 70 which include those members of the family that have more chlorine affixed to the biphenyl group and eventually you reach the point where the monochlorine group is not present any longer in the 1254, for example. He just didn't

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survive because another chlorine or two hooked itself on. So the shift is to the higher chlorinated members of this family. Now, it is possible to take a particular mixture and boil it as we talked earlier, distill it and remove some of these members of the family and to get a mixture, then, that resembles the next type of commercial mixture.

266 Q. Well, this morning Mr. Richards was asking you about the difference in testing which resulted in some being read as 1242 and others being read as 1248, is part of the explanation for that involved in the fact that there are really different types of PCB's in a particular mixture? In other words, something sold as 1242 may also contain some PCB's similar to what would be found in 1248?

A. That is correct.

267 Q. So if you take a commercial mixture, it could be accurately tested insofar as the state of the art is developed and compared to a very highly refined sample used as the test standard as either 1242 or 1248?

A. I don't want to mislead you here. Let me try this.

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The commercial mixture as sold as Aroclor followed by a number when looked at under this instrument will produce a chart of peaks and valleys. It is referred to commonly among the chemists as the fingerprint of that commercial mixture. And it has been demonstrated through the years that Aroclor 1242 irrespective of when it was made, as long as it was made by Monsanto following its process, is pretty much the same fingerprint. So if a sample of that Aroclor 1242 supplied by Monsanto is put in the instrument, the experienced chemist can identify the fingerprint. If he has seen many of them, he can identify it. If this Aroclor 1242, however, has been fed to a test animal and you take the test animal's tissue, extract the PCB's from the tissue and run it through the instrument, it may look like the fingerprint exactly if you catch it quickly. However, it may be altered where some of the peaks and valleys have been altered. They are either lowered or they are shifted or they have little shoulders on them. There is an alteration that takes place and the

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experienced chemist can look at it and say it is not exactly 1242, but it is darn close, so I will report it as 1242. Now, if this alteration has taken place to a greater degree, that fingerprint may look like Aroclor 1248 because the lower chlorinated members of that family have been metabolized or, let's put it in a more concrete way, they have disappeared. They are no longer identifiable. We don't know what happens to them in some instances. So the experienced chemist looking at the fingerprint says it looks more like 1248 than 1242. He has no way of knowing what the original version was. Therefore, you will see in most reports of tests made on tissues from wild animals, creatures out in nature, invariably the report will be it is Aroclor 1254. This is all out of proportion to the amount of material that was really sold as 1254, which would indicate that something is going on out there in nature where the 21's, 32's and the 42's and the 48's are undergoing some alteration so that by the time the investigators sees the sample, it looks

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to him like 1254 and then it is not a perfect fingerprint of 1254, it is the closest that I can identify it with.

268 Q. It is not just wild creatures that this happens with, is it?

A. No, I use the example of wild creatures to point out that most studies report 1254 as though that were the principal material sold, which is not the truth.

269 Q. During the test results there are fingerprints sometimes which - in other words, two sets of fingerprints out of perhaps the same sample, 141242 and 141254?

A. Yes. The more experienced chemist, and there is no reflection there on the chemist or his training or the individual, it just takes an exposure to thousands of samples before he gets the confidence it takes to put his reputation on the line. The more experienced chemist says, okay, the way I see this fingerprint, and there is, as you can see, subjectivity involved here, now, no two chemists may see the same thing. He may say

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that is a mixture of 1242 and 1254 superimposed and he will then quantify, based on that superimposition. The quantification is made, as some of you probably already know, by various means depending on the chemist's preference. There is no one standard way just yet.

270 Q. But if you had test results which showed ten parts per million of 1242 and ten parts per million of 1254, what you have is 20 parts per million of PCB's?

A. That is the way it is reported, yes.

(Discussion off the record.)

THE WITNESS: The careful chemist as a good scientist is careful about qualifying his answer because this is not that absolute.

271 Q. On these fingerprints, as you have described them, if the report is phrased in terms of Aroclor 1242, is it fair to say that that is an identification of a Monsanto product Aroclor 1242?

A. Not necessarily. Material produced by other producers would have - it could have and does have

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the same fingerprint if it is manufactured to be roughly 42 percent chlorine.

272 Q. Do you have personal knowledge about other manufacturers' products and the percentages in which they are produced?

A. My information as told me is that the - - -

273 Q. Well, first, do you have personal knowledge?

A. Personal, you mean have I analyzed it personally, no, sir.

274 Q. Do you have any information given to you by others as to whether or not that is so?

A. Yes, I am told that the competitive material is designed to compete with Monsanto's in terms of chlorine content.

275 Q. The competitors being mostly in Europe today.

A. Well, today it is Europe, in the past it included Japan.

276 Q. Do you have any information as to how much foreign material was actually sold in this country?

A. I have very sketchy information.

277 Q. I think you said yesterday that the tariffs pretty much protected Monsanto from competition here?

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A. Yes.

MR. PETERS: Off the record.

(Discussion off the record.)

THE WITNESS: Tariffs discouraged it. This does not mean that they were necessarily kept out entirely.

278 Q. (By Mr. Muirhead) Well, in fact, in most of the talks that you gave and in the letters which I think are Exhibit B which were sent to the customers of Monsanto and in the interdepartmental task force, isn't Monsanto always listed as the sole or principal manufacturer in the United States?

A. In 1970 and prior years, we assumed we were sole producer. Subsequent to that, we have been hearing - I may have related this previously - we heard reports that others on occasion have manufactured polychlorinated biphenyls. Attempted to enter the marketplace and for reasons unknown to us, would abandon that attempt. This was the sporadic type of information that we have gotten. It is difficult to substantiate. No one will admit to

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anything these days.

279 Q. Do you have any specific information about other U. S. producers of PCB's in the years 1969 and 1970?

A. Nothing specific, no, sir.

280 Q. This talk that you have given to the groups and I take it it was the same one to the customers?

A. Yes, sir.

281 Q. Has that talk ever been published?

A. No, sir.

282 Q. Have newspaper reports of your talks been published?

A. Newspapers, no, sir.

MR. PETERS: Newspaper reports he said.

THE WITNESS: I am not aware of any newspaper that ever referred to my talk.

283 Q. Any sort of articles?

A. Yes, there was one that I recall; I can't remember the name of the journal. There was a trade journal for egg producers in which someone attempted to report on my talk that I had made, in I believe it

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in New York City?

290 Q. Dr. Fields?

A. Dr. Frank Fields.

291 Q. Dr. FrankFields interviewed you?

A. Yes.

292 Q. This was for NBC?

A. For NBC, yes.

293 Q. And part of that program was aired?

A. I was told it was aired. I saw a film clipping of that airing.

294 Q. When did this occur?

A. March or April, 1970.

295 Q. Do you know whether that television interview exists either in the form of videotape or film today?

A. I do not know.

296 Q. To your knowledge, does Monsanto have a copy of it?

A. I do not know.

MR. PLAUT: Will you look it up, please, Phil, and see if they do?

297 Q. (By Mr. Muirhead) Do you know when it was shown

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on television?

A. No, I don't.

298 Q. In your talk that you gave to groups, how did you describe to them the difficulties of sampling and analyzing the material for PCB's?

A. I informed them of the sophisticated instruments required, of the training that the analyst had to undergo and the experience that he had to go through. I cautioned them about how easy it was to contaminate the entire laboratory unless they were extremely careful. I cautioned them about the interferences that could exist if they didn't follow the instructions carefully. I cautioned them about the fact that at times these fingerprints can be misleading and the only way to make certain is to use still another instrument called a mass spectrophotometer to confirm their initial suspicions. This is the type of discussion I held.

299 Q. Have you yourself ever been trained in the testing of materials for PCB's?

A. No, sir.

300 Q. Have you a familiarity with the Monsanto procedure?

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A. To a degree, yes.

301 Q. As you understand it, could you describe the gas chromatograph testing procedure?

A. I will attempt it.

302 Q. Perhaps you could start first with describing the equipment that is used.

A. I don't know whether I am technically qualified. I have only looked at a series of steel cases and they were pointed out to me that this is the gas liquid chromatogram. I understand that a column made of - it can be a metal or glass - is involved and this column is packed with a certain absorbative material. Clays, specially treated clays. The material to be tested is refined to a very high degree and is presented finally in a very clean solvent. The solvent most commonly used is hexane, which is a hydrocarbon compound. The material is introduced into the system with a hypodermic needle. The temperatures are such that the different polychlorinated biphenyls that are present vaporize at different times and as each one of these is eluded - that is the expression used -

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it is exposed to radioactive energy from a source and as a result a certain response is noted by another sensitive instrument and this response is translated within this instrument and I don't know the details into the peaks and valleys that we talked about on a chart of paper. And the degree of the rise of the peaks and falls of the valleys is a measure of the amount of material that is present. I am sure that is not a sophisticated explanation, but that is my understanding.

303 Q. One of the laboratories that you recommended to Mr. Rozansky was WARF Institute?

A. Yes.

304 Q. Do you have any familiarity with that laboratory?

A. Yes, sir.

305 Q. And I think you indicated that you had confidence in their ability to do this testing?

A. Yes, sir.

MR. PETERS: Why don't you show him the document and he can tell you better.

MR. MUIRHEAD: Show him what document, Mr. Peters?

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MR. PETERS: That you have in your hand.

MR. MUIRHEAD: I don't see how that document that I have in my hand would assist him.

MR. PETERS: Isn't that the report?

MR. MUIRHEAD: I don't know that I am required to show what it is.

MR. PETERS: I didn't say that you were required to.

MR. MUIRHEAD: Off the record.

(Discussion off the record.)

306 Q. (By Mr. Muirhead) Mr. Papageorge, do you know whether or not Monsanto has supplied in the past and continues to supply WARF Laboratories with PCB material for testing purposes to use as a standard?

A. We have supplied WARF Laboratories with samples for standard use.

307 Q. Are you familiar with Dr. Aulerich and Dr. Ringer?

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A. I believe I have met Dr. Ringer on one brief exposure. Let me put it another way, I was in Lansing, Michigan, to discuss polychlorinated biphenyls with Dr. Robert Cook as it relates to dairy cattle and while visiting the campus I was introduced to other professors and we had lunch with several of them; and, if my recollection is correct, Dr. Ringer was one of those professors that I met.

308 Q. And you are familiar with Dr. Aulerich's and Dr. Ringer's research on the effects of PCB's on mink?

A. Not at that time. It seems to me I was familiar with his study of coho salmon. I was familiar with some of his suspicions that he had at the time. I also recall that we sent him samples of materials for his studies. Later I saw his published work.

309 Q. He is at Michigan State?

A. Yes, the university at Lansing, Michigan.

MR. PLAUT: Who is he?

THE WITNESS: Dr. Ringer.

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310 Q. (By Mr. Muirhead) If we could just jump back a moment to your experience as plant manager in Anniston, Alabama, at the Monsanto plant; what instructions did you have from the company concerning safety precautions to take during the manufacture of PCB's there?

A. The instructions were the type given for all of our chemicals, one of practicing good housekeeping and good industrial hygiene.

311 Q. Well, what do those consist of?

A. It is a matter of instructing the employees to wash their hands, don't eat or smoke with any chemicals on their hands. If they spill chemicals on their work clothes, to change them immediately. We issued clean work clothes for their use. We insisted on their working in an environment, the buildings in which they worked and all, to be clean and the floors kept clean. The drippage and leakage to be controlled. These kind of things. These are not unique to polychlorinated biphenyls, they apply to any well-run chemical plant.

MR. PLAUT: Is that a written

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instruction? A written code or manual?

A. I don't recall anything like that in writing, it is the kind of thing that is discussed by the foreman when he has his safety meetings with employees or man-to-man talks he has with them or when he says, look, fellows, let's clean up the mess here or, here, fellow, you go to the rest room and change your clothes; you have something on your pant leg. I don't remember any bulletin or written document that covers this.

312 Q. As part, I believe it is, of Papageorge Exhibit 1 for identification, you have produced a study by R. K. Ringer, R. J. Aulerich and M. Zabik entitled "Effect of Dietary Polychlorinated Biphenyls on Growth and Reproduction of Mink," do you know of any more definitive work on the growth and reproduction of mink as affected by PCB's?

A. No, sir.

313 Q. I believe you testified earlier in this deposition that one of the things found with the seals in the North Sea was malnutrition?

A. Yes, sir.

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314 Q. Are you aware that in the Japanese Yushu incident, that one of the effects found in the humans affected there was loss of appetite?

MR. PETERS: Objection.

THE WITNESS: Yes.

315 Q. What other symptoms did the humans in the Yushu incident demonstrate, as you understand it?

MR. PETERS: Objection.

THE WITNESS: It is reported that they had headache, nausea, fatigue, the eyes were running; they had color acne - the skin effect known as color acne.

316 Q. What is the skin effect known as color acne?

A. Well, as I understand it, the skin is affected in such a way - - -

MR. PETERS: Objection to that question.

THE WITNESS: I don't know how to describe it medically, but the skin is affected in such a way that imperfections are performed on the surface. Some of them became infected, some of them form what is commonly known

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as blackheads, this type of effect.

317 Q. Was there a change in the color of their skin?

MR. PETERS: Objection.

THE WITNESS: I believe there were some - I am not certain here - infants that were born to women that were exposed at that time are - - -

MR. PETERS: Objection again.

THE WITNESS: Are reported to have been born with a dark pigmentation that is reported to have cleared with time. I don't remember any reference to pigmentation changes in adults.

318 Q. In the studies that you have had an opportunity to review, which portion of an animal tissue does PCB generally tend to concentrate in?

A. The fatty tissue.

319 Q. So that perhaps the best thing to test to determine whether PCB is present in an animal is fat tissue?

A. That is my understanding, yes.

320 Q. You referred earlier to a study that was done at Bangor University by Professor Charles Evans for

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Monsanto?

A. Yes.

321 Q. Do you recall what size of grant was given to Professor Evans to do this study?

A. I don't know that I ever heard the number. That was handled through our European research group.

322 Q. Have you ever told anybody that your understanding was that there were two studies and that the first one amounted to two or three thousand U. S. dollars?

MR. PETERS: Objection.

THE WITNESS: I don't remember that.

MR. PETERS: Why don't you refresh his memory; you have the page there.

THE WITNESS: I don't remember, it could be.

323 Q. I will show you what I represent to be page 339 and 340 of the deposition you gave in the North Carolina cases and show you the question that begins at the bottom of page 339 and your answer as contained at the bottom and continues onto page 340 and ask you if that refreshes your

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recollection?

MR. PETERS: Note my objection.

THE WITNESS: Yes, it does; I remember this now.

324 Q. And was that answer true at the time?

A. Yes, sir.

MR. PLAUT: Would you read in the answer?

MR. PETERS: Note my objection to it.

MR. MUIRHEAD: The question and answer were as follows: "Q. How much was the grant? A. I don't recall the details, sir, but it seems like there were two studies. I recall the first one was about two or three thousand U. S. dollars. Somewhere in that range."

325 Q. And that is your best information as to what the cost of the first study was?

A. Yes, sir.

326 Q. Do you know what the cost of the second study was?

MR. PETERS: Objection.

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THE WITNESS: I was involved when the number was discussed; I just don't remember it now. I don't have a feel for the order of magnitude even.

327 Q. When do you say you first learned about PCB residue showing up in chickens grown in New York state for use by the Campbell's Soup Plant?

MR. PETERS: Objection.

THE WITNESS: I first heard - if you are looking at that, you will find the wrong dates in there. As I recall in that deposition, it was mentioned - I said something about November-December, 1970. I first heard about it in January - no, I am confusing that. About November or December I first heard of what I call the New York Campbell Soup incident. It was in January that I first heard from the Agway people.

328 Q. What was your information in November of 1970 concerning what you describe as the Campbell's Soup incident?

MR. PETERS: Objection; you may answer.

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THE WITNESS: Somebody called me.

329 Q. Do you recall who?

MR. PETERS: Objection.

THE WITNESS: The best I can recall, it was either a Campbell Soup representative or it was a New York state agency individual and I don't know which of the two.

330 Q. And what did you find out at that time?

MR. PETERS: Objection.

THE WITNESS: At that time, as I best recall, the individual that called me again wanted to know what polychlorinated biphenyls were, where were they used, how do you analyze for them; and it is during that conversation I was informed that spent laying hens in that area were found to contain polychlorinated biphenyls.

331 Q. Were you told how it was determined that they contained PCB's?

MR. PETERS: Objection, please.

THE WITNESS: I was led to

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believe that during the routine pesticide testing in which they were looking for pesticides similar to DDT, they came across the polychlorinated biphenyl fingerprint.

332 Q. And somebody recognized it as such?

A. And somebody recognized it as such.

MR. PETERS: Note my objection to the question.

333 Q. In fact, a fingerprint of DDT is also obtainable by gas chromatograph, isn't it?

A. Yes.

334 Q. Do you understand that pesticide testing is done by gas chromatograph?

A. Yes, sir.

335 Q. What did you inform the person who contacted you in November of 1970 about the testing technique?

MR. PETERS: Objection.

MR. PLAUT: Objection.

THE WITNESS: I don't remember specifically. I honestly don't remember the details.

336 Q. Did you make any record at all of that, the

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conversation?

MR. PETERS: Objection.

THE WITNESS: No, sir.

337 Q. Did you report that conversation to anyone in Monsanto?

MR. PETERS: Objection.

THE WITNESS: My normal method of operating was such that anything like this I would have in due time and not in any formal fashion mentioned to the business group director, Mr. Bergen, to Mr. Park, our senior attorney, to Mr. Richard, our research director; these people who were intimately involved with polychlorinated biphenyls.

MR. MUIRHEAD: I'd like to request that if there is any memoranda available made by either Mr. Park or Mr. Bergen or anyone else at Monsanto to whom this could have been communicated, that it be made available?

MR. PETERS: I will object to it, but we will search for it.

(Discussion off the record.)

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338 Q. (By Mr. Muirhead) After that initial contact in November of 1970, did you have any further contact with this person who either worked for Campbell's Soup or from some New York state agency?

MR. PLAUT: I will object to the form of the question simply because you keep referring to November and I think the witness said November or December. If the question is included to possibly both dates, as whatever the record shows, then I have no objection.

MR PETERS: Note my objection to the question.

THE WITNESS: I don't recall any lengthy or direct discussions of this incident. I do recall getting initially the information and that is about all I remember. It was not the kind of thing that involved many telephone calls, many letters or anything of the sort.

339 Q. (By Mr. Muirhead) Well, did Monsanto provide any test specimens, for example?

MR. PETERS: Objection.

THE WITNESS: I believe so,

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but I don't remember specifically who they were sent to.

340 Q. In the normal course of business when specimens or samples are sent, is there a covering document?

A. In the normal course of business, yes. I inform the recipient that I am sending him samples under separate cover.

MR. MUIRHEAD: I'd like to request all documentation in any form concerning contact with this New York state agent or Campbell Soup agent?

MR. PETERS: My objection and we will look into it.

341 Q. Did you at any time subsequently have further contact with the same person?

MR. PETERS: Objection.

THE WITNESS: As I indicated, this particular instance was not a prolonged situation, as far as I was concerned, and I do not remember any subsequent conversations.

342 Q. What is your understanding of - I may have the wrong phrase - mass spectrograph? Is it a different

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test procedure than the gas chromatograph?

A. It is a different procedure using different technology and a different instrument.

343 Q. What is your understanding of how it works?

A. I don't know exactly how it works. I do know that the results it gives to the experienced operator is information as to the size of the chemical molecule that is being investigated and from this information they can refer to an index as to which known chemical materials have this mass or this size. That is all I know about this.

344 Q. Was the mass spectrograph used on any of the test samples which are included in either Papageorge Exhibit 1 for identification or 2 for identification?

A. No, sir.

345 Q. Generally, then, you wouldn't use the mass spectrographif you were confident of the gas chromatograph technique?

A. That is correct.

346 Q. Incidentally, just how large an organization is Monsanto? How many people does Monsanto employ?

MR. PETERS: Objection.

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THE WITNESS: I believe somewhere in the 50,000 or so bracket.

347 Q. How many plants does Monsanto have?

A. Over fifty. I am guessing, I have never counted them all.

348 Q. What were Monsanto's annual sales in the year 1970?

MR. PETERS: Objection.

349 Q. Do you know?

A. I don't remember.

350 Q. I think you testified earlier that at the Anniston plant in the year 1971, Monsanto manufactured 40 million pounds of PCB's?

MR. PETERS: Seventy.

THE WITNESS: In 1971, we terminated the manufacture of chlorinated biphenyls.

351 Q. In 1970?

A. In 1970, they approached the 40-million-pound range, roughly.

352 Q. And another 40 million manufactured at Sauget?

A. That is correct.

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353 Q. And in 1970, was the Japanese Monsanto interest also producing PCB's?

A. Yes, sir.

354 Q. Approximately how many million pounds did they produce per year?

A. I have never heard the number.

355 Q. Are you familiar with the number for your plant in Wales?

A. I have seen them. As best I recall, they were about in the 20-to 25-million-pound area.

356 Q. Did Monsanto also have an interest in or a plant of its own manufacturing PCB's in Luxembourg?

A. No, sir.

357 Q. In Spain?

A. No, sir.

358 Q. In the Netherlands?

A. No, sir.

359 Q. In Italy?

A. No, sir.

360 Q. Do you know the particular Monsanto product containing PCB's which Bond Baking or General Foods or National Biscuit or Ward or City Service

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was using in 1970?

MR. PETERS: Objection.

THE WITNESS: Not specifically, no, sir.

361 Q. Is that information obtainable?

MR. PETERS: Objection.

THE WITNESS: Yes, sir.

MR. PETERS: You already asked for it.

MR. MUIRHEAD: Well, I don't know that I asked for it as a matter of record.

MR. PETERS: It has been asked for.

MR. MUIRHEAD: Well, I think it was in a different form, Brother Peters. What I am requesting is the sales on a month-by-month basis to any organization on the list which Brother Rogers showed to Mr. Papageorge, I believe yesterday. Sales to those companies containing - materials containing PCB's for the years 1969 and 1970.

MR. PETERS: Note my objection.

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(Discussion off the record.)

362 Q. (By Mr. Muirhead) Could you summarize for us as briefly as you can the program which Monsanto embarked upon from the time they decided to restrict sales of PCB's through the completion of that program?

MR. PETERS: Objection.

MR. MUIRHEAD: With reference as nearly as you can to the dates when various events took place.

THE WITNESS: By program, I believe you are referring to its marketing policy, marketing program?

MR. MUIRHEAD: Well, I was including in addition to that the construction of the incinerator and so on.

MR. PETERS: Note my objection again.

THE WITNESS: I will try. The program initially was one of information gathering and sharing this information as it developed with our customers, with government

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agencies, with universities as requested.

363 Q. What was the time frame for that?

MR. PETERS: Objection.

THE WITNESS: That started in '68 through '69 and actually continues on through today, continually gathering information. It was decided fairly early in 1970 to withdraw from those applications, to withdraw the sale of polychlorinated biphenyls to those applications that in our opinion led to virtually a direct exposure to the environment so that we announced in mid-1970 that as of August, we would no longer supply polychlorinated biphenyls to those uses which we at Monsanto referred to as plastercizer uses, but which I personally suspect the general public might refer to as miscellaneous applications; adhesives, inks, softeners for chlorinated rubbers, caulking materials, coatings, paints, varnishes.

364 Q. Wax extenders, too?

A. Wax extenders. In June of 1970, we informed our distributors that we would no longer have them handle our polychlorinated biphenyl products. The

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intent here was to get a better understanding of where the products were being sold. Also in June of 1970, we informed the known customers of heat transfer fluids that contained polychlorinated biphenyls who were in the human food processing industries, that we would no longer supply polychlorinated biphenyl heat transfer fluids for their applications and recommended alternative fluids that didn't contain polychlorinated biphenyls.

Starting in mid-1970, we began introducing nonpolychlorinated biphenyl hydraulic fluids which we sold under our trade mark Pydraul and we got the high-volume types introduced fairly early at that point in time. And we finally managed to develop alternatives in time to remove all of the polychlorinated biphenyl hydraulic fluid from the marketplace as of April 1, 1971. So the hydraulic fluid program was one of phasing out over a period of June, '70, to April, '71. The carbonless reproduction paper solvent problem; when we announced that we were going to withdraw on August 30, and we did this back in May or so, we were optimistic - overly optimistic -

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that we could find a good replacement for this application. It turned out that we ran into some serious technicalities, so that the latter part of 1970 we were trying different alternative solvents in the carbonless copy paper application with our customer and he in turn with his customers in the applications in various kinds of papers and in their machines that processed these papers. We were finally able to phase out of this application by April, 1971. In the third quarter of 1971, we announced that we would no longer supply the polychlorinated biphenyl heat transfer fluids to those applications that had to do with animal feeds or with packaging materials that ended up exposed to food. This was in the third quarter of '71.

366 Q. How was PCB used in making packages for food?

MR. PETERS: Objection.

THE WITNESS: Well, for example, there are papers that are coated with waxes or plastics and in order to do this coating, this wax or plastic material must be kept molten and the polychlorinated biphenyl fluids were used to heat this bath of wax and the paper would then be dipped

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into the wax and come out the other end. That is the kind of application we had in mind. Or there are steel rolls, I understand, that are heated internally with heat transfer fluid and these steel rolls are used to convey these plastic wrappings, these flexible see-through wrappings, to roll them and to process them. That kind of application is another we had in mind. There are some applications, I understand, where heat is used to seal these enclosures and these heated devices have these heat transfer fluids involved internally. By late - by December, '71, we finally concluded that it is better we get out of all heat transfer applications and we announced then in a letter to the remaining customers we would no longer supply heat transfer fluid containing polychlorinated biphenyls and at the same time we embarked on this program of in essence registering or approving the dielectric customers so that by the end of 1971, the only market remaining was the dielectric application. I believe that covers everything.

367 Q. Well, in addition to that, there were some labeling

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changes that we referred to the other day?

A. Yes, throughout all this there were label changes and letters of notification, copies of which you have received.

MR. MUIRHEAD: That is all I have at the present time.

(Interrogatories by Mr. Spellman.)

368 Q. Mr. Papageorge, as I understand, Agway was not a direct customer of Monsanto, was it?

A. No, I am led to believe that the Agway Company purchased something from Monsanto.

369 Q. Direct?

A. Yes, sir.

370 Q. Then, would Agway have received the warning-type letters as part of the direct customer mailing list?

A. I am sorry, I didn't mean to imply that they received polychlorinated biphenyl from Monsanto; therefore, they wouldn't have received this correspondence.

371 Q. Let me put the question this way: Agway was not a

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direct customer of Monsanto for receiving polychlorinated biphenyl products?

A. Not to my knowledge.

372 Q. Were they for this purpose a customer, as you understand, of any of your distributors?

A. Not that I know of.

373 Q. Is the methodology which Monsanto developed included in the materials as part of Appendix A?

A. No, sir.

374 Q. Has it been produced in connection with any response to interrogatories?

A. I don't believe so.

MR. PETERS: I don't think so.

MR. CHIESA: You have asked for it in No. 3 on the list here now.

375 Q. (By Mr. Spellman) When Monsanto made a sale of polychlorinated biphenyl products, were they also in liquid form regardless of the application for which the sale was made?

A. The only polychlorinated biphenyl that was a solid was the one referred to as Aroclor 1268. That is a solid material, the others are all liquid.

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376 Q. Once the product was distilled to establish whichever number Aroclor you wanted, was there any difficulty in keeping it in a liquid form?

A. No, sir, except for the Aroclor 1268.

377 Q. I had understood somewhere along the processing of the product temperatures had to be sustained somewhere around 100 degrees Fahrenheit?

A. That is the temperature required to keep the starting material, biphenyl, before chlorination in the liquid state.

378 Q. But once the product was completed, all distillation and soforth finished and it was ready for market, it was in liquid form and shipped in that form?

A. That is correct.

379 Q. And with the exception of the 1268, it was in that form regardless of the application to which it would be applied?

A. Yes, sir.

380 Q. Was it in the nature of an additive or was the product which you shipped the entire product used; for example, in a transformer?

A. In some instances, we sold them the material which

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could be considered an additive which our customer further processed.

381 Q. Let's talk for a moment about dielectric use particularly in transformers. You sold, or at least manufactured and shipped under the Pyronol label to G. E. or G. E. customers?

A. To G. E. or anyone else who asked for the trade mark.

382 Q. And, likewise, for Westinghouse you did it under the trade mark Inerteen?

A. Or anyone else who asked for Inerteen.

383 Q. Now, did you have your own trade mark for use in transformers other than Pyronol and Inerteen?

A. It would be the Aroclor trade mark.

384 Q. Was there any difference other than labeling between Pyronol, Inerteen and Aroclor for dielectric use?

A. Yes.

385 Q. What was the difference?

A. Some of the Pyronols and Inerteens were blended mixtures. One of the ingredients of the mixture is the polychlorinated biphenyl ranging from 40 percent to 70 percent of the mixture by weight.

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386 Q. What else was in either of those formulas?

A. I don't know if I am divulging any proprietary information at this point.

387 Q. Well, strike the question, let me put it this way: Was there anything added to the Pyronol or Inerteen formula which would work as a catalyst with the polychlorinated biphenyls or in some other way cause a breakdown in the chemicals to produce something more toxic than you anticipated?

A. Not that I am aware of, no, sir.

388 Q. Are the products still being manufactured and sold under those two tradenames, Pyronol and Inerteen?

A. Yes, sir.

389 Q. And also Aroclor?

A. That is correct.

390 Q. Now, let's assume that a customer purchases Aroclor for use in a transformer. When he gets the Aroclor, he has got a certain quantity of fluid he wants in his transformer, does he not?

A. Yes, sir.

391 Q. Does he fill it all up with Aroclor?

A. He could.

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392 Q. Is that the practice?

A. No, sir.

393 Q. Is the practice to add it to something else?

A. Correct.

394 Q. As the Aroclor leaves Monsanto's plant, is it just 100 percent polychlorinated biphenyl?

A. Yes, sir.

395 Q. And to the extent that it is mixed with something else in a transformer, it is some lesser percentage for PCB's, is that correct?

A. That is correct.

396 Q. In the case of both Inerteen and Pyronol, it is less than 100 percent of PCB's in all cases?

A. No, there are some Pyronols and Inerteens that are 100-percent polychlorinated biphenyls.

397 Q. Are there any chemical ingredients in the Inerteen or the Pyronol which a competent laboratory person would have difficulty in distinguishing from the PCB's if he made a test?

A. No, sir.

398 Q. Now, we have been using the expression "parts per million" and "parts per billion," can you give me

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an explanation of that so a layman would have an explanation of what you are talking about?

A. Well, I have heard, although I have not personally calculated this, that an analogy to a part per million is somewhat equivalent to a shot glass of about an ounce dropped into a tank car of about a 10,000-gallon capacity.

399 Q. I am still trying to find a way to explain to a layman what you mean by the part per million, is it like taking this table and cutting it up into a million parts?

A. Yes, sir.

400 Q. And when you say one part per million, you mean just one of those parts?

A. Right, and this is on a weight basis.

401 Q. On weight solely?

A. Right, so if these parts are all equal in weight, one of those parts out of the million represents one part per million.

402 Q. And, if you are talking about parts per billion, it is the same thing except the thing is fragmented further?

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A. That is correct.

403 Q. Now, when you shipped the Aroclor, say, for a dielectric use, if you made a test on what was shipped, would it show one million parts per million?

A. The Aroclor would be one million parts per million.

404 Q. And the cutoff point - I am trying to get my own mind straight on this - as to when it ceases to really be measurable is .05 parts per million or per billion?

A. A highly competent experienced laboratory can measure down to .05 parts per billion. Let me think a bit. It is .005 parts per billion which is the same as five parts per trillion.

405 Q. So it is even closer than what I indicated in my question?

A. Even smaller, yes, sir.

406 Q. Now, you have indicated that the animal feeds, Calcium MHA and Santoquin were not manufactured at either Sauget or Anniston; my question is, Where were they manufactured?

A. I don't keep very close to those two products, but I believe that they are manufactured in our plant

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located in Nitro, West Virginia.

407 Q. West Virginia?

A. Yes, sir.

408 Q. Has Monsanto made any effort to study changes in the demand for Therminol by any of its customers during the years 1969 and 1970?

A. I do not know of any such study.

409 Q. You indicated, as I recall, that when you filled up a transformer with Aroclor, forty years later it is probably still there and still functioning doing its job?

A. That is my understanding, yes, sir.

410 Q. Can you describe for me whether a heating system, heat transfer system, is anything like the transformer in terms of the longevity of the Aroclor in it?

A. In both instances, the longevity is directly related to the stresses which the fluid undergoes. If the temperatures exceed given levels, which I can't recall offhand, too frequently, the fluid will start to degrade and become darker in color and become tarry and lose some of its properties at which point it must be replaced.

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411 Q. How does the operator of the heattransfer system know that the properties are being lost if it is a closed system?

A. Well, one way to determine this, of course, is to take a sample of the oil and see if it has picked up any color. That is normally the way. Another way I understand is to have it analyzed very quickly and rather unsophisticatedly for acid content. This is also true of the transformer fluid, but I understand in a transformer, the transformer itself isn't functioning properly, which would be an indication of something not being normal.

412 Q. I understand also that in terms of heat transfer use, there may be losses by leakage through gaskets or by repair work that you wouldn't necessarily incur on a transformer?

A. That is right. Normally a heat transfer system is more complex.

413 Q. Can you tell me whether or not given any particular heat transfer system, the demand for additional Therminol is fairly consistent over a period of years?

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A. For a given system, yes.

414 Q. Is there any way in which by computer or otherwise Monsanto could determine whether any of its customers for Therminol made any unusual demands in 1969 or 1970?

A. We could probably determine the placement of orders that are larger than normal or more frequent than normal, but we could not determine the cause for this.

415 Q. I understand that, but you think you could pinpoint any change in the frequency of orders or the volume of them from a particular customer?

A. Yes.

416 Q. For example, in the - I guess it was Eastern States Terminal, that South Carolina thing - in retrospect was it apparent to you that they were demanding more than they had required before 1970 or '71 whenever that situation broke?

MR. PETERS: Objection, please.

THE WITNESS: Well, that is a very unusual situation because that initial order for this installation was placed by the engineering company that constructed the unit, so that the

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subsequent orders that were placed appeared under a different name and we could not trace it back.

417 Q. So, on your records, it would look almost like a new customer?

A. That is correct.

418 Q. Do you have any information or suspicions of leaks in any other heat transfer systems in the country other than South Carolina during the years 1969 or '70?

MR. PETERS: Objection, please.

THE WITNESS: No, sir.

419 Q. Are you aware of any industrial accidents throughout the country involving either Monsanto's operations or someone else's operations in which there was a potential for leakage of polychlorinated biphenyls?

MR. PETERS: Objection; when?

MR. SPELLMAN: During '69 and '70, I am sorry.

THE WITNESS: I am assuming - are we still here with heat transfer systems or any kind?

420 Q. No, I assume we have no problems that you are

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aware of with heat transfer systems, I am now talking of other type industrial accidents that may involve hydraulic fluids. For example, did Monsanto ever have a problem itself in Florida?

MR. PETERS: Objection.

THE WITNESS: Yes, that is what I have in mind.

421 Q. When did that happen?

MR. PETERS: Objection.

THE WITNESS: 1969.

422 Q. Can you describe briefly what it was?

A. This was the situation where a hydraulic fluid containing polychlorinated biphenyls used in an air compressor, the system developed a leak, a relatively minor leak. As I remember, something like a pint or at most a quart a day found its way into the nearby estuary which led into the Gulf of Mexico. This was at Monsanto's plant there.

423 Q. Were they ever able to determine how much quantity leaked?

MR. PETERS: Objection.

THE WITNESS: I believe so,

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but I don't remember the amount.

424 Q. Having regard for that kind of leakage or any other industrial application, can you tell me of any other experiences in which something has happened that you are aware of that caused leakage into the environment?

A. I am not aware of any leak.

425 Q. Did Monsanto ever determine the source of the alleged contamination in the Great Lakes?

MR. PETERS: Note my objection.

THE WITNESS: No, sir.

426 Q. Did Monsanto determine whether or not there was contamination of any part of the Great Lakes by PCB's?

MR. PETERS: Objection.

THE WITNESS: Monsanto has not analyzed any water or material from that area.

427 Q. Does it have any reason to accept the analysis made by anyone else to indicate that there was PCB contamination in the area?

MR. PETERS: Objection.

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THE WITNESS: Yes, some reputable laboratories are involved and it is reasonable to assume that their work is accurate.

428 Q. Do any of these laboratories direct their attention to determining the source of this contamination?

MR. PETERS: Objection.

THE WITNESS: I believe the state of Michigan Water Resources Commission is actively pursuing this.

429 Q. Should I infer from that that as far as you know, no one has really determined yet what the source is?

MR. PETERS: Objection.

THE WITNESS: That is correct.

430 Q. Is it generally conceived to be some industrial source or do they know yet?

MR. PETERS: Objection.

THE WITNESS: The information I have is that this is - the source is suspected to be many industrial sources.

431 Q. Any particular type of industry or any particular company?

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MR. PETERS: Objection.

THE WITNESS: None of that has been reached. No conclusion has been reached.

432 Q. Does Monsanto operate any plants on the Great Lakes?

A. I am not aware of any plant on the Great Lakes.

433 Q. Does it operate any plants on tributaries to the lakes?

MR. PETERS: Objection.

THE WITNESS: The nearest one that I am aware of is located in Trenton, Michigan, and I don't know personally how close it is located to the Great Lakes or whether the river it is located near drains into the Great Lakes.

434 Q. Would the activities of the state agencies in Michigan so far as they might concern Monsanto be called to your attention or would that be handled by a plant more local such as Trenton?

A. It would be more normal that they would approach the plant locally. If it involved polychlorinated biphenyls, I would probably be contacted rather soon after.

435 Q. Have you had any inquiries relative to the state of

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Michigan's efforts to resolve the question of source out there?

MR. PETERS: Objection.

THE WITNESS: I have been in touch with representatives of the Water Resources Commission of the state of Michigan off and on for the past three years in this matter.

436 Q. Can you give us any indication of the level of PCB contamination, where it is and how general it is in the Great Lakes?

MR. PETERS: Objection.

THE WITNESS: I don't know that - - - I know I haven't documented any of this. I recall references to Saginaw Bay. I recall references to catfish found where the bay empties into the lake. I have, of course, heard references to Coho salmon. The levels in these fish were higher than the five parts per million that the Food and Drug Administration permits for human consumption. The laboratory has bragged about how they have capabilities for detecting down to three parts per trillion. These are the kinds of things that are

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discussed. I don't recall seeing any list of samples with their polychlorinated biphenyl content.

437 Q. Which laboratory do you refer to?

A. This is the laboratory of the state. The Michigan State Water Resources Commission. They claim that they can read down to three parts per trillion, which is the lowest I have ever heard any laboratory claim.

438 Q. I thought I heard you in the last three or four days make reference to a railroad accident involving PCB's?

A. Yes.

439 Q. Where was that, when was it and what happened?

MR. PETERS: Objection.

THE WITNESS: I don't remember the - - - None of the railroad accidents to date have involved a situation where the tank car containing polychlorinated biphenyls ruptured. The contents remained under control. I don't remember those in the past specifically. I do remember one recently that occurred about a week ago in Troy, Illinois, two cars were derailed, the contents were

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contained. Fortunately so far no tank car has ruptured.

440 Q. Are there any shipments by rail in drums rather than tank cars?

A. I don't know, it is very possible.

441 Q. Are there any shipments by rail in containers other than drums or tank cars?

A. No, sir.

442 Q. Can you refer us specifically to any railroad accidents involving a shipment of PCB's during the year 1969 or 1970?

MR. PETERS: Objection.

THE WITNESS: I don't remember any right now that I can describe to you specifically. I just can't recall.

443 Q. Can you place them in the east as opposed to the mid-west or the south or the northWest?

MR. PETERS: Objection.

THE WITNESS: These were primarily mid-west, that is the impression I am left with.

444 Q. Did Monsanto make any effort to trace the source of

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contamination by PCB's of the Mueller spaghetti?

MR. PETERS: Objection.

THE WITNESS: No, sir.

445 Q. Do you know whether Mueller ever attempted to trace the source?

MR. PETERS: Objection.

THE WITNESS: No, I do not.

446 Q. There has been testimony with respect to living tissue, to the effect that PCB's will tend to migrate to the fat, is that correct?

A. That is correct.

447 Q. Is the same thing true assuming there are to be PCB's in ground bakery products, would they tend to be in the fatty parts of the product or otherwise?

MR. RICHARDS: Please note my objection.

MR. PETERS: Objection.

THE WITNESS: I am led to believe they are more apt to be in the fatty portion.

448 Q. Mr. Papageorge, prior to your learning of the Campbell Soup situation, how many laboratories were there in the United States capable of testing for

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the existence of PCB levels in vegetable or animal tissue or in minerals?

A. I can only speak for those laboratories that I had heard of and had some discussions with. I cannot speak for all laboratories that were involved in polychlorinated biphenyls.

449 Q. How many did you know of total?

A. Just real quickly here, I would guess about eight laboratories that I would say were qualified.

450 Q. You have listed several in the course of the deposition, can you add to that list any that you have not already named?

A. I have not mentioned Monsanto Research Corporations Laboratory in Dayton, Ohio. I have not mentioned the Food and Drug Administration Laboratory and the USDA laboratory and at that point in time Dr. Risebrough at the University of California, Berkeley; I believe he had capability well-established. That about summarizes the labs that I felt could do a respectable job.

451 Q. Were they all equipped with the gas chromatograph?

A. Yes, sir, they would have to be.

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452 Q. As well as the mass spectrograph?

A. No, some of those laboratories did not have the mass spectrograph available to them.

453 Q. Which did not have the mass spectrograph?

A. Dr. Riscbrough did not have one available to him, he would have to go elsewhere to get that support. I do not know whether Woodson-Tenet has a mass spectrograph. That is about it.

454 Q. In any of the tests for Aroclor made by Monsanto of samples submitted by Agway or Rozansky, was the presence of chlorinated dibenzofuran or chlorinated dibenzodioxin found?

A. We did not look for those.

455 Q. So that the absence of the report does not indicate that their presence was not there?

A. That is correct.

MR. SPELLMAN: I guess at this point I better suspend and reserve everybody's rights to examine the witness further and indicate that I think all parties are expecting to get copies on the materials that you indicated you would find.

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MR. PETERS: That is right.

_____
Deponent

THE STATE OF _____)
) SS.
COUNTY OF _____)

Subscribed and sworn to before me this _____ day of _____ 19_____.

_____
Justice of the Peace and/or
Notary Public

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