SUPERIOR COURT OF NEW JERSEY
LAW DIVISION
GLOUCESTER COUNTY

NVF COMPANY,	)	
	)	
Plaintiff,	)	Docket No.
Vs.	)	GLD L-001594-91
	)	
AMERICAN CASUALTY COMPANY OF READING, PENNSYLVANIA, ET AL.,	)	Civil Action
	)	
Defendants.	)	

DEPOSITION OF WILLIAM B. PAPAGEORGE
Taken on Behalf of
Lumbermens Mutual Casualty Company

July 30, 1997

COPY

Taylor & Associates Reporting, Inc.
COURT REPORTERS

7494 ETHEL AVE.
ST. LOUIS, MISSOURI 63117
PHONE: (314) 644-2191
1-800-280-DEPO

DEPONET

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IN THE SUPERIOR COURT OF NEW JERSEY
LAW DIVISION
GLOUCESTER COUNTY

NVF COMPANY, Plaintiff, vs. AMERICAN CASUALTY COMPANY OF READING, PENNSYLVANIA, ET AL. Defendants.	)	Docket No. GLD L-001594-91

DEPOSITION OF WILLIAM B. PAPAGEORGE, produced, sworn and examined on the 30th day of July, 1997, between the hours of eight o'clock in the forenoon and six o'clock in the afternoon of that day, at the offices of Husch & Eppenberg, 100 N. Broadway, St. Louis, Missouri, before Nancy A. Kuncaitis, a Registered Professional Reporter and Notary Public within and for the State of Missouri in the cause now pending in the Superior Court of New Jersey, Law Division, Gloucester County, wherein NVF Company is the Plaintiff, and American Casualty Company of Reading Pennsylvania, et al. are the Defendants.

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A P P E A R A N C E S

For NVF Company:

REED, SMITH, SHAW & McCLAY
BY: Paul S. Kline
435 Sixth Avenue
Pittsburgh, Pennsylvania 15219
(412) 288-7280

For Lumbermens Mutual Casualty Company:

TRESSLER, SODERSTROM, MALONEY & PRIESS
BY: Brett L. Warning
Sears Tower, 22nd Floor
233 S. Wacker Drive
Chicago, Illinois 60606
(312) 627-1717

For Monsanto Company and William B. Papageorge:

SMITH, HELMS, MULLISS & MOORE, L.L.P.
BY: Gerard H. Davidson, Jr.
300 North Greene Street, Suite 1400
P. O. Box 21927
Greensboro, North Carolina 27420
(910) 378-5267

For Appalachian Insurance Company:

WILLIAMS & MONTGOMERY, LTD.
BY: Douglas W. Lohmar
20 North Wacker Drive
Chicago, Illinois 60606
(312) 443-3200

For CIGNA Companies:

WHITE & WILLIAMS
BY: John S. Anooshian
One Liberty Place, Suite 1800
1650 Market Street
Philadelphia, Pennsylvania 19103-7301
(215) 864-7005

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For Liberty Mutual Insurance Company:

MANTA AND WELGE
BY: Walter A. Stewart
2000 Market Street, 6th Floor
Philadelphia, Pennsylvania 19103
(215) 851-6600

For London Market Insurers:

MENDES & MOUNT
BY: Albert C. Hilber
One Newark Center
Newark, New Jersey 01702-5259
(201) 639-7300

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IT IS HEREBY STIPULATED AND AGREED by and between Counsel for the Plaintiff and Counsel for the Defendant that this deposition may be taken by Nancy A. Kuncaitis, Notary Public and Registered Professional Reporter, thereafter transcribed into typewriting, with the signature of the witness being expressly reserved.

WILLIAM B. PAPAGEORGE,

of lawful age, being produced, sworn and examined on behalf of Lumbermens Mutual Casualty Company testified as follows:

EXAMINATION

QUESTIONS BY MR. WARNING:

Q. Good morning, Mr. Papageorge, we met before. My name is Brett Warning and I represent Lumbermens Mutual Casualty Company in the case we're here for today. First, I would like to go through some ground rules. I know you've been deposed before, but just to refresh your memory. First, if there is ever a question that I or any of the others ask you that you do not understand, please let us know and we'll clarify it. Please remember that you can't nod your head; you have

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to give a verbal response so the court reporter can take down your response.

A. I understand. One thought, though. My understanding may not be what you intended. So I hope my answer indicates that and you reword your question.

Q. And if you ever want to clarify anything, please do.

A. Okay.

(Discussion off the record)

MR. WARNING: Back on the record.

Q. Finally, if you ever want to take a break, please let me know and we'll do so.

A. I will.

Q. Mr. Papageorge, could you please give us your name and spell it?

A. William B. Papageorge, the last name is spelled P-A-P-A-G-E-O-R-G-E.

Q. Am I pronouncing your name correctly when I say Papageorge or should I say Papageorge?

A. I'm accustomed to both pronunciations. Don't agonize over it.

Q. Could you give us your address, please?

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

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Q. And the phone number, please?
A. (314) 878-3513.
Q. Mr. Papageorge, the case we're here for today is an environmental coverage action. The plaintiff, NVF, has filed a declaratory judgment action against various insurance companies. And I, as well as several of the other attorneys here are representing insurance companies and we are asking you some questions regarding some products that Montana sold to NVF. Mr. Papageorge, could you tell us your education beyond high school?
A. I received a bachelor of science in chemical engineering degree from Washington University in St. Louis in 1943. And from the same university I received a master of science in chemical engineering in 1947. I've also taken credit courses at the then Oklahoma A and M, now I think it's called Oklahoma State University, in Stillwater, Oklahoma. Credits for those courses were intended to apply to a possible doctorate degree. I never completed the course because I transferred out of Oklahoma.
Q. And what doctorate degree were you pursuing?
A. Doctor of science in chemical engineering.

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Q. I want to step back a moment. Have you been deposed before?
A. Yes.
Q. Do you know how many times or approximately how many times?
A. I've never kept records, but it's over a couple dozen, 30 or so, since 1971.
Q. Were any of those on behalf of Monsanto Company?
A. Most of them, in fact all of them as best I recall.
Q. Have you ever testified at trial?
A. Yes.
Q. Do you know how many times you have testified at trial?
A. Half a dozen or so.
Q. Were those all on behalf of Monsanto?
A. Yes.
Q. That reminds me of one further instruction. Don't guess when you give us any responses. You can approximate, but we don't want any guesses for responses. Either it's something you know or don't know, but as I said, to your best approximation.
A. I understand.
Q. Thank you. Mr. Papageorge, are you currently

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employed?

A. I consider myself self-employed.

Q. What is your occupation?

A. Technical consultant.

Q. What is the area that you consult for?

A. It's primarily in the area of chemicals in the environment.

Q. Could you give us a rundown of your employment history beginning with your first job after your last education, the last time you were in school? If you could go through and tell us what your first job was and do it chronologically.

A. I'll try to remember all of it. After receiving my master of science degree, I worked for Phillips Petroleum Company in Bartlesville, Oklahoma, for four years, 1947 to 1951. Half of that time was in research activities relating to oil fields and recovery of oil. The other half was in the engineering department that designed or specified equipment for refining petroleum products.

Q. Then in, I guess it would be 1951?

A. 1951 I joined Monsanto Chemical Company.

Q. What was your first position with Monsanto?

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A. First position as best I recall was project engineer or some such title working on the design of chemical processing equipment.

MR. DAVIDSON: We have a CV that lists all of these if that would foreshorten some of this.

MR. WARNING: It certainly would. Could you mark that as Papageorge No. 1?

(Curriculum vitae marked as Exhibit No. 1 for identification.)

Q. Mr. Papageorge, did you look at any documents before this deposition in preparation for this deposition?

A. Yes.

Q. Could you tell us what you looked at?

A. I certainly don't remember all of them. Seemed to me I looked at about six stacks about six inches per stack, and I recall seeing copies of Monsanto product labels, copies of correspondence, Monsanto to customers and customers to Monsanto, Monsanto's product literature including sales brochures and the like, documents that I'm going to call material safety data sheets that describe products and

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how they should be handled and what properties they have. And as I recall, copies of records of sales to some customers, not all. That's all that comes to mind at the moment.

Q. Did you see a subpoena for today's deposition?

A. I was shown a copy, yes.

Q. Do you recall that there was a rider attached to that subpoena asking for documents to be produced?

A. Yes.

Q. Were you involved in the preparation of the documents that were responsive to that rider?

A. I was not.

Q. Did you see the documents that were prepared in response to that rider?

A. I was led to believe those documents I described earlier were in response to that request.

Q. Mr. Papageorge, are you familiar with the term, "Aroclor," I'll spell that, A-R-O-C-L-O-R?

A. Yes, I am.

Q. How are you familiar with that term?

A. It's a Monsanto trademark, so it's cap A. I supervised activities that resulted in products that carried that trademark.

Q. So you're familiar with Aroclor through your

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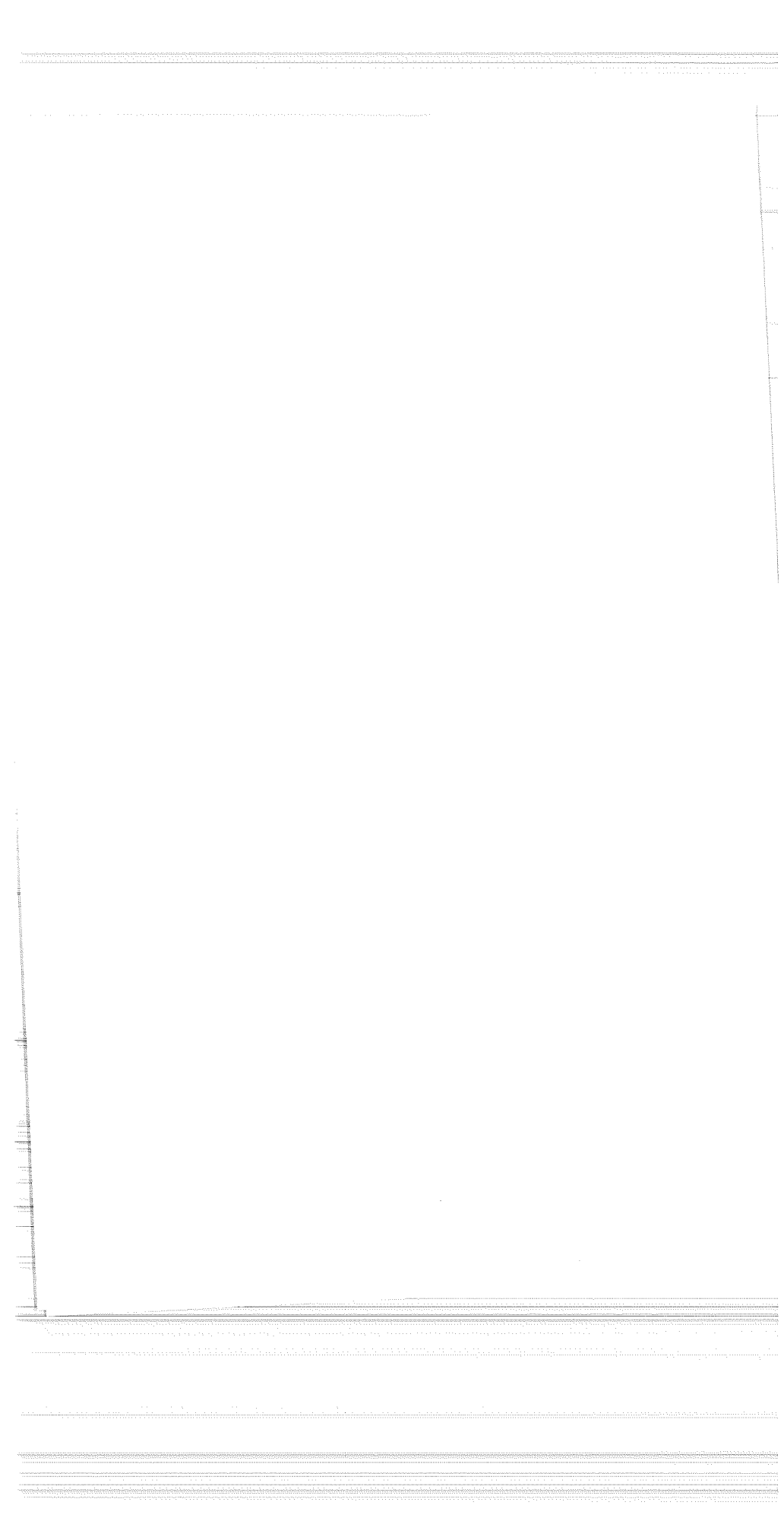

employment at Monsanto; correct?
A. Yes.
Q. Could you explain what Aroclor is, what that word refers to?
A. It refers to a group of chemicals composed of carbon and hydrogen in what the chemists refer to as the hexagon configuration. Two of those hexagon configurations are referred to as biphenyls. Three of them are terphenyls. These materials were exposed to chlorine, resulting in a chlorinated biphenyl group and a chlorinated terphenyl group. Those products as made or as blended with each other were marketed by Monsanto as Aroclors with different number distinctions to distinguish one mixture from another.
Q. Could you explain the difference between the numbers that you just referred to? Why it is there are different numbered series of Aroclors?
A. There is a series that starts with the digits 1, 2, what we called the 1200 series. The 1, 2, was selected to designate that these are the biphynels, the two hexagon rings. The series with the 5,000 number designations like 5460 is an example, the 5,000 designation refers to the

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chlorinated terphenyls, the three hexagon configuration products. The last two digits of the four digit number, such as 1242, the last two, the 42 designated the percent by weight of chlorine in that particular commercial mixture. That applied as well to the 5,000 series.

Q. I'm going to list some numbers and I'm going to ask you if these numbers, if you recognize them as Aroclors; 1248?

A. Yes.

Q. 1254?

A. Yes.

Q. 1268?

A. Yes.

Q. 5460?

A. Yes.

Q. 6062?

A. That's an Aroclor, yes.

Q. Are you familiar with the term "Pydraul" P-Y-D-R-A-U-L?

A. Yes.

Q. Could you explain what Pydraul refers to?

A. Pydraul is a Monsanto trademark that was used with fluids blended by Monsanto for use in hydraulic systems by industry.

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Q. Are you familiar with Pydraul F-9?
A. Yes.
Q. Is Pydraul F-9 a series of Pydrauls similar to Aroclor 1248 being a series of Aroclors or is that not a proper characterization?
A. I'm confused.
Q. Could you explain what Pydraul F-9 is?
A. That is the trademark that was selected to describe a specific mixture made by Monsanto under a given recipe, so many gallons of ingredient A and so many more gallons of ingredient B and on and on. The end material met certain specifications and was marketed with those specifications and described as Pydraul F-9.
Q. Aroclors with the numbers 1248, 1254, 1268, 5460 and 6062, of all of those, do all of them contain polychlorinated biphenyls or what's also referred to as PCBs?
A. The Aroclor 5460 and Aroclor 6062 did not contain PCBs.
Q. Did Aroclor 5460 and Aroclor 6062 contain what's commonly referred to PCTs?
A. Yes.
Q. Can you explain what PCT is?

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A. Polychlorinated terphenyls, T-E-R-P-H-E-N-Y-L.
Q. How does PCT differ from PCB?
A. You mean chemically or physically or --
Q. To the best of your knowledge?
A. Chemically the PCT has the three hexagon ring configuration as compared to the two ring configuration for the biphenyl. Physically the chlorinated terphenyls depending, of course, on the amount of chlorine they were exposed to, would be more viscous, tend to be solids instead of free flowing liquids.
Q. Mr. Papageorge, while you were employed by Monsanto, do you know whether Monsanto Company or Monsanto Chemical Company, I believe at one point the name changed. We will refer to it as Monsanto. When I say Monsanto it's either Monsanto Company or Monsanto Chemical Company. Do you know, did they differentiate between customer and direct customer at any time?
A. Yes, that term was used by some of the employees. I don't know that it was in a Monsanto dictionary anywhere.
Q. Do you know when employees of Monsanto used the terms customer and direct customer what the differences would be between a customer and a

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direct customer?

A. I can give you the understanding that I had when I used those words.

Q. Okay.

A. The direct customer meant the material produced by Monsanto and shipped to this customer was used by that customer either in his facilities or in a product that he produced and sold to others. The indirect customer referred to the situation where the material Monsanto produced and marketed went to a third party who warehoused it and resold it, shipped it on to the ultimate user of that material.

Q. You just used -- you just told me about direct customer and indirect customer.

A. Yes.

Q. Was there a difference between direct customer and customer?

A. Many times the word "customer" was used to designate anybody who received material whether they used it or reshipped it.

Q. Are you saying direct customer would be a subgroup of customers?

A. Yes.

Q. So a customer could be a direct customer or what

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you just referred to as an indirect customer; is that correct?

A. Correct.

MR. WARNING: Off the record a second.

(Discussion off the record)

MR. WARNING: Back on. I'm handing the court reporter two documents. They are Bates stamped number NVF 000064, and NVF 000041 and 42, ask her to mark them as Papageorge No. 2 collectively.

(Group of documents marked as Exhibit No. 2 for identification.)

Q. Handing those two documents to Mr. Papageorge and his counsel and asking you to review those for a moment. Actually, what I'm most interested in would be in documents NVF 64, the second line in the first paragraph, and in NVF 41 and 42 would be the first line of the second paragraph.

A. I have scanned the documents.

Q. Thank you. In what I will call short term, NVF 64, I'll leave out the zeroes in this document, do you see in the second line of the first

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paragraph where it refers to direct customers?
A. I do.
Q. And in NVF 41 do you see the second paragraph, the first line where it refers to customers?
A. I do.
Q. After looking at those two, would your testimony change at all -- excuse me, your testimony you just told me explaining customer and direct customer, does it change at all?
A. No.
MR. KLINE: I'm going to object as vague.
Q. Can you answer the question?
A. I thought I said no.
Q. That's all I have of those. Thank you.
MR. LOHMAR: Off the record a second.
(Discussion off the record)
MR. WARNING: Back on the record.
Q. Mr. Papageorge, I was just looking at Papageorge Exhibit No. 1, which is a CV of yours and I just had a couple quick questions. On here it says J.F. Queeny plant. Where is that located?
A. It's here in St. Louis along the river front.
Q. And W. G. Krummrich plant?
A. It's across the Mississippi River in Sauget,

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Illinois, S-A-U-G-E-T.

Q. Where is the Anniston plant?

A. It's in Anniston, Alabama.

Q. Thank you. Mr. Papageorge, while you were employed at Monsanto, do you know whether at any point in time Monsanto discovered anything about the effects of PCBs on the environment?

A. Yes.

Q. Do you know what that was?

A. Well, over a period of time, several effects were made known to Monsanto or Monsanto itself made it a point to discover by studies. I suppose the very beginning was the report that these PCB materials were being found in some environmental samples in Europe. That was the first report of PCBs in the environment.

Q. Do you know when that was?

A. 1967.

Q. Do you know what these reports had concluded?

A. The reports, initially at least, reported the presence of a strange chemical which the investigators thought might be polychlorinated biphynels, that were found in environmental samples as they were looking for DDT. With time, these suspect materials were, indeed,

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identified as PCBs.
Q. And they were identified as PCBs by 1967, is that correct, when these reports were?
A. I would suggest that it took about a year before the investigators felt comfortable with their conclusion.
Q. So would that be 1968?
A. '68.
Q. And Monsanto became aware of these reports; correct?
A. Yes.
Q. How did Monsanto become aware of them?
A. Well, the initial reports that came out of a meeting in Europe were reported to Monsanto in the U.S. by Monsanto's European representatives. Then Monsanto U.S. sent the Monsanto representatives directly to the laboratories that had made this discovery to get further details on what is it they saw and what analytical methods were used, what instruments were necessary and the details of the study.
Q. When we're referring to Monsanto in the United States, would it be a certain department or departments, if you know, that this was reported to?

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A. It would be the group within Monsanto that was assigned the responsibility for the manufacture, research, sales, relating to PCBs.
Q. Did this group have a title?
A. Yes, it was the functional fluids business group of the organic chemicals division of Monsanto Chemical Company.
Q. Was that group located in what I'll refer to as corporate headquarters, if there is such a location?
A. That is true.
Q. And those headquarters were in St. Louis, Missouri; correct?
A. Correct.
Q. Do you know what Monsanto did with this information after it received -- when I say Monsanto, Monsanto United States, the functional fluids business group?
A. Yes. They got a copy of the analytical procedure that was developed by the Swedish investigators. They ordered a more sophisticated instrument, a spectrophotometer to replace an existing unit which was not as sensitive as the newer instrument. However, in the meantime, the Monsanto research team

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assigned this analytical study used the older instrument until the new one arrived, which was about eight months to a year after it was ordered, and it was ordered in early '68, so the unit arrived either late '68 or early '69, as best I recall.

Q. What was done with this unit after it arrived?

A. It was used to assist in the analysis of samples to determine the presence of PCBs and the amount of PCBs that were detected.

Q. What was being sampled for PCBs if you recall?

A. Of course water samples, soil samples, at that time those were the primary sources of environmental samples.

Q. Do you know where the water and soil samples came from?

A. I don't remember the exact locations, but they were a mixture, a combination of Monsanto plant samples, the waste waters, the neighborhood waters and soils in the vicinity of the plant as well as some samples that were obtained by some of our customers. I don't remember the customers any longer, but some customers were willing to cooperate and send Monsanto samples. Now, we're talking here about the early

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analytical study phases.

Q. After these early -- excuse me -- what you just referred to as these early analytical study phases, did Monsanto do anything else regarding information received about the effect of PCBs on the environment?

A. Did several things over a period of time.

Q. If we could go through chronologically what you recall was done at Monsanto.

A. In early '69, a letter was sent to customers that were designated by Monsanto as being the big users such as the fluids used in electrical equipment and so on. They sent them a letter attempting to bring them up-to-date as to what Monsanto knew about these discoveries in the environment. Another letter was eventually mailed in early 1970 to all customers on record with Monsanto as of the date of that letter, no matter how much material they had purchased over the years.

Q. Do you recall what that letter said generally?

A. Generally the letter informed them that recent studies detected in the environmental samples of the presence of some of the PCBs, particularly those with the most chlorine associated with

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them. The PCBs marketed by Monsanto with the lower chlorine had not yet been identified in any samples except for those samples taken by Monsanto right at its production unit. And the intent was to inform the recipients of those letters which of Monsanto's products contained PCBs, both the higher chlorinated type and the lower chlorinated. And it had in there some wording that cautioned the recipient of that letter to make certain that PCBs were not allowed to escape into the environment, to control them. In other words, don't hose them down the sewer kind of practice. That was in early 1970.

Q. Anything else you recall about that letter?

A. Not at the moment.

Q. You referred -- or strike that. You said that this letter which was sent in the early period of 1970 was sent to all customers of Monsanto. When you refer to customers, is that consistent with your testimony earlier today when you said customers include what you termed direct customers and indirect customers?

A. Yes.

Q. How did Monsanto determine who its customers

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were at that time?

A. It went to all available records at least three years preceding early 1970, and then went to its district sales offices and picked up additional customer names and addresses particularly of customers who at one time had purchased PCB type products and for some reason or other had not purchased any within that three-year period. So an attempt was made to find as many customer names as possible.

Q. How would Monsanto keep records of customers? Would they keep a copy of invoices, for example?

A. Well, that's one example. There were invoices that were internal documents that informed the shipping department and the warehouse when to make a shipment and how much and to whom. There is the billing department. There are documents that went with the truckload, for example. The truck driver was given information, as I remember, too, there were I'm going to call them tally sheets, customer, product and deliveries by month for the year of that product to that customer. Those were kept, and of course this is dated before computers and most of it was done manually. Some of them used the old

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Addressograph approach. I'm not familiar with the details of it, but there were attempts made to keep sort of a score sheet and follow the customers' activities.

Q. These were all records that were kept at Monsanto; correct?

A. Yes.

Q. And these were all records that were used to send this letter to the customers in the early period of 1970; correct?

A. They were some of the records. Remember I mentioned there were other records out there in the field. The salesmen had their own little books with names in them and so on.

Q. So the examples of records that you just explained, those were utilized to send the early 1970 letter to customers; correct?

A. Yes.

Q. But there could be other records that were utilized as well as those you have explained to us that were used to compile the list of customers who received the early 1970 letter; correct?

A. Yes.

Q. Do you happen to know any of these other records

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that --

A. I don't know that they had any name to them. There were files that the individual sales offices kept for their own marketing activities.

Q. Do you know if the sales employees communicated the type of information that was contained in that early 1970 letter to customers either by letter or orally over the telephone or orally in person?

A. Yes, they did.

Q. Were they encouraged to do that?

A. Oh, yes, even before the letter went out they were already personally passing on the word as they made their calls or contact by telephone, as you say and --

Q. Do you know what year that would have been when that process of informing customers began?

A. I would suggest the latter part of 1969.

Q. Again, so we're clear, when I refer to customers I'm referring to the definition of customers that you used earlier. And you're using customer as you defined earlier; correct?

A. Yes, anybody who was shipped to or billed to.

Q. That includes the direct customers that you defined earlier and the indirect customers that

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you defined earlier?

A. Correct.

Q. After this letter that went out in early 1970, were there other communications after that?

A. Yes.

Q. Could you explain those, please?

A. There were letters informing some customers who used PCB Monsanto materials in their products that were told that the sales of PCB products for that type of use would be discontinued, and a target date was mentioned of August 30, 1970. There were letters relating to the Pydrauls we mentioned earlier informing customers that reformulations were being studied in an attempt to remove the PCB from the fluid and still maintain the properties that the older fluid had in terms of, for example, fire resistance and lubricity and the like. There were also letters issued to inform customers who had systems in their facilities that used PCB products to transfer heat from a furnace, let's say, to an end use, and those letters ranged from the caution not to get it into food and animal feed type applications to the point where once a successful replacement product and new

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engineering approaches were instituted that the PCB type heat transfer fluids would no longer be available. So in an attempt to summarize, there were letters that try to inform the customer of the environmental problem. There were letters that cautioned them about, don't get it in the wrong places whether it be down the sewer or in the potato chips. And there were letters that said, we are now in a position where we have replacement products, here they are, and they will be available on a given date. There were also letters informing customers who had the liquid PCBs that they could no longer use, by liquid I'm talking about material that's pumpable, that could be pumped into a destruction type unit that Monsanto had, an incinerator, a high temperature furnace in which the PCBs could be destroyed or disposed of reasonably. So the customers did receive letters informing them of the availability of that service and the conditions under which Monsanto could receive their material and what it might cost. And of course, there was a final letter that said as of July, 1977, no PCBs of any kind would be available.

WATER_PCB-SD0000074225

Q. You said that there was at least one product that Monsanto terminated sales of on August 30, 1970; is that correct?

A. It wasn't the termination of the product so much as it was the termination of the sales of several products to customers who made a product that was perceived by Monsanto to be one that entered the environment almost immediately. As an example, traffic lane paint, sealants around buildings like this one where the windows are caulked and sealed. The carbonless copy paper application where it ends up in the trash can and out in the environment. Those were perceived by Monsanto as being impossible to control when it came to the environment. Those were the sales that were terminated starting August 30 and as soon as possible afterwards.

Q. You also mentioned letters to users of heat transfer systems. Do you recall when those letters were sent?

A. I believe we started our program about 1971.

Q. Do you know the type of customers who received those letters? Would it be all customers who you knew used those, the Monsanto products in the heat system -- excuse me -- heat transfer

WATER_PCB-SD0000074226

systems?

A. Yes.

Q. And again, by customer I mean both direct and indirect customers?

A. Yes.

Q. And each time a letter was sent, was it true that that letter was sent to every customer within the three previous years from the date of the letter?

A. Well, we had the mailing list that was assembled for that big mailing in early 1970. That mailing list was kept current, where a new customer would be added or someone recalled a customer that purchased a product many years ago, he may still have it in his premises, that name would be added. So an attempt was made to keep the list as up-to-date as possible with any new information relating to customers and PCBs would be considered and the name added to the list if necessary.

Q. Were any names dropped from the list if you recall?

A. I don't know of anybody that was dropped.

MR. WARNING: Let's take a short break right now.

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(Brief recess.)

MR. WARNING: Let's go back on the record.

Q. Mr. Papageorge, we a moment ago were discussing heat transfer system fluids. Are there certain numbered Aroclors that are used for heat transfer fluids or were you referring to certain Aroclor numbers when you referred to heat transfer fluids?

A. The heat transfer fluids were marketed under the trade name Therminol, T-H-E-R-M-I-N-O-L. There were several Therminols produced by Monsanto from several of the Aroclor mixtures.

Q. Could Aroclor 1248 be used as a heat transfer fluid?

A. Yes, sir.

Q. Could Aroclor 1254 be used as a heat transfer fluid?

A. It could, but it -- it would have to be special applications requiring high temperatures because the 1254 is a viscous material at room temperature, therefore harder to pump. So it had limited application.

Q. Could Aroclor 1268 be used as a heat transfer fluid?

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A. No.
Q. Could Aroclor 5460 be used as a heat transfer fluid?
A. No.
Q. Could Aroclor 6062 be used as a heat transfer fluid?
A. No.
Q. Could Pydraul F-9 be used as a heat transfer fluid?
A. It was never intended for that. That doesn't mean someone could not have used it, but I don't know of any such use.
Q. When you said Aroclor 1268, Aroclor 5460 and Aroclor 6062 could not be used as heat transfer fluid, why? Why did you say that?
A. The Aroclor 1268 is a solid material, looks like course table salt. So it would not be a pumpable fluid. The 5460 Aroclor and Aroclor 6062 were polychlorinated terphenyl based, therefore quite viscous like molasses in January and since the more fluid PCBs were available, there was no interest in using the viscous material.
Q. And 1268, 5460 and 6062, those Aroclors would not be possible to heat them up to a temperature

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where they would be liquid enough to use as a heat transfer fluid; is that correct?

A. It's possible, but not very, in my opinion, practical.

Q. Do you know of any adverse effects from doing that if this were tried in a heat transfer system, if you know?

A. I have a hard time with describing adverse effects. If, for example, one melted the Aroclor 1268 by heating it so it became pumpable and introduced it into a heat transfer system, if a leak developed somewhere, that material would ooze out and form an icicle, if you will. And if the system for some reason had to shut down it would be blocked solid with that solid material and very difficult to reheat and start up again. Those are adverse effects, in my opinion. Those three products really didn't offer any advantage over the other heat transfer fluid that Monsanto had to offer.

Q. Mr. Papageorge, have you ever heard of a company known as NVF or National Vulcanized Fiber?

A. Only recently.

Q. When you say recently, when did you hear of them?

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A. Within the past month or so.
Q. How was it you had heard of NVF or National Vulcanized Fiber in the past month or so?
A. I was informed by an attorney of this particular case and that's when I first heard of NVF.
Q. Mr. Papageorge, did Monsanto use distributors when it sold Aroclors? And what I mean by distributor is, did Monsanto sell Aroclors to a certain company that I will call the distributor who then sold the Aroclors to another company or did Monsanto sell Aroclors to a company and use a distributor to ship the Aroclors to the company? Did either of those two situations ever occur?
A. Yes.
Q. Would it be the first scenario or the second that I referred to?
A. Monsanto sold packaged products to entities that in turn would warehouse them and ship them to their customers.
Q. Did Monsanto sell a product to a certain company and use another company to ship that product to the company that purchased the product?
A. Are your referring to an order placed with Monsanto and Monsanto then goes to this

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intermediate company --

Q. Correct.

A. -- to ship it? I'm not aware of a situation like that.

MR. DAVIDSON: You're talking about something different than just employing a public carrier to transport it?

MR. WARNING: Correct.

Q. Mr. Papageorge, have you ever heard of a company known as American Mineral Spirits Company?

A. Yes.

Q. How have you heard of this company?

A. I don't remember the circumstances but it had to do with my involvement in looking into what companies were listed by Monsanto as distributors of Monsanto products which included the PCB products and others.

Q. Would that have been during your employment at Monsanto?

A. Yes.

Q. Mr. Papageorge, I'm going to give a group of documents to the court reporter and ask her to mark this group as Papageorge Exhibit No. 3.

(Group of documents marked as Exhibit No. 3

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for identification.)

Q. The documents that have been identified as Papageorge Exhibit No. 3, are Bates stamped NVF 000038 through 62 as well as 64, 66, 67, 92, and 108 through 111. Mr. Papageorge, would you take a moment to look at those?

(Discussion off the record)

A. I have scanned the documents.

Q. Thank you. If you would look at Bates number 38.

A. I have it.

Q. Have you seen this document before?

A. Yes, sir.

Q. What is this document?

A. It's a Monsanto document that's used within Monsanto to communicate to the various departments within Monsanto involved with shipping material, invoicing and the like.

Q. Where have you seen this before?

A. Of course, I saw it yesterday. I'm trying to recall if I had seen it prior to that. I just don't remember.

Q. Is this a type of record that Monsanto would generate in its normal course of business?

A. Yes.

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Q. Was it a normal practice of Monsanto to keep these records?
A. Yes, sir.
Q. Such as document Bates number NVF 38?
A. Yes.
Q. Mr. Papageorge, do you see the box where it says "sold to" on that document?
A. Yes.
Q. And it says "American Mineral Spirits Company;" is that correct?
A. Yes.
Q. And the box below it says "shipped to;" do you see that?
A. I do.
Q. It says "NVF company"?
A. It does.
Q. Could you explain the relationship between Monsanto and American Mineral Spirits and the relationship between Monsanto and NVF Company as evidenced on this document?
A. This document indicates that American Mineral Spirits Company placed an order for the material listed, Aroclor 1254, with the producer, Monsanto, and asked that that shipment be shipped directly to their customer, NVF

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Company. The individuals within Monsanto who arranged for this shipping follow that type of instruction and the individuals in Monsanto who are involved with the invoicing will send the necessary documents to American Mineral Spirits who are designated as the entity the product was sold to.

Q. So based on your definition of customer from earlier today, would American Mineral Spirits Company be a customer of Monsanto?

A. Yes.

Q. Would NVF Company in the transaction we're referring to, identified in NVF 38, would NVF Company be a customer of Monsanto?

A. I don't know that we ever made that fine a line between the definitions. The fact that NVF got a shipment automatically puts them on these documents I referred to earlier, product, customer, shipped, month of shipment and so on, they would be picked up.

Q. So based on the testimony you gave earlier today, as far as the definition of customer, NVF in the transaction in document NVF 38 was a customer of Monsanto?

A. Yes.

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Q. Would NVF have received a copy of this document?
A. No.
Q. Would American Mineral Spirits Company have received a copy of this document?
A. No.
Q. Was a copy of this document kept in Monsanto's files?
A. Yes.
Q. Was American Mineral Spirits Company sent another document regarding this transaction if you know?
A. I would be surprised if they were not sent a bill, an invoice.
Q. Would NVF Company have received any type of documents from Monsanto regarding this transaction?
A. They would receive a document we refer to as a bill of lading.
Q. Could you explain a bill of lading?
A. As best I remember, I don't remember all the features, it shows the material shipped, the amount, the carrier, of course, dates and the like. I can't remember any other features at the moment.
Q. Mr. Papageorge, would you look at the, looks

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like a two-page document, NVF Bates numbers 39 and 40, please. If you would look at the document NVF 40, look at that document?

A. I see it.

Q. Do you see at the top looks like a list of names?

A. I do.

Q. About the fourth name down looks like a W.B. Papageorge; do you see that?

A. I do.

Q. Would that be you?

A. Yes.

Q. The placement of those names on that document, does that indicate that those individuals received a copy of this document?

A. Yes.

Q. They would have received a copy of the document shortly -- strike that -- on or about the date of the document; is that correct?

A. That is correct.

Q. On NVF 40, there is a signature near the bottom and a name W.E.Schalk. Do you know who W.E.Schalk is?

A. I do.

Q. As indicated on this document, was W.E.Schalk

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director of sales plasticizers at Monsanto?
A. Yes.
Q. That would have been on or about February 19, 1970; correct?
A. Yes.
Q. Is this two-page document something you have seen before?
A. Yes.
Q. What is this document?
A. Are we talking about NVF 39, 40?
Q. Correct.
A. What is it?
Q. Yes.
A. It's a Monsanto -- I'm sorry, it's a letter by Mr. Schalk, director of sales and plasticizers, Monsanto letterhead, dated February 19, 1970, addressed to Mr. E.M. Toby, president of American Mineral Spirits Company, and it advises Mr. Toby about the PCB environmental issue and Monsanto's plan to inform its customers. And it goes further to suggest that he or his company inform their customers.
Q. Do you know if this was a letter that was produced in the ordinary course of Monsanto's business?

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A. It was.
Q. And was a copy kept with files at Monsanto?
A. Yes.
Q. Was this letter sent -- strike that. Do you know if this letter was sent to Mr. E.M.Toby of American Mineral Spirits Company?
A. You mean did I personally drop it in the mailbox, no.
Q. Do you have any indication or any knowledge of whether it was sent?
A. I have no reason to believe it was not sent. This was one letter of thousands. A lot of activity occurred at that time and boxes of letters were mailed to the post office. I do remember that. We worked weekends to get them out. It was a concerted effort.
Q. Was this the early 1970 letter that you had referred to earlier today?
A. This is one of several similar letters, each one slightly different in wording to address the interests of the addressee.
Q. See the third paragraph on Page NVF 39?
A. I see it.
Q. Where it states, "we feel it is very desirable that you, as a reseller of Monsanto Aroclor

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plasticizers, alert your customers to this potential problem"?

A. I see that.

Q. After this letter was sent, did Monsanto know whether American Mineral Spirits Company sent or alerted in any way its customers as used in this document? That's how I'm using the word "customers" whether it alerted its customers to the potential problem indicated in this letter with Bates number NVF 39 and 40?

A. You say did Monsanto know?

Q. Yes.

A. Monsanto, yes, through its people.

Q. How did they verify that American Mineral Spirits sent or -- strike that -- not sent, but somehow alerted its, quote, customers as used in this document of the situation identified in this document?

MR. DAVIDSON: I'll object to the use of the word "verify." I don't think he testified Monsanto verified. You just asked him did they know.

Q. With that correction?

A. This information was relayed by the field marketing staff. That's all I personally knew

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about that communication.

Q. When you say this was relayed by the field staff, what do you mean when you say "this"?

A. If you picture, there are individual salesmen who call on the accounts at the different locations. They have a dialogue about the PCB issue. They check on whether or not the letter was mailed, they report back to their district manager, so and so has completed their mailing or so and so is still working on theirs. So all this information flows into the district manager and he in turn reports it back to the home office to Mr. Schalk who is the director of sales. And Mr. Schalk would report to his supervisor or to me if something was not going as planned. We would get the negative information rather than the positive.

Q. Did you get any of this negative information regarding American Mineral Spirits and whether they had sent any -- strike that -- whether they had alerted their customers, again as customers is used in the document, as to the situation?

A. I got no negative information.

Q. About -- strike that -- about American Mineral Spirits Company; is that correct?

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A. That is correct.
Q. So does that mean American Mineral Spirits Company would have alerted their customers as customers is used in this document about the situation identified in this document?
A. That's the way it would be understood, yes.
Q. Mr. Papageorge, I would like you to look at a document NVF 41 and 42; also NVF 43, NVF 44 and 45. And for those documents, I will ask you to identify, if you know, who each of those letters would have been sent to.
A. Document 41 and 42 is a duplicate of the previous documents, 39 and 40. The difference is that there is no addressee shown on this example.
Q. When you say "this," you're referring to NVF 41 and 42; correct?
A. Yes. And attached to 41, 42 are the copies of information that Monsanto was using to send to its customers and were attached to 41, 42 as hopefully helpful suggestions on the kinds of information that the recipient of 41, 42 would use.
Q. So NVF 43, 44, 45, 46, 47, and 48 through 51 are all attachments to NVF 41 and 42; correct?

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A. That is correct.
Q. And NVF 41 and 42, is this a version of the early 1970 letter that you told us about earlier today that was sent to all of Monsanto's customers?
A. Not all of them.
Q. Who was this letter sent to?
A. This letter was intended for the distributors of the material.
Q. Mr. Papageorge, would you please look at NVF 52 and 53, that document, and on the first page of NVF 52, I notice at the top of the page there is a name about five names down, W.B. Papageorge. Would that be you?
A. Yes.
Q. Have you seen this document before?
A. Yes.
Q. What is this document?
A. This is a letter from Mr. Schalk addressed to Mr. Toby at American Mineral Spirits Company dated May 25, 1970, in which Mr. Schalk reviews again the environmental PCB issue, and informs Mr. Toby that Monsanto was going to discontinue the sales of PCB products that were used in what we earlier called these open uses, easy entry

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into the environment uses and this termination would be effective the 30th of August, 1970. And they suggest that Mr. Toby through his organization inform his customers of this action.

Q. Was this a document generated in the ordinary course of business by Monsanto?

A. Yes.

Q. Was it a document kept in Monsanto's files?

A. Yes.

Q. If you would please look at page NVF 53, page No. 2 of this document, if you look at the second paragraph on that page, please, states we will notify our direct customers using the above products of this decision by June 1 of 1970. As a distributor of these products, it would seem appropriate that you follow the same course of action at as early a date as feasible. Do you have any reason to believe that American Mineral Spirits Company did not receive this document?

A. I have no reason to believe that.

Q. Do you have any reason to believe that American Mineral Spirits Company did not inform their customers of the action that's identified in this letter?

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A. I do not.
Q. When you say that, is that similar to your testimony a few moments ago where you would have been told if that did not happen; is that correct?
A. That is correct.
Q. And you were not told that there was any problem with American Mineral Spirits communicating this information to its customers; correct?
A. That is correct.
Q. If you would look, Mr. Papageorge, at documents NVF 54 through, I believe, 62. NVF 54 and 55, is that an identical copy of the document we just looked at 52, 53 or -- strike that. Document NVF 54 and 55, have you seen that document before?
A. Yes.
Q. What is that document?
A. This is a copy of the letter that was sent to Monsanto's customers who used PCBs in the, I'm going to call them open uses again, the plasticizer uses, informing them of the plans that Monsanto had to discontinue the sale of PCB containing products effective August 30, 1970.
Q. Is there any method to determine who received

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that letter?
A. There is a method. At least I was aware of records kept of all the addressees of each letter.
Q. Does that list exist today?
A. I don't know.
Q. NVF 54 and 55, is that a document produced in the ordinary course of Monsanto's business?
A. Yes.
Q. Is that a document that was kept in Monsanto's files?
A. Yes.
Q. Documents 56 through 62, is it your understanding that those were attachments to document 54 and 55?
A. That's my understanding.
Q. Mr. Papageorge, if you would please look at document NVF 64, and I'll ask if you have seen this document before.
A. Yes, I have.
Q. What is this document?
A. This is a copy of a letter signed and authored by Mr. Walter Schalk, director of sales, plasticizers, Monsanto dated August 14, 1970, in which Mr. Schalk informs the recipients that

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they will be getting a letter informing them of the status of the PCB environmental issue as of the middle of August, 1970, and they would also receive a new product brochure referred to here as O/PL-306 Aroclor plasticizers and it urges that this new bulletin, the revised bulletin, be sent on to their customers, the customers of the recipient of this letter as well as a letter to the customers of the recipient of this letter. The second paragraph also refers to a procedure for returning unused material.

Q. Was this document produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Was it kept, at least a copy of it, kept in Monsanto's files?

A. Yes.

Q. Would a copy of this letter have been sent to American Mineral Spirits Company?

A. Yes.

Q. And why do you say yes?

A. Well, they were one of the few distributors Monsanto was dealing with on PCB type products. There is no reason to believe they would not have received this document that was

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deliberately prepared for that small group of distributors.

Q. In fact, we've previously looked at document NVF 52 and 53 which was addressed to American Mineral Spirits dated May 25, 1970, and that was certainly within three previous years of August 14, 1970, the date on NVF 64; correct?

A. Yes.

Q. And it was Monsanto's policy to at least send these letters to customers within the previous three years; correct?

A. As a minimum.

Q. This letter NVF 64, indicates that it is being sent to direct customers; is that correct?

A. No.

Q. Who is this letter sent to?

A. This is sent to the, what we call the distributors.

Q. Again, this letter asks that the distributors forward copies of the Aroclor plasticizers bulletin as well as a letter to their customers; correct?

A. Yes.

Q. And American Mineral Spirits Company would have sent such a letter and the bulletin, a copy of

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the bulletin, to its customers; correct?
A. There is no reason to believe they would not have.
Q. If they had not, as you testified before, you would have been informed of that; correct?
A. Yes.
Q. And you were not informed of that, were you?
A. That's correct.
Q. Mr. Papageorge, if you would look at NVF 66 and 67, please. Have you seen this document before?
A. I don't think so. I'm sorry, did you say have we seen this?
Q. Have you seen this document?
A. Oh, I have seen it. I thought you meant in our previous discussion here had we seen it.
Q. What is the document?
A. It's a copy of a letter that was mailed to, I'm going to use the word "direct customers" of Monsanto of PCB type materials.
Q. Was this a document generated in the ordinary course of Monsanto's business?
A. Yes.
Q. Is this a document that would have been kept in Monsanto's files?
A. Yes.

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Q. As you indicated, this was sent to Monsanto's direct customers?
A. Yes.
Q. Again, correct me if I'm wrong, direct customer means any customer who used the product themselves after receiving it from Monsanto or any customer who turned around and sold it to another party; is that correct?
A. Well, your last description of a customer who ordered the material and resold it, generally they were described as indirect customers whereas a direct customer is that company that purchased the PCB material and actually used it in his products or in his plant.
Q. So those are the parties or entities that received this document; correct?
A. The group I just last defined, yes.
Q. Mr. Papageorge, if you would please look at NVF 92.
A. I have it.
Q. Have you seen this document before?
A. Yes, I have.
Q. What is this document?
A. It's a letter authored and signed by Walter Waychoff who's a product manager of plasticizers

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at Monsanto Company. The letter is dated September 23, 1970. And it's addressed to customers informing them of the alternative Aroclors that were being substituted for the PCB type Aroclors.

Q. Is this a document that was generated in the ordinary course of Monsanto's business?

A. Yes.

Q. Was this document kept in Monsanto's files?

A. Yes.

Q. And as a letter that's addressed to, quote, dear customer, unquote, does that mean this letter was sent to the direct and indirect customers that you have referred to earlier today?

A. This letter was sent to the customers that we have referred to as direct customers.

Q. Do you know whether this letter would have made it into the hands of indirect customers?

A. I don't know.

Q. Would this letter have been sent to American Mineral Spirits Company?

A. I don't know.

Q. Were distributors considered customers?

A. Yes.

Q. And American Mineral Spirits Company was a

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distributor; correct?
A. Correct.
Q. Because they were a distributor, does that therefore mean that they would have received a copy of this letter?
A. I don't know. They could have. I just don't know.
Q. You have no reason to believe that they did not receive a copy of this letter; correct?
A. Either way, that they did or did not, I do not know.
Q. It would have been Monsanto's intent to send this letter to American Mineral Spirits Company; correct?
A. I hesitate because the same information could have been conveyed to the distributors in another memorandum, perhaps at a slightly different date. I don't know exactly what happened at that point in time.
Q. Do you know whether the information contained in this document was sent either through this document or another document to all of Monsanto's customers as you have defined them?
A. Well, we saw from previous documents in this exhibit the reference to a new bulletin which is

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described in this particular letter, NVF 92. What I don't know is the price list of the products. I haven't seen that for years, decades now, so I just don't remember how that was handled regarding distributors.

Q. Mr. Papageorge, I'm going to hand you a document identified as NVF 93 and ask you if that document refreshes your recollection at all as to what you were just referring to, the price list?

A. I do not recall seeing this document back in 1970. I did see it yesterday.

Q. So you don't know whether that document would correlate with document NVF 92?

A. Well, the information --

Q. Strike that -- whether document NVF 93 is what is referred to in document NVF 92?

A. It appears to be the price list mentioned in 92, but that's all I can say about it.

Q. Mr. Papageorge, if you would look at NVF 108, please, and I will ask you if you have seen this document before.

A. I recall seeing this document yesterday.

Q. Do you know what this document is?

A. It's a letter authored by Mr. Walter Schalk

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addressed to Mr. J.W. Schrage, American Mineral Spirits Company, dated September 27, 1971.

Q. Was this letter generated in the ordinary course of Monsanto's business?

A. Yes.

Q. Was a copy of this letter kept in Monsanto's files?

A. Yes.

Q. Do you have any reason to believe that American Mineral Spirits Company did not receive this letter?

A. I do not.

Q. I notice that it appears -- could be the copy quality -- but it appears that the document that we are looking at was not signed by Mr. Schalk; is that correct?

A. Not this copy, that's true.

Q. Was it, at least at times, Monsanto's policy to keep a copy of a document that was sent out without a copy of the document with a signature on it?

A. I don't know there was a policy. I personally do not know what led to this situation where a letter was addressed to a specific person at a customer was copied and then the author signed

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it. I don't know what happened here.
Q. You see in the second paragraph of this letter, second sentence states, as our distributor, we expect you to send the same letter, or a similar letter to each of your customers, keeping a record of the date sent.
A. I see that, yes.
Q. Again, if American Mineral Spirits Company had not sent any such letter to its customers, would you have been informed of that?
A. Very likely, yes.
Q. Were you informed that American Mineral Spirits Company did not send such a letter identified in this document?
A. I was not.
Q. Mr. Papageorge, would you look at NVF 109, please?
A. I have it.
Q. Do you recognize -- strike that. Have you seen this document before?
A. Yes.
Q. What is this document?
A. It's a letter by Mr. Walter Schalk of Monsanto Company dated September 30, 1971, addressed to its direct customers of Aroclor type products

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which highlights the, again reminds the recipient of the letter about the environmental issue and highlights the possibility that these products of Monsanto, unless properly handled, could get into food, food related products.

Q. Is this a document produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Did Monsanto keep a copy of this document in its files?

A. It did.

Q. I'm sorry, you may have told us this. Who would this letter have been sent to?

A. This is the customer who used the Monsanto products in manufacturing his products or in his equipment in his plant.

Q. Do you know if that was sent to American Mineral Spirits Company?

A. We discussed earlier the document NVF 108 which was mailed or the original was mailed to American Mineral Spirits on September 27. It refers to this letter now that we're now looking at that's NVF 110. At this moment, I'm confused.

MR. DAVIDSON: I think the

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clarification is that 108 that you've been looking at on September 27 refers to the September 30 letter and says a copy is enclosed. And that's 109 that you've been asking about.

MR. WARNING: Actually, 108 is dated September 27, but it refers to the September 30 letter saying it will be sent.

MR. DAVIDSON: He picked up one of your extra pages and skipped over and said 110, and he meant 109. Does that clarify it for you, Bill?

THE WITNESS: Yes.

MR. WARNING: Thank you.

Q. Do you know whether NVF 109 would have been sent to NVF Company?

MR. DAVIDSON: Other than as an enclosure to the previous letter? Do you understand that, Bill?

MR. WARNING: Yes.

MR. DAVIDSON: He's asking whether this letter would have sent independently other than as an enclosure to this letter.

A. Yes. Since NVF received that one shipment in August of 1970, it appeared on the list of

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Monsanto's customers. When this letter was mailed six weeks later, NVF would have received a copy.

Q. Mr. Papageorge, would you look at NVF 110, please?

A. I have it.

Q. Have you seen this before?

A. Yes.

Q. What is this document?

A. It's a letter authored and signed by Mr. Walter Schalk, Monsanto letterhead, dated December 31, 1971. It informs the recipient that Monsanto would cease the sale of polychlorinated terphenyl plasticizers as of March 31, 1972. And it indicates that the conditions under which they would continue selling it until that date.

Q. Was this letter produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Was the letter or a copy of the letter kept in Monsanto's files?

A. Yes.

Q. You indicated that this letter informs recipients that Monsanto will cease the sale -- was going to cease the sale of polychlorinated

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terphenyls. Do you know why Monsanto was ceasing the sale of polychlorinated terphenyls?

A. Two principal reasons was, one, that Monsanto felt that it had suitable alternative materials to sell that didn't contain chlorine. And since chlorinated terphenyls were somewhat similar to the chlorinated biphynels, it decided that since suitable alternatives were available to discontinue dealing with chlorinated plasticizers.

Q. What was it about chlorinated plasticizers that Monsanto wanted to get away from, if you understand my question.

A. I think I do. There was at the time much discussion going on amongst the scientific community and the regulatory community regarding chlorinated materials, and Monsanto chose to discontinue them because, like I said earlier, they had attractive substitute products which were not considered to be potential problems, so why not emphasize those nonchlorinated materials. That's the line of thought that was followed.

Q. Do you know who would have received this letter -- strike that -- who this letter was addressed

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to?

A. It was addressed to those customers on this customer list that was kept current.

Q. And is that the customer list you referred to earlier this morning that was used for the letter that was generated and sent in early 1970?

A. The original listing was put together in early '70, and it was kept current through '70 and through 1971 when this letter was put together. So it was the latest listing available to Monsanto at that time.

Q. Mr. Papageorge, would you look at NVF 111, please?

A. I have it.

Q. Do you recognize this document?

A. I do.

Q. What is this document?

A. This is a page from a list of companies that received the letter we just described under 110.

Q. Was this document produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Was it or a copy of it kept in Monsanto's files?

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A. Yes.
Q. Document NVF 111, has in the middle, looks like number 2-4-5, it's a number then 45; correct?
A. Yes.
Q. Says NVF Company; correct?
A. Yes.
Q. Is this a portion of the list that you have referred to recently that was generated in early 1970?
A. Generated and modified, yes.
Q. Does this list indicate that document NVF 110 was sent to NVF Company?
A. Yes.
Q. Why is that?
A. Why does it indicate it?
Q. How do you know by looking at NVF 111 that NVF 110 was sent to NVF Company?
A. I think the key clue is the date mailed. You will notice it's written in, handwritten 12/30/71 which predated the letter by one day.
Q. Do those appear to be initials next to the date on NVF 111?
A. Yes, that's someone's initial. I don't know who.
Q. Was it a practice at Monsanto with such service

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lists to have someone initial the list when the letter that the list refers to was sent?

A. Well, that was the practice of this particular group that put out this mailing. Each group had it's own record-keeping system.

MR. LOHMAR: Off the record.

(Brief recess.)

(Group of documents marked as Exhibit No. 4 for identification.)

MR. WARNING: Back on the record.

Q. I've just handed the court reporter a group of documents. I will ask her to identify them as Papageorge Exhibit No. 4 and the Bates numbers for these are the following, and again I will leave out the NVF and zeroes; 3702, 3710, 3720, 3731, 3739, 3749, 3755, 3763, 3764, 3769, 3790, 3809, 3811, 3833, 3836, 3838, 3879, 3880, 3920, and 3923.

Mr. Papageorge, if you would take a moment to look at the documents identified as Papageorge Exhibit No. 4.

A. I have scanned the documents.

MR. WARNING: Off the record a moment.

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(Discussion off the record)

Q. Mr. Papageorge, the documents that have been identified as Papageorge Exhibit No. 4, have you seen each of these documents before?

A. Yes.

Q. Do you know what each of them is?

A. What's the last word?

Q. Do you know what each of them are?

A. I believe I do, yes.

Q. Could you tell us what they are?

A. These are copies of letters mailed to Monsanto customers of PCB containing products from early 1970 to the latter part of '73.

Q. Were each of these documents produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Were each of these documents or a copy of each of these documents kept in Monsanto's files?

A. Yes.

Q. When you say they were sent to the customers of Monsanto, would that mean they were sent to those on the service list that we just discussed in relation to NVF 110 and NVF 111?

A. That's one group, yes.

Q. They were at least sent to parties on that list;

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correct?

A. Correct.

MR. DAVIDSON: Wait a minute. Earlier Mr. Papageorge testified that depending upon the use of the groups, the letter may have been tailored to that group. If you're asking him if every single one of those letters was sent to the people on the list attached to that previous document, I don't think that's accurate because some of these went to the Aroclor customer list and some of them to dielectric company customers and the list was not the same. It was not one master list.

Q. Mr. Papageorge, would it be correct to say that the recipients of each of these letters in Papageorge Exhibit 4 were the customers of the product that is referred to in each of those letters?

MR. KLINE: I'm going to object at this point to it being an incredibly compound question, asking him to consider each of the individual letters all at once and ambiguous because I'm still not sure whether you're asking whether it was sent to direct customers or indirect customers or both.

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MR. WARNING: Well, to the extent you don't represent the witness, I'm not sure you can object. If you're telling me there is something you don't understand --

MR. KLINE: I'm just preserving the record.

MR. WARNING: Is there something you don't understand?

MR. KLINE: I think I just explained my confusion, or my objection.

Q. Did you understand my last question, Mr. Papageorge?

A. I've forgotten it.

MR. WARNING: Would you read back my last question, please?

(Question read.)

Q. Do you understand that question?

A. I believe I do except for the use of the word "customers" to cover both the direct and indirect. I'm assuming it does cover both types.

Q. Yes, that's what I'm referring to.

A. So in this Exhibit No. 4, there are examples of letters sent to both types, both categories of customers, the direct and the indirect.

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Q. Could you, Mr. Papageorge, go through each document in this exhibit and identify which ones were sent to the customers as you identify them? Let me explain. Could you go through each document and tell us which customers the letter would have been sent to, either direct customers, indirect customers, all customers?

A. I will try. I'll just quote the last four digits of the first page. 3702, is a direct customer; 3710, direct customer; 3720 is an indirect customer; 3731, direct; 3739, indirect; 3749, direct; 3755, direct; 3763, direct; 3764, direct; 3769, indirect; 3790, direct; 3811, direct.

Q. I think you missed one, 3809.

A. 3809, direct; 3833, direct; 3836, indirect; 3838, direct; 3879, direct; 3880, direct; 3920, direct; 3923, direct.

Q. Thank you, sir. If you would look at NVF 3731 for a moment, please. This letter does not, at least this copy of this letter, does not appear to have a date on the top. Would you have any idea what the date would have been?

A. I would suggest that it's a copy of 3720 -- I'm sorry, it's not. I'm wrong.

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MR. KLINE: Mr. Papageorge, do you have 3702?

THE WITNESS: 3702?

MR. KLINE: Yeah.

THE WITNESS: I have it, yes, sir.

MR. KLINE: I suggest you take a look at that and compare it with 3731.

THE WITNESS: There are some parts that are identical, but the remaining items on the two letters are specific to different types of customers.

Q. Those two documents are not identical, they differ?

A. No, they're not. I do not know what date should appear on 3731.

Q. Okay. Document number NVF 3749, same question if you know.

MR. DAVIDSON: 37 what?

MR. WARNING: 49.

Q. If you know what the date is on that document because it does not have one?

MR. LOHMAR: What document are you looking at?

MR. WARNING: 3749.

A. 3749 is identical in content to 3755.

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Q. And 3755 is dated June 1, 1970. Would that lead you to believe that 3749 would have been dated June 1, 1970?
A. Yes.
Q. Mr. Papageorge, in the letters in Papageorge Exhibit No. 4, where they recommend that the recipients of the letter relay certain information contained in that letter to their customers, do you recall ever being informed that American Mineral Spirits Company did not forward any type of information from any of these letters in Papageorge Exhibit 4 on to its customers?

MR. KLINE: I'm going to object.

A. I don't remember receiving information of that type at all.

MR. KLINE: The basis of my objection would be assumes a fact not in evidence.

Q. That's all I have with those. Thank you. Mr. Papageorge, do you know how the various Aroclors were supplied to customers of Monsanto?
A. Yes, sir.
Q. How were they supplied? When I say supplied, let me clarify. What I'm referring to is what kind of containers were they delivered to

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customers in?

A. All right. They were available in five-gallon pails. Some of them were available in the 35-gallon steel drum, the 55-gallon steel drum, tank trucks of different sizes, tank cars of several different sizes.

Q. Of these various containers that you just identified, did all of those containers contain labels that identified the product within them?

MR. KLINE: Could we clarify to a time period you're talking about?

Q. During your employment at Monsanto for a time period.

MR. KLINE: I'm going to object as overbroad.

A. At different periods, labels were added and modified, of course. The steel drums and pails always had a label that identified the contents and the weight and the precautionary wording on how to handle it. The tank trucks and tank cars, the label was affixed to the dome of these vehicles, as I remember, about 1971 or -- yeah, '71.

Q. You just mentioned that the steel drums and pails always had labels on them; correct?

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A. Yes.
Q. When you say always, does that go back to the beginning of your employment with Monsanto in 1951?
A. Yes.
Q. Would the steel drums and pails, beginning in 1951, did they always have one label, did they have more than one label?
A. Not always.
Q. So is it correct that at times some of these containers had one label, at times some of them had more than one label?
A. Correct.
Q. Why would some have one label at times and some have more than one at times?
A. When the environmental issue was made known, there was a period of time in which an environmental warning statement was prepared on a separate label and this was affixed to drums that had already been packaged and warehoused. So it was sort of a supplementary statement on the container. I am not totally familiar, but there are instances in shipping where additional tags are placed on drums for shipping purposes. They identify the material as to its source and

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destination, that kind of information, but not as to its contents. So there are other labels that could be affixed on the drum before it's shipped out of the warehouse. I'm not totally familiar with that procedure.

Q. You just said these separate labels were added when the environmental issue became known?

A. Yes.

Q. Do you know what year that was?

A. It started in May of 1970.

Q. Correct me if I'm wrong, does that mean in May of 1970 the steel drums and pails that you referred to had these additional labels affixed to them?

A. Yes.

Q. And they were affixed before they went to the customer?

A. Yes.

Q. Regarding the tank trucks and tank cars that you referred to a moment ago, did those at any time during your employment at Monsanto have labels that identified the contents?

A. As I mentioned, starting in 1971, there was a tag placed at the dome of the vehicle which the employee of the customer would see as he opens

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up the vehicle and starts moving and pumping the liquid.

Q. Do you know generally what the label indicated?

A. Yes.

Q. What was that?

A. Identity of the product, some -- by identity, I'm talking about the trademark like Aroclor 1248, and it would also designate that it was a chlorinated material. And it also had some words of caution about getting it on the skin and breathing it, and also the statement about it being identified as an environmental pollutant, care in handling is important.

Q. The labels you referred to a moment ago that were put on the drums and pails beginning in, I believe, around May, 1970; is that correct?

A. The supplemental statement?

Q. Yes?

A. May of 1970.

Q. Do you know what those labels provided, what those labels had written on them?

A. The same information that was available on tank cars and tank trucks.

Q. Were those supplementary labels any certain color, if you know?

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A. As I remember, yes, it was red, I think, on a white background.
Q. Were the other labels that identified the product, were they a certain color?
A. Yes. Of course, some of the wording was in red ink, some in black on a white background.
Q. On these supplemental labels, were the letters in capital letters or in bold if you know?
A. It had upper case and lower case letters. It was a paragraph.
Q. Do you know if they contained the following words, any of the following words -- "warning"?
A. I don't remember that word. I just don't remember.
Q. How about the word "caution"?
A. Yeah, I believe the word "caution" was there.
Q. "Danger"?
A. No, I would have to see the label to refresh my memory.
Q. When the labels were on the -- placed on the drums and the pails, do you recall where on the drums and pails they were placed? Maybe I can help you out. Were they possibly placed on top of the container, the bottom, or around the side?

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A. It was on the side and I have a hard time recalling whether it was in the upper third or the middle third of the drum. I just don't recall anymore because through the years they changed the position to try to avoid material from staining the label where it was no longer readable after they opened the container.

Q. Do you know whether the supplemental labels on the drums and pails ever changed through time after they were initially used? What I mean by that is whether the language contained on those labels ever changed.

A. Yes, we -- when we use the words "supplemental label," I'm assuming you're talking about the additional label that was affixed to the container after it was packaged and warehoused.

Q. Correct, the label that you told us Monsanto began using in May of 1970.

A. That's the add-on. The reason I say that, those words were incorporated on a redesigned full label so that the supplementary label became a part of the initial label. And the wording in that paragraph did change as more information was made available regarding PCBs and the environment.

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Q. Do you know when the, what we're calling the supplementary label was added to the main label?
A. This varied product to product. There was no one date. I would suggest that by the end of '71, the paragraph was part of the originally designed label.
Q. For all products?
A. For all PCB containing products, yes. When I said original, I didn't mean the 1935 version. I meant the label that is affixed to the container when it's still empty and before it's filled.
Q. Before it's sent to any customers?
A. Correct.
Q. You just told us that the language on the labels did change over time, and I may have missed this. Why was the language on the label changed?
A. There was information that Monsanto had gotten relating to the PCBs' presence in animal feed, human food, packaging of food, so as I remember we had a sentence or two that brought that to the attention of the purchaser of the material.
Q. Mr. Papageorge, I'm going to show you a document that is, I'll represent a decision from the

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California Court of Appeals, Second District, Division Seven, dated June 17, 1996. The name of the case is Transwestern Pipeline Company V Monsanto Company. The citation is 53 Cal. Reporter 2nd, 887. And ask you to look at Page 4 of this document.

A. I have read the --

Q. Mr. Papageorge, do you see from that decision, Page 4, a paragraph that begins, in 1996, Monsanto learned PCBs were turning up -- do you see that paragraph?

A. I do.

Q. And a sentence in there states in 1970 -- see where that one starts?

A. Yes.

Q. Do you have any reason -- strike that. According to the Court in that case, there was some supplementation of labels that occurred in 1970 at Monsanto; correct?

A. Yes.

Q. Could that have been the supplementation that you were just referring to?

A. Yes.

Q. Do you believe it is, that that supplementation began in 1970?

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A. Yes, that's what I was describing previously.
Q. That's all I have with that. Thank you. I'm handing the court reporter a group of documents and ask her to label them as Papageorge Exhibit No. 5, please, and these are Bates numbers --
MR. LOHMAR: Are you marking the California decision as an exhibit?
MR. WARNING: No. Bates numbers NVF 118, 120 and 124.
(Group of documents marked as Exhibit No. 5 for identification.)
MR. KLINE: Off the record.
(Discussion off the record)
A. I have reviewed the exhibit.
Q. Thank you. Do you recognize the documents in this exhibit?
A. Yes, I do.
Q. Have you seen them before?
A. Yes.
Q. What are they?
A. These are copies of labels used by Monsanto over a period of several years to place on containers of products containing PCBs.
MR. KLINE: Off the record.

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(Discussion off the record)

Q. Mr. Papageorge, were these documents produced in the ordinary course of Monsanto's business?

A. Yes, sir.

Q. Were the documents or copies of the documents kept at Monsanto's premises?

A. Yes.

Q. You had referred a moment ago to the fact that these labels had been used for a certain period of time, I believe, by Monsanto; is that correct?

A. Correct.

Q. Is there any way looking at these documents that you can tell which time period any of them was used?

A. Well, I know for a fact that the copies of the supplemental label as shown on 121 -- yeah, 121. There is a repeat in here. I'm certain that that was introduced in May of 1970. The copy shown on 118, from the logo and just the design of that particular label tells me that this is a 1950s label. I can't get any closer than that. The only other indicator that might be of help if someone wished to pursue it is the use of the mailing ZIP code on the address of

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Monsanto where instead of the five digit code it's a single digit, like St. Louis 4 on Exhibit 118 or NVF 118.

Q. Right. I see that.

A. Other than that, I have no other way to specifically determine the dates.

Q. Documents 118, 120, and 124 contain the term "Aroclor" but they do not give a series of Aroclors. Do you know which Aroclors those labels would have been used for?

A. Not a specific one. You will note that these labels were intended for small samples supplied out of the laboratory and the person filling the bottle would write in the appropriate numerical designation. The example shown on NVF 124 is a wraparound type label for a 10-gallon pail.

Q. Would that label have been used for any type of Aroclor?

A. Yes, they would write in the appropriate number designation.

Q. Where would that be written?

A. Right in the blank space next to the caution statement.

MR. WARNING: That's all I have with those. Off the record.

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(Lunch recess.)

Q. (By Mr. Warning) Handing the court reporter a group of documents, ask her to mark them as Papageorge Exhibit No. 6. The Bates numbers to this exhibit are the following: 287, 289, 290. 291, 294, 297, 303, 309, 313, 316, 317, 323, 325, 328, and 333?

(Group of documents marked as Exhibit No. 6 for identification.)

Q. Mr. Papageorge, if you would take a moment to look at those, please.

A. I have looked over the exhibit.

Q. Mr. Papageorge, have you seen the documents that are included in Exhibit No. 6 before?

A. I have.

Q. What are those documents?

A. These are copies of labels used on Monsanto's Aroclor 1248 over a period of, well, it's several decades.

Q. Are these labels that were produced by Monsanto in its ordinary course of business?

A. Yes.

Q. Did Monsanto keep labels or copies of labels in its files?

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A. Yes.
Q. Is there any way for you to determine when different variations of Aroclor 1248 labels were used? You had a few moments ago told us that the labels contained in Exhibit No. 6 were used over a period of time. So is there any way that you can tell us when the different versions of labels were used?
A. NVF 287, has in the lower left-hand corner the reference 7 dash 56, which would suggest that's July '56 for that label.
Q. Is that a part of the number 1040-260-7-54-53 that you're referring to?
A. Yes, it is. It's 54. That's the one I called a 6. Yes that's the one I'm looking at.
Q. If I could ask you another question, document 288 appears to be a separate label. Is that a label that would have been added to the label -- strike that -- added to the container that contained the label in document 287?
A. That would have been affixed, yes.
Q. Would that have been affixed in May of 1970?
A. No, because I believe those words were on the label in use in 1970.
Q. So the label on Page 288, do you know when that

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would have -- when Monsanto would have begun using that label?

A. I don't know when it began, but it was in effect in the '50s.

Q. That label was used in the 1950s?

A. Yes, sir.

Q. Was it therefore used in the 1960s as well?

A. I believe it was changed after that.

Q. Is there a similar label, a label similar to the label contained on document 288 within that exhibit that came after the label on document 288 and that, let me say, replaced the label on Page 288?

A. As an example, the message on NVF 288 is included, as an example, on the label shown on NVF 313, where the mention is made to avoid prolonged breathing and later on, if skin contact occurs wash with soap and water, if clothing becomes soaked and so on. Those words are now in Exhibit NVF 313. They're part of the label, so they did not need this supplementary label.

Q. And do you know when the label on document 313 was first used?

A. I do not.

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Q. Let me go back to document 287. That small number in the bottom left-hand corner that you referred to a little while ago, would it be correct to say in any of the documents in Exhibit No. 6 that if there is a numbered series similar to the numbered series that's included in the left-hand corner of document 287, that the date would be included in there, in that numbered series?

MR. KLINE: I'm going to object to that question.

MR. WARNING: Based on?

MR. KLINE: Based on he should look at each individual document and not make generalizations on one document.

MR. WARNING: Are you trying to instruct the witness?

MR. KLINE: No. You asked my basis. That's my basis. I think it's overbroad.

Q. Do you understand my question?

A. I believe I do. The answer is no because the number on 287 in the lower left-hand corner is the cataloging number used by the manager of label design at that point in time. You will note later that cataloging numbers changed in

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the way they were displayed with no date included in there any longer. So the labels that came in the '60s, as best I remember, did not have any reference to a date. You would have to go to the catalog list to get the dates when they were introduced.

Q. Are there any other documents in Exhibit No. 6 that you could give us a date when that label was first used?

A. Let me give you some -- these are going to be estimates; I can't give you exact dates.

Q. That's fine.

A. We talked about the supplemental label regarding the environmental situation and how it was added to packaged products starting in May of 1970. The label in use in May of 1970 was similar to that shown on -- I'm sorry, I picked the wrong one -- the label in use and as shown on NVF 313. And on NVF 314 we have a copy of the supplementary label that was affixed to the container. Now, for NVF 315 we now have that same message incorporated on the total label. Now, that NVF 315 must have been designed in late 1970 or early '71.

Q. Why do you say that?

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A. That's about the time that the inventory and labels were depleted. They were used up and new labels had to be printed and with this new printing, it took the opportunity to include the additional message.

Q. Would it be correct to say that any label, any Monsanto Aroclor label that contains the language in the bottom left-hand corner of document 315 within what we've referred to before as the main label would have been produced in late 1970 or early 1971?

A. That is correct.

Q. Would you take a look at document 304, please?

MR. DAVIDSON: 304, is that what you said?

MR. WARNING: Right.

A. I have it.

Q. The language in, excuse me, on document 304 is the identical language which is found in the lower left-hand corner of document 315; correct?

A. Correct.

Q. Was the label identified in 304 -- let me step back. Is the language depicted in document 304 one of those supplementary labels you've referred to in the past?

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A. Yes.
Q. Was that label, therefore, placed on containers prior to either late 1970 or early 1971?
A. Yes.
Q. Do you know when that label was first placed on containers?
A. This supplementary label?
Q. Correct.
A. That's the May, 1970.
Q. Could you take a look at NVF 305, please?
A. I have it.
Q. Was this a supplementary label that was put on containers?
A. Yes.
Q. Do you know when that label was first used?
A. 1971.
Q. Do you know if there was a time when that label was also included with the main label?
A. It was, and an example is NVF 333.
Q. Do you know about when that change occurred to the labels?
A. The waste disposal statements, and I can't find an example of the one I have in mind that was initially on the full label, was introduced in late 1971 and it referred to department 246

instead of, as shown on 333, 831. So there is a label that preceded the one we're looking at here.

Q. Do you know the date of when the what I'll refer to as waste disposal label was added to the main label for the first time?

A. I thought I mentioned that, '71, late '71.

Q. I thought, correct me if I'm wrong, I thought that was when the waste disposal label was first used separately?

A. It was early '71 and later on it was incorporated in the complete label.

Q. I'm sorry, my mistake. On document 333, do you see right before the word "Monsanto" it says "dielectric fluid by." Do you see that?

A. I see that, yes.

Q. You'll notice in some of the other documents in Exhibit No. 6 there is no such language. Is there a difference between dielectric fluid Aroclor 1248 and Aroclor 1248?

A. Some Aroclor 1248 was used as 1248 in electrical equipment. So yes, it could be called and was called a dielectric fluid. The reason this is shown on the label NVF 333 is that when this label was presented the only market for Aroclor

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1248 was dielectric fluids. All other sales were discontinued. This was 1972.

MR. WARNING: Off the record a moment.

(Discussion off the record)

MR. WARNING: I'm handing the court reporter two documents identified as -- and I will ask her to identify them as Papageorge Exhibit No. 7. Bates numbers on these two are NVF 358 and 362.

(Group of documents marked as Exhibit No. 7 for identification.)

MR. WARNING: Correction, the Bates numbers for that Exhibit No. 7 are 358 and 391.

Q. Ask you to take a moment to look at those.

A. I have reviewed the documents.

Q. If you would look at document 358?

A. I have it.

Q. Would you know when the -- strike that. Have you seen that before?

A. Yes.

Q. What is it?

A. It's a copy of a label for Aroclor. I find it hard to read the black rectangle to the right of

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the word "Aroclor." This label was intended for affixing to a sample bottle of the material.

Q. If you would please look at number 391, please.

A. I have it.

Q. Have you seen this document before?

A. I have.

Q. Could you tell us what it is, please?

A. It's a copy of a label for Aroclor that, again, I cannot make out the word in the black rectangle to the right of the word "Aroclor," but this is a mixture of Aroclor with Toluene. 10 percent of the material is Toluene.

Q. Why was 10 percent Toluene mixed with Aroclor if you know?

A. It was added to Aroclor to make it a less viscous, a more free flowing liquid.

Q. Do you know, if an Aroclor which contained 10 percent Toluene and was sold to a customer, do you know if the invoice or any record to the customer would indicate that that contained 10 percent Toluene?

A. That's the official designation of that product, yes.

Q. So, for instance, if a customer received a bill for an Aroclor product which contained 10

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percent Toluene, the bill would list Aroclor plus 10 percent Toluene?

A. Yes.

MR. WARNING: Handing the court reporter a group of documents and ask her to identify them as Papageorge Exhibit No. 8. Bates numbers on these documents are 560, 562, 565, 567, 568 and 572.

(Group of documents marked as Exhibit No. 8 for identification.)

A. I have scanned the documents.

Q. Have you seen these documents before which are contained in Papageorge No. 8?

A. I have.

Q. What are they?

A. They're copies of labels used on containers of Monsanto's product Aroclor 6062.

Q. Were they produced in the ordinary course of Monsanto's business?

A. They were.

Q. Were they or copies of them kept in Monsanto's files?

A. Yes.

Q. If you would look at Exhibit 560 -- strike that

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-- document 560, please?
A. I have it.
Q. Do you know when Monsanto first began using that label on containers?
A. Late '70, early '71.
Q. Why do you say that?
A. This material was developed to replace the PCBs that were withdrawn from the marketplace on August 30, 1970.
Q. Do you happen to know the materials that were taken off the market in -- on August 30, 1970, which this replaced?
A. Not specifically, no.
Q. If you would look at document 561, please.
A. I have it.
Q. Do you know when Monsanto began using that label on containers if that is a label depicted in the documents. Is that a label depicted in the documents?
A. That is a supplementary label. Introduced, 1971 is as close as I can come.
Q. That's all I have on that exhibit. Handing the court reporter a group of documents and ask her to identify them as Papageorge Exhibit No. 9. And the Bates numbers for these documents are

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809 through 813 and 815 through 821.

(Group of documents marked as Exhibit No. 9 for identification.)

Q. Mr. Papageorge, if you would take a moment to look at those documents.

A. I've reviewed the documents.

Q. Have you seen the documents that are contained in Papageorge Exhibit No. 9 before?

A. I have.

Q. What are they?

A. These are copies of labels to affix to containers of Monsanto's hydraulic fluid referred to as Pydraul F-9.

Q. Do you know during the time period of your employment at Monsanto the type of containers that Pydraul F-9 was given to customers in?

A. There were pails, five-gallon pails, and 55-gallon steel drums.

Q. Any others?

A. That's it.

Q. Were these documents produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Were they or copies of them kept in Monsanto's

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files?
A. Yes.
Q. Looking at the documents in this exhibit, all of them except number 813 contain the phrase, quote, the safety hydraulic fluid, end quote. Do you notice that?
A. I do notice the absence of the word "hydraulic" but the word "safety fluid" is present on NVF 813.
Q. Are you aware of any use of F-9 other than as hydraulic fluid?
A. I am not.
Q. Mr. Papageorge, are you -- strike that -- can you place a date on any of the documents in Exhibit No. 9 as to when that individual label was first used?
A. The only dates I can come up with are broad ranging. NVF 809, I would suggest that was middle 1950s.
Q. For that one would you know when it was last used?
A. This particular label, no, I don't. Then NVF 821, I recall that one was in use in 1963 so between the '50s and '63, those intermediate parts of this exhibit were in use, but I don't

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know just when which replaced what here.

Q. That's all I have on those. Thank you. Handing the court reporter a group of documents, I'll ask her to identify them as Papageorge Exhibit 10. Bates numbers for this exhibit are 1083, 1084, 1085, and 1086.

(Group of documents marked as Exhibit No. 10 for identification.)

Q. Also add Bates numbers 1079 and 1080 to that exhibit. If you would take a moment to look at that exhibit, Mr. Papageorge.

A. I have reviewed the documents.

Q. Mr. Papageorge, have you seen these documents before?

A. I have.

Q. Can you tell us what they are, please?

A. NVF 1079 is a copy of the seven language statement regarding environmental presence, care in handling, proper handling to avoid exposures for PCB products that were marketed to the electrical equipment manufacturers starting in 1972, as I recall. NVF 1083 is a revision of the environmental impact statement that was introduced in May of 1970 and includes a

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reference to keeping it away from food, animal feed and pharmaceuticals. This was introduced about 1972. NVF 1085 is a copy of a label that applies to PCB containing products and includes the reference to waste disposal by incineration at Monsanto's plant. NVF 1084 is a copy of a label which was sent by Monsanto to the customer who in turn would affix it to his drum of returned material to the Monsanto plant for incineration. NVF 1086 is a copy of an Aroclor label that was in use prior to the 1950s.

Q. If you would look at document 1083, please?

A. I have it.

Q. I'm sorry, did you say that was a label that was affixed on containers of Aroclor products?

A. Yes.

Q. Was that affixed to all Aroclor products?

A. Yes.

Q. Would you look at document 1084, please?

A. I have it.

Q. Do you know if this document was sent to all Aroclor customers of Monsanto?

A. It was not sent to all. It was sent when requested. And as I remember, it was included in one of the mailings as a sample of the type

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of label available and the salesmen carried a supply with them and dropped them off as he made his calls.

Q. Do you know which letter it was sent with?

A. As I remember it was a letter that referred to the availability of the service at three cents a pound which was perceived to be the break even price. That would have to be about 1971.

Q. Document 1085?

A. I have it.

Q. Could you tell us when that label was first used?

A. Which label?

Q. I'm sorry, maybe it's not a label. The document identified in 1085?

A. Oh, this is, best I can tell it's '71.

Q. Is that a label?

A. Yes. Product name would be above it, and this would be below it.

Q. And I'm sorry, you said it was sometime in 1971 that label was affixed to containers --

A. Yes.

Q. -- of Aroclor?

A. Yes.

Q. All Aroclors?

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A. Yes.
Q. Do you see on that document where it says in case of leak or spill, call collect 618 271-5835?
A. I do.
Q. Do you know why Monsanto included that language on that label?
A. It's an attempt on Monsanto's part to be helpful where it could. And this was one way to let it be known that we would try, once we got a call we would try to contribute when we understood the situation.
Q. Do you know what Monsanto's concern was regarding leaks or spills?
A. It's the concern expressed by that supplemental environmental statement, don't get it into the environment. This is the next step toward improving that situation.
Q. That's all I have with that exhibit. Thank you.

MR. WARNING: Off the record for a moment.

(Brief recess.)

MR. WARNING: Let's start.

Q. Mr. Papageorge, did Monsanto at any time publish

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any literature such as bulletins regarding any warnings that have to do with the use of Aroclor?

A. Yes.

Q. Do you know when?

A. It started back in the 1940s.

MR. KLINE: Would you read back that question? I wasn't listening.

(Question read.)

Q. I'm handing the court reporter a document, ask her to identify it as Papageorge Exhibit No. 11. And this document begins with Bates number 1443.

(Group of documents marked as Exhibit No. 11 for identification.)

Q. Mr. Papageorge, if you would take a moment to look at that exhibit.

A. I will. I have scanned the exhibit.

Q. Have you seen this document before, Mr. Papageorge?

A. I have.

Q. Could you tell us what it is?

A. It's a collection of about five bulletins. Three of them deal with the use of Monsanto's

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Aroclor products to extend or substitute for carnauba wax. One of them deals with the use of Monsanto's Aroclor 1254 in the manufacture of paper draperies. And the fifth one deals with the use of Aroclors in combination with Lindane for pesticide control.

Q. Were these documents produced by Monsanto in the ordinary course of business?

A. Yes.

Q. Were they or a copy of them kept in Monsanto's files?

A. Yes.

Q. And I need to correct for the record the Bates numbers for this exhibit in addition to 141 -- strike that -- 1443 are 1451, 1459, 1467 and 1472. If you would look at page 1475, please, Mr. Papageorge.

A. You say 75, sir?

Q. Yes, 1475.

A. I have it.

Q. In the middle of that page do you see 2 slash 3 slash 53?

A. Yes.

Q. Would that be the date that this document was prepared?

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A. Yes.
Q. Now, if you would look at page 1443, please.
A. I have it.
Q. There appears to be a date near the top of that page. Do you see that?
A. I see the June 1, and 1940 something.
Q. So is it your understanding that this document was prepared sometime during the 1940s?
A. Yes.
Q. Do you know who would have received a copy of this document?
A. Are you talking about within Monsanto, external or both?
Q. I'm sorry, external.
A. External -- this was intended and was shared with manufacturers of wax polishes as well as potential manufacturers, companies that Monsanto's sales force believed might be interested in trying Monsanto's product in preparing a polish or a wax for the marketplace.
Q. That's all I have with that exhibit. Thank you.

I'm handing the court reporter a document I would ask her to identify as Papageorge No. 12. And this document begins

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with Bates number 1548.

(Group of Documents marked as Exhibit No. 12 for identification.)

Q. Mr. Papageorge, I ask you to take a moment to look at that document.

A. I have scanned the document.

Q. Have you seen this document before?

A. Yes, I have.

Q. Can you tell us what it is?

A. This is a Monsanto technical bulletin describing the Aroclors that Monsanto produced for use as plasticizers.

Q. Would you look on Page 1549, please?

A. I have it.

Q. Are the Aroclors listed on that page Aroclors used as plasticizers?

A. Yes.

Q. Are there any other Aroclors used as plasticizers that are not listed on this page that even perhaps were produced after this document was produced?

A. Yes.

Q. What would those be?

A. Well, I remember the Aroclor 5,000 series, 5460,

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5442 and so on. And then the later blends of material referred to as Aroclors were the 6062. That's all that comes to mind at the moment.

Q. Mr. Papageorge, was Papageorge Exhibit No. 12 produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Did Monsanto keep the original or a copy of it in its files?

A. Yes.

Q. Would you turn to Page 1557, please?

A. I have it.

Q. Do you see at the very top of the page under the word "compatibility"?

A. I see it.

Q. The document states, quote, Aroclor compounds --

A. Yes.

Q. Unquote. Do you know what is referred to as Aroclor compounds on Page 1557?

A. Yes. I interpret that as referring to the Aroclors described in this book and it does have the parenthetical exception, except for Aroclor 1268.

Q. Mr. Papageorge, who would have received outside of Monsanto a copy of this document if you know?

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A. This was intended for customers of Monsanto who were purchasing plasticizers of many types from Monsanto who were believed to be in a position where they might be interested in the Aroclor family of plasticizers. It was also shared or given to potential customers, individuals or companies that made inquiries regarding the availability of these types of materials, and this brochure would be offered as a source of information.

Q. Would you look at Page 1548, the first page of that document?

A. I have it.

Q. Do you see where it says December, 1960?

A. I do.

Q. Would that be the date when this document was prepared?

A. Yes.

Q. Thank you. That's all I have of that document.

I'm handing the court reporter a document, ask her to identify it as Papageorge Exhibit No. 13. This document begins with Bates number 1604.

(Technical bulletin PL-311 marked as Exhibit No. 13

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for identification.)

A. I have scanned through the exhibit.

Q. Have you seen this document before?

A. I have.

Q. What is this document?

A. This is a Monsanto technical bulletin on the subject of the use of Monsanto's Aroclor products in the formulation of chlorinated rubber.

Q. Was this document produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Was it or a copy of it kept in Monsanto's files?

A. Yes.

Q. Would you look at Page 1604?

A. I have it.

Q. Do you see near the middle, I believe it says, revised April, 1962?

A. I see that.

Q. Would that be the date that this document was prepared?

A. Yes.

Q. And do you know who would have received outside of Monsanto a copy of this document?

A. This would be companies or manufacturers of

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chlorinated rubber, or potential customers that might be interested in that type of product.

Q. That's all I have with that document. Thank you.

Handing the court reporter two documents and ask her to identify them collectively as Papageorge Exhibit No. 14. The Bates numbers for each documents are 1627 and 1653.

(Group of documents marked as Exhibit No. 14 for identification.)

Q. Ask Mr. Papageorge to take a moment to look at those.

A. I have scanned the exhibit.

Q. Have you seen either of these two documents before?

A. Yes, I have.

Q. Can you tell us what they are?

A. NVF 1627 is the first page of a technical bulletin which describes the Aroclor products of Monsanto. The bulletin that starts with page NVF 1653 is another technical bulletin and describes the Monsanto Aroclor products when used as plasticizers.

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Q. Were each of these produced in the ordinary course of Monsanto's business?
A. Yes.
Q. Were they or a copy of them kept in Monsanto's files?
A. Yes, they were.
Q. Do you know when each of these documents were prepared?
A. The bulletin that starts with page NVF 1627 on Page 24 of that bulletin in the lower right-hand corner you'll see a series of numbers and the zero 4/66 means this was printed in April of 1966. The technical bulletin that starts with Page NVF 1653 on the page identified as NVF 1705, in the lower right-hand corner, there is a series of numbers and you'll see in the middle of that series it looks like 9/66, September of '66.
Q. Do you know who outside of Monsanto received copies of each of these two documents?
A. Monsanto customers of plasticizers including the Aroclor plasticizers and potential users of such products.
Q. The document which begins 1627, is that document not limited to plasticizers?

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A. No, this is broader.
Q. Does that mean it was sent to customers beyond plasticizer customers?
A. That is true.
Q. Would it have been sent to customers who used Aroclors as a heat transfer fluid?
A. I believe so, yes.
Q. Would it have been sent to customers who used Aroclors as hydraulic fluid?
A. This particular bulletin seems to emphasize the electrical use and some other industrial applications but it does not emphasize the use as an ingredient in hydraulic fluids or as a heat transfer fluid, but it does refer to the availability of other bulletins for those applications.
Q. Where do you see that reference?
A. On the page that's marked Page 2 of the bulletin in the lower right-hand corner, it starts off, ask your man from Monsanto for additional Aroclor literature, and it lists other uses there.
Q. Do you see there where it states, engineering heat transfer data?
A. Yes.

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Q. Are you familiar with what that refers to?
A. Not in detail, but as I remember, it talked about heat capacities and the temperature that could be reached without destroying the fluids, what kinds of pressures were involved, what kind of materials should be used in the systems for gaskets and seals so the system did not fail. That's the kind of data it had.
Q. What do you mean by fail?
A. If you have a gasket that can't withstand the material it will deteriorate and the material will spray out of that joint where the gasket is supposed to keep it intact.
Q. This engineering heat transfer data, was that a brochure or bulletin that was published by Monsanto?
A. Yes.
Q. Was that published in April, 1966 or sooner?
A. Yes.
Q. Do you know who outside of Monsanto would have received that document?
A. Any potential customer, of course, or any customer who was already using Monsanto's products and needed an update or an updated copy of the bulletin.

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Q. Why would someone need an updated copy of the bulletin?
A. That's rather typical in bulletins where new information is made available that new information is included either an addendum sheet or as a whole new bulletin and new copies are given to the possessors of the old copy to keep them up-to-date.
Q. Is it correct to say based on what you're telling us that every customer who used heat transfer fluid received some type of bulletin related to the use of Aroclors as a heat transfer fluid?

MR. KLINE: I'm going to object to this point since we've been using customer in a variety of ways today as either indirect or direct or both. I think it's vague and ambiguous.

Q. Do you know what I'm referring to?
A. Yes, you're indicating that you're asking me if I knew that every customer who had a heat transfer system that used Monsanto's PCB type fluids received a new bulletin when it was printed. The intent was to supply this customer with a new bulletin. Whether it was achieved

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completely I'm in no position to know. There is too many of them out there.

Q. When a customer began purchasing Aroclors for use as heat transfer fluid, was it normal practice for Monsanto to provide that customer with a document that explained the use of the Aroclor as a heat transfer fluid?

A. Yes.

MR. KLINE: Again, objection. Are we talking about direct or indirect customers? Were the bulletins provided directly to the customers, the direct customers or indirect or both?

MR. WARNING: Talking about customer as Mr. Papageorge has defined customer today.

MR. KLINE: Meaning what?

MR. WARNING: What he's told us.

MR. KLINE: Objection stands.

Q. That's all I have with that exhibit. Thank you.

I'm handing the court reporter a group of documents I'll ask her to identify these as Papageorge Exhibit No. 15. And the Bates numbers in this group include 1707, 1719, 1758, 1792, 1831, 1891, 2038, 2053 and 2070.

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(Group of documents marked as Exhibit No. 15 for identification.)

A. I have scanned the exhibit.

Q. Have you seen the documents in this exhibit before?

A. I have.

Q. Could you tell us what they are, please?

A. You want me to describe each one individually here as a group or --

Q. If you can group any of them together that would be great.

A. I'll try. The document starting with NVF 1707 is a technical bulletin prepared by Monsanto describing the use of Aroclor 1248 in the heat transfer system for chemical operations. The next three or four, are technical bulletins, the first page of the first bulletin is NVF 1719, the second one is 1758, the third one 1792, the fourth one is 1831. These are several versions of the information relating to the use of Aroclor 1248 in heat transfer equipment. The last four bulletins are technical bulletins dealing with the Aroclor plasticizers sold by Monsanto. The first one is NVF 1891, that's the

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number of the first page; second one NVF 2038; third one, NVF 2053; and the fourth one, NVF 2070. The last four I just mentioned are bulletins describing the general subject of plasticizers of the Aroclor type.

Q. Mr. Papageorge, were all of these documents produced in the ordinary course of Monsanto's business?

A. Yes.

Q. Were they or copies of them kept in Monsanto's files?

A. Yes.

Q. The document which begins Page 1707, see near the top of that Page 1707 is a date September, 1949?

A. I see it.

Q. Would that be the date that this document was prepared?

A. Yes.

Q. If you would look at Page 1710, please?

A. I have it.

Q. Do you see the second column under design and construction?

A. I see it.

Q. There is a heading in all cap letters entitled,

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"Heating System"?

A. I see it.

Q. That sentence there refers -- I'll read it. It states: "The heating system required to utilize Aroclor 1248 as the exchange medium includes a heater (Figure 1), cooler, pump and expansion tank (Figure 2) and control and safety circuits (Figure 3)." Do you see that?

A. I see it, yes.

Q. Do you know whether all of these elements listed in that sentence are necessary for the proper operation of a heat transfer system?

A. Definitely, yes.

Q. If one of those elements listed there is not present in the heat transfer system, do you know what the result could be if you try to operate the system without it?

A. You can't operate it.

Q. When you say you can't operate it, does that mean if you flip the switch it won't run?

A. It will not operate as a heat transfer system. If the pump is missing, you can't circulate the hot liquid. If the heater is missing, you can't create a hot liquid. So any of those elements is missing and you can't start up the system.

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Q. What if the expansion tank is missing?
A. There is nowhere to hold it. The system starts up, the liquid goes over to the heater through the system and back to that tank.
Q. Mr. Papageorge, would it be possible for you to date any of the documents -- well, to make it easier, the remaining documents in Exhibit No. 15 other than the one that begins 1707.
A. The technical bulletin that starts with page NVF 1719, on the pages designated as NVF 1754 and 1755, you'll see a string of numbers again, and it appears, if my eyesight is good, looks like April '56. I need a magnifying glass to read that, but that's what I would look for that would help date that. And on the page NVF 1752 the literature cited would indicate that '56 is a reasonable date as compared to the first citation of the Monsanto data bulletin dated 1954 on page 1752.

MR. KLINE: Off the record.

(Discussion off the record)

A. On the bulletin that starts with NVF 1758, I find no similar reference, so I cannot date it. On the bulletin starting with page NVF 1792, I find on pages NVF 1826 and 1827, I'm sorry --

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not 1827, it's 1828. The reference to April or a zero four, 56. April of '56. The technical bulletin that starts with page NVF 1831, shows on NVF 1866 and 1868 the same April '56 date. The technical bulletin starting with NVF 1891, shows on page NVF 1943 the date 0568, could be a 6 but I think it's an 8, so it's May '68. The bulletin that starts with NVF 2038 on page NVF 2052 the lower right-hand corner you see a 3 slash '70, March, '70. The bulletin that starts with page NVF 2053 on page NVF 2068, in the string of numbers at the lower right-hand corner, I can't make out whether it's a 6 or 8 of 1970 in the string of numbers.

Q. Mr. Papageorge, do you see on that page above the Bates number and above the line a three slash '70?

A. Yes, that's the date of this office list which is a duplicate of the previous one.

Q. So, I'm sorry, the date for the document which begins on page 2053 is?

A. It's the reference there, zero 6 or 8, I can't make it out, '70 just above the bottom line there. The bulletin that starts with NVF 2070 I find no reference to a date but from the

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contents of the material, it would indicate that this bulletin is dated sometime in 1971.

Q. Mr. Papageorge, would you look at the document which begins with Bates number 1707?

A. I have it.

Q. Do you know who would have received that document outside of Monsanto?

A. This was intended for potential customers of a heat transfer fluid to be used in their operations.

Q. And documents 1719, 1758, 1792 and 1831?

A. What were the numbers again?

Q. 1719?

A. I have it.

Q. 1758?

A. I have it.

Q. 1792?

A. Right.

Q. And 1831?

A. Okay.

Q. Do you know who would have received those?

A. These documents were also intended to promote the use of Aroclor 1248 in heat transfer systems and were intended for sharing with potential customers.

WATER_PCB-SD0000074316

Q. And finally documents beginning with 1891, 2038, 2053 and 2070, do you know who would have received those documents?
A. Yes, I think we answered that before on the plasticizer uses. This was intended for Monsanto's customers who were using other plasticizers for Monsanto; in other words, they were already customers but the intent was to get them interested in the properties offered by the Aroclor type plasticizers and it was also intended again to share with potential customers to interest them in this product line.
Q. I'm sorry, did you say they were sent to current Monsanto customers who were using plasticizers?
A. Yes.
Q. Who already had been using plasticizers?
A. Yes, other than the Aroclor plasticizers.
Q. That's all I have off that exhibit.

MR. WARNING: Off the record a moment.

(Discussion off the record)

MR. WARNING: Back on the record.

Q. I am handing the court reporter a group of documents I'll ask her to identify as Papageorge Exhibit 16.

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(Group of documents marked as Exhibit No. 16 for identification.)

Q. I'll ask Mr. Papageorge to look at the documents in Exhibit No. 16, and the Bates numbers for this exhibit?

MR. LOHMAR: Are those written down? Why don't you read them into the record and pass them around?

MR. WARNING: These are the following Bates numbers in Exhibit No. 16: 2363, 2371, 2378, 2400, 2422, 2444, 2469, 24 the eight, 2527, 2556, 2585, 2614, 2645, 2675, 2706, 2738, 2770, 2800, and 2848.

MR. LOHMAR: Just for the record, those are the beginning Bates numbers of the various documents?

MR. WARNING: Yes, as we have been doing throughout today, those are the first pages of separate documents all included in this exhibit, being No. 16.

A. I have scanned the exhibit.

Q. Mr. Papageorge, have you seen the documents contained in Exhibit No. 16 before?

A. I have.

WATER_PCB-SD0000074318

Q. Could you tell us what they are, please.
A. These documents are product bulletins on the subject of Aroclors manufactured by Monsanto. They are Monsanto bulletins. The first two, the ones starting with NVF 2363 and NVF 2371, describe the physical properties of Aroclors. I cannot determine just when they were printed, but I would suggest that it has to be 1940s at the latest. The next 15 all carry the same title and represent the various revisions that were published throughout the years and the title is the Aroclors physical properties and the suggested applications. The first of the 15 has a date of April, '43, starts with NVF 2378. As best I can tell, the next document starting with NVF 2400 is the same as the previous. They have the same title, subject matter and date of printing. The copy starting with NVF 2422 does not have a printed date on it, but on the front page there is handwritten a date 1946, about the middle of the page towards the right-hand side, just to the right of the reference to P dash 115. The copy that starts with NVF 2444 on page NVF 2468 the date is August, '47. The copy that starts with page NVF 2469, on page NVF 2496 the

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date is October, '48. On the copy starting with NVF 2498, on the page designated as NVF 2525 the date is April, '49. The copy starting with NVF 2527 shows on page 2554 the date of June, '50. The copy that starts on NVF 2556 shows on page NVF 2583 the date of January, '52. The copy that starts on NVF 2585 shows on page NVF 2612 the date of November, '52. The copy that starts on NVF 2614 shows on page NVF 2641 the date of March, '53. The copy that starts on NVF 2645 shows on the page NVF 2672 March '54. The copy that starts on NVF 2675 shows on page NVF 2702 as February, I can't make out whether it's '63 or '65, or '55. It's hard to read. I think it's '55. The copy that starts on NVF 2706 shows on page NVF 2733 as December, '55. The copy that starts on NVF 2738 shows on page NVF 2765 November '56. The copy that starts on NVF 2770 shows on the page NVF 2797 November '67. Now that covers the series that has been identified as "Physical Properties and Suggested Applications Bulletin P dash 115." The remaining documents in this exhibit have in essence the same type of information except that the title has been changed to just simply "The

WATER_PCB-SD0000074320

Aroclor Compounds" as distinguished from "The Aroclors Physical Properties and Suggested Applications." I can find no specific reference to a printing date. There is a handwritten note on the upper right-hand corner of the copy that starts with NVF 2848 on that page there is a handwritten note 23rd reprinting, parentheses, several corrections, close parentheses, May 1962, 5,000 copies.

Q. On that document you just referred to, do you know whose handwriting that is?

A. I do not recognize it.

Q. Mr. Papageorge, were all these documents prepared by Monsanto in its ordinary course of business?

A. Yes, sir.

Q. Were these documents or copies of these documents kept in Monsanto's files?

A. Yes.

Q. The documents that were different versions that you identified of bulletin number P dash 115, when a subsequent version was produced -- strike that -- prepared, does that mean that version replaced the prior version?

A. Yes.

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Q. Does that mean that the prior version would then not be sent out any longer?
A. That is true.
Q. I mean sent out to non Monsanto parties?
A. That is true, yes.
Q. For that group of documents, do you know who would have received the different versions of that bulletin P dash 115?
A. Well, again it's the plasticizer customers of Monsanto. And for the revisions of this bulletin, the former recipients would get a new version or a new edition and it was also intended for use by the marketing people to share with potential customers and in response to inquiries from potential customers.
Q. The various versions of bulletin number P dash 115 were not limited to the use of Aroclors as plasticizers; is that true?
A. No, you're right, it's not limited just to plasticizers. There are, I thought I saw references to heat transfer.
Q. Does that mean that therefore customers and potential customers other than plasticizer customers and potential customers would have received copies of these?

WATER_PCB-SD0000074322

A. Yes.
Q. Does that mean heat transfer fluid customers and potential heat transfer fluid customers would have received copies of these versions of bulletin P dash 115?
A. They may have received this one or they may have received a bulletin specifically entitled "Heat Transfer Systems" like we saw with the Aroclor 1248 previously.
Q. For documents number 2363 and 2371 in this exhibit, the first two documents, do you know who these documents would have been sent to outside of Monsanto?
A. Anyone perceived by Monsanto's marketing staff as having an interest in this kind of information and hopefully they would eventually become customers.
Q. The last two documents in this exhibit, again if you could tell us if you know who would have received copies of these documents outside of Monsanto, documents 2800 and 2848?
A. They would be again the broad description of customers in terms of those interested in plasticizers, those interested in heat transfer, there is even some mention occasionally here

WATER_PCB-SD0000074323

electrical use, so it's a little broader spectrum of potential and current customers that might receive a copy of this.

MR. WARNING: Off the record a moment.

(Discussion off the record)

Q. Mr. Papageorge, if you would look at Page 2516 in this exhibit, please.

A. I have Page 2516.

Q. Do you see the heading, "Gaskets and Packing Materials"?

A. I do.

Q. If you would take a moment to read the first paragraph under that heading.

A. I have read it.

Q. If you would now read the next column, the paragraph which begins Silastic, and appears to be the third paragraph?

A. I see it.

Q. If you would read that paragraph, please?

A. I've read it.

Q. If you would read the paragraph below that which begins Teflon?

A. I've read it.

Q. This section that you've just looked at appears

WATER_PCB-SD0000074324

to be discussing the use of Aroclors in heat transfer systems; is that true?

A. Well, it does mention heat transfer systems but it also refers to elevated temperature in the use of Aroclors.

Q. So would it be correct to say it refers to the use of Aroclors at elevated temperature?

A. Yes.

Q. Does what you've read mean that gaskets in systems that use heated Aroclor can swell?

A. Depending on the temperature that that Aroclor is brought up to.

Q. Can you explain that? Does that mean that the higher the temperature the more the likelihood of swelling?

A. The higher the temperature the greater the effect on some material used as gasketing so care must be taken in selecting a material that will withstand the temperature expected in the operation.

Q. And this expansion, does that mean that seals could break if the proper equipment is not used?

A. Certainly.

Q. Do you know what proper gaskets and seals should have been used in systems that use hot Aroclor?

WATER_PCB-SD0000074325

A. I don't call them from memory, but I do know that certain materials were recommended for certain conditions of use.

Q. And do you know if Monsanto published information regarding the proper material to use in those situations?

A. Seems to me I recall references to different kinds of materials that were found to be satisfactory for certain conditions.

MR. WARNING: That's all I have with this exhibit. Thank you.

(Witness will read and sign transcript)

(Deposition suspended)

WATER_PCB-SD0000074326

STATE OF _____)

COUNTY OF _____)

I, WILLIAM B. PAPAGEORGE, do hereby certify:

That I have read the foregoing deposition;

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

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

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

Executed this _____ day of _____, 1997, at _____, _____.

_____

NOTARY PUBLIC

My Commission expires: _____

_____

WILLIAM B. PAPAGEORGE

WATER_PCB-SD0000074327

CERTIFICATE OF REPORTER

STATE OF MISSOURI)
) SS
COUNTY OF ST. LOUIS)

I, NANCY A. KUNCAITIS, a Registered Professional Reporter and Notary Public in and for the State of Missouri, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me to the best of my ability and thereafter reduced to typewriting under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.

_____
NOTARY PUBLIC in and for the State of Missouri

My commission expires 11-22-97

WATER_PCB-SD0000074328

CO 220
Rev. 1-70

Monsanto

ROS Shipping

0/UW456/JL28/0813/0814/2/ZI773/FH/GZQ ORG DSOS

SHIPPER'S NO.	DISTRICT	DATE ENTERED	CUSTOMER'S ORDER NO.	INVOICE DATE	INVOICE NUMBER
554382	WL	7/28/70	207-391-C		

TERMS	DATE SHIPPED	CAR INITIALS AND NO.
NET 30 DAYS	8-13-70	

PREPAID OR COLLECT—ROUTING
COLLECT MALONE-CR

DELIVERY F.O.B.
ANNISTON ALABAMA

SHIPPED FROM	WHSE. CODE	BOOKED THRU	COPIES CODE	CUST. FORM
ANNISTON	09			

SOLD TO
AMERICAN MINERAL SPIRITS COMPANY 23268
A DIVISION OF UNION OIL COMPANY OF CALIFORNIA
3100 SOUTH MEACHAM ROAD
PALATINE ILLINOIS 60067

Papageorge
EXHIBIT NO. 3
7-30-97
N. KUNCAITIS

SHIPPED TO
NVF COMPANY
LAFAYETTE AND CEDAR STREET
KENNETT SQUARE PENNSYLVANIA
ORDER NO. 197-89P

DESCRIPTION	QUANTITY
54- 600 LB DRS-30 Steel AROCLOR 1254 1040-280-04-09 LESS DISTRIBUTOR DISC 5 PCT	32400 LBS

CAR

R.

8/13/70

EXPECT TO SHIP
8/13/70

SPECIAL INSTRUCTION

SHIPPING DATE	ARRIVAL DATE
	WEEK OF AUGUST 10- CR

STENCIL PRODUCT NAME AND LOT NUMBER ON TOP AND SIDES OF ALL DRMS INCLUDE B/L WITH SHIPMENT WHICH STATES QUANTITY AND TYPE PLASTICIZERS PLS KEEP ALL CONTAINERS OF ONE PRODUCT TOGETHER SHOW P O NO 197-89P ON ALL DRUMS

NVF 000038

Monsanto

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

February 19, 1970

Mr. E. M. Toby, President
American Mineral Spirits Co.
Div. of Union Oil of Calif.
1345 Avenue of the Americas
New York, New York 10019

Dear Sir:

Recently several newspaper and magazine articles have been published indicating that Polychlorinated Biphenyls (PCBs) have been discovered at some points in some marine, aquatic and wildlife environments. The quantities detected are in the parts per million and parts per billion categories. It is claimed that the PCBs found strongly resemble chlorinated biphenyls containing 54% and 60% chlorine by weight. Products which are sold by Monsanto under the trade-names of Aroclor ® 1254 and 1260 contain chlorinated biphenyls.

Monsanto has decided to notify all its customers of Aroclor ® products of the publicity surrounding PCBs. A copy of the letter which will be sent to our customers is attached. This letter is intended to alert our customers to a potential problem of environmental contamination through the application, processing and effluent disposal of Aroclor ® 1254 and 1260.

We feel it is very desirable that you, as a reseller of Monsanto's Aroclor ® plasticizers, alert your customers to this potential problem. This should be done promptly and, ideally, all customers should be notified at the same time. A record should be kept of all customers notified, along with the dates on which the letters were transmitted.

NVF 000039

WATER_PCB-SD0000074330

D. H. Becntold - Chicago
J. D. Wright
WFW/W. E. Schalk
W. B. Papageorge
P. C. Park
E. H. Fording - New York
J. J. McNamara - Everett
R. N. Brell - Wilmington

You will note that attached to the notification letter is a copy of a reprint of an article that appeared in Chemical Week, October 29, 1969, regarding water pollution standards set by each state in the Union. This article helps to put our letter in proper context. As mentioned in the article, good manufacturing practice in the future may require that no products used by any company be lost or discharged in such a manner as to ultimately be found in waterways.

For your guidance, we intend to mail the attached letter to all our Aroclor ® customers around February 27. The letter will be addressed to the Office of the President at the Accounts Receivable address which we hold in our files. We will send you sufficient copies of the letter for your needs in notifying your customers.

To help you further, we have drafted a cover letter which you may wish to use in notifying your customers. A copy is attached, but the decision whether to use it or draft your own cover letter is, of course, yours.

We regret the work that this request may cause you. As a responsible supplier, however, we feel we have a duty to keep our customers fully informed on matters concerning the safe handling of our products. We are sure of your support in this matter and are confident of your assistance along the lines indicated.

Very truly yours,

W. E. Schalk

W. E. Schalk
Director of Sales
Plasticizers

/dbw

cc: D. Stewart
P. E. Schmeal
L. W. Norkus
A. S. Hoyer
J. W. Schrage

WATER_PCB-SD0000074331

Monsanto

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

February 19, 1970

Dear Sir:

Recently several newspaper and magazine articles have been published indicating that Polychlorinated Biphenyls (PCBs) have been discovered at some points in some marine, aquatic and wildlife environments. The quantities detected are in the parts per million and parts per billion categories. It is claimed that the PCBs found strongly resemble chlorinated biphenyls containing 54% and 60% chlorine by weight. Products which are sold by Monsanto under the trade-names of Aroclor ® 1254 and 1260 contain chlorinated biphenyls.

Monsanto has decided to notify all its customers of Aroclor ® products of the publicity surrounding PCBs. A copy of the letter which will be sent to our customers is attached. This letter is intended to alert our customers to a potential problem of environmental contamination through the application, processing and effluent disposal of Aroclor ® 1254 and 1260.

We feel it is very desirable that you, as a reseller of Monsanto's Aroclor ® plasticizers, alert your customers to this potential problem. This should be done promptly and, ideally, all customers should be notified at the same time. A record should be kept of all customers notified, along with the dates on which the letters were transmitted.

NVF 000041

WATER_PCB-SD0000074332

You will note that attached to the notification letter is a copy of a reprint of an article that appeared in Chemical Week, October 29, 1969, regarding water pollution standards set by each state in the Union. This article helps to put our letter in proper context. As mentioned in the article, good manufacturing practice in the future may require that no products used by any company be lost or discharged in such a manner as to ultimately be found in waterways.

For your guidance, we intend to mail the attached letter to all our Aroclor ® customers around February 27. The letter will be addressed to the Office of the President at the Accounts Receivable address which we hold in our files. We will send you sufficient copies of the letter for your needs in notifying your customers.

To help you further, we have drafted a cover letter which you may wish to use in notifying your customers. A copy is attached, but the decision whether to use it or draft your own cover letter is, of course, yours.

We regret the work that this request may cause you. As a responsible supplier, however, we feel we have a duty to keep our customers fully informed on matters concerning the safe handling of our products. We are sure of your support in this matter and are confident of your assistance along the lines indicated.

Very truly yours,

W. E. Schalk

W. E. Schalk
Director of Sales
Plasticizers

/dbw

NVF 000042

WATER_PCB-SD0000074333

Suggested Letter from Distributor to Aroclor ® Customers

Dear Sir:

Recently several newspaper and magazine articles have been published indicating that Polychlorinated Biphenyls (PCBs) have been discovered at some points in some marine, aquatic and wildlife environments. The quantities detected are said to be in the parts per million and parts per billion category.

It is claimed that the PCBs found strongly resemble chlorinated biphenyls containing 54% and 60% chlorine by weight. We are distributors for products with the trade-names of Aroclor ® 1254 and 1260 and these contain chlorinated biphenyls.

As your supplier of Aroclor ® 1254 and 1260, we wish to alert you to the potential problem of environmental contamination as referred to in the newspaper and magazine articles.

Aroclor ® 1254 and 1260 are manufactured and sold to us by Monsanto Company. For your further clarification and guidance, we would refer you to the attached letter sent by Monsanto to its customers concerning PCBs. We have also attached a reprint of a recent article from Chemical Week, October 29, 1969, regarding water pollution standards set by each state in the Union.

With the present public and government concern with environmental contamination, good manufacturing practice in the future may require care in the application, processing and effluent disposal of all products used by your company.

Very truly yours,

NVF 000043

WATER_PCB-SD0000074334

Monsanto

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

Dear Customer:

Recently several newspaper and magazine articles have been published indicating that Polychlorinated Biphenyls (PCBs) have been discovered at some points in some marine, aquatic and wildlife environments. The quantities detected are said to be in the parts per million and parts per billion categories.

It is claimed that the PCBs found strongly resemble chlorinated biphenyls containing 54% and 60% chlorine by weight. Products which are sold by Monsanto under the tradenames of Aroclor® 1254 and 1260 contain chlorinated biphenyls.

As your supplier of Aroclor® 1254 and 1260, we wish to alert you to the potential problem of environmental contamination as referred to in the newspaper and magazine articles.

We would like to point out the following additional facts.

1. Certain Monsanto products which are sold under the Aroclor® trademark, namely Aroclor® 5060, 5442 and 5460, are not polychlorinated biphenyls.

2. PCBs with a chlorine content of less than 54% have not been found in the environment and appear to present no potential problem to the environment.

NYF 000044

WATER_PCB-SD0000074335

We feel that all possible care should be taken in the application, processing and effluent disposal of these products to prevent them becoming environmental contaminants. Of interest to you may be an article in Chemical Week, October 29, 1969 regarding water pollution standards set by each state in the Union. It is attached. This article reflects the view that good manufacturing practice in the future may require that no products used by any company be lost or discharged in such a manner as to ultimately be found in waterways.

Very truly yours,

W. E. Schalk
Director of Sales
Plasticizers

ek

WATER_PCB-SD0000074336

Environment

The huge water requirements of the chemical industry—now the nation's third largest user—make water quality and availability increasingly important factors for site selectors. Legislation enacted in recent years has forced planners to pay close attention to pollution control standards.

All 50 states have had their water quality standards approved entirely or in part by the Federal Water Pollution Control Administration (FWPCA). Recently a state-by-state summary of key standards was put together for the first time. Surprisingly, it was not the FWPCA that did the job. Instead it was handled by an American Public Health Assn. (APHA) subcommittee headed by TVA Health Director F. E. Gartrell, assisted by the APHA Engineering and Sanitation Section. A portion of the study, covering standards for surface industrial water, is summarized in the tables starting on p. 80.

Contrary to widely held opinions, there is considerable variation in state standards. Take the dissolved oxygen (DO) standard, for example. Minimum allowable DO (as milligrams per liter or percent saturation) is the single most important standard to chemical site evaluators. As a rough rule of thumb, a 2-mg./l. standard is considered to be one industry can live with comfortably, while a 6.0 mg./l. value is pegged "extremely tough."

California, Wyoming and Washington have set the standard at 6 mg./l. or higher. But a few states such as Connecticut, Maine, Illinois, Indiana, Massachusetts, Virginia and Wisconsin require 2 mg./l. or lower.

Other standards—notably turbidity, taste, odor, color and solids—may also be important, depending upon the nature of the chemical plant's waste effluents. These standards also exhibit state-by-state differences. Moreover, they are generally less specific than the straight numerical DO standards.

Although chemical plant site experts see little point in "running from tough standards," the criteria do make a difference: Plans for two nonferrous metals plants in Puerto Rico are now on the shelf, because of standards that call for a 4.5 mg./l. DO, no wastes that interfere with the esthetics of the waters and other specifications.

No compilation of ground water standards has yet been published. Ground water standards may prove important in the future as companies are forced to use costly deep-well disposal for wastes. Availability of ocean waste disposal services is also looming more important.

Waste Cost: The price tag for pollution control is high. A recent FWPCA study on the organic chemicals industry estimated that water waste-treatment facilities can increase installed capital equipment costs 40% or more. Between '69-'73, the organic chemical industry would have to shell out $182.5 million to remove 10% of its biological and chemical oxygen demand waste and 65% of its suspended solids. Removal levels of 83%, 13% and 71%, respectively, for biologic oxygen demand, chemical oxygen demand and suspended solids would require $242.6 million, while 98%, 30% and 89%, respectively, would up the ante to $608 million.

Cleaner Air: Establishment of air quality standards is not nearly as far advanced as are water standards. The National Air Pollution Control Administration (NAPCA) is still designating regional air control regions. At last count, 16 regions had been formally designated and another 41 had been proposed. NAPCA has issued air quality criteria and control technology data for sulfur oxides and particulate matter, will follow with similar studies for other pollutants.

Once criteria and control data have been issued for a pollutant and control regions have been designated, a complicated process involving standards, hearings and implementation and enforcement plans will be initiated that can take over a year to produce standards.

So far, no firm sulfur oxide or particulate standards have emerged. But NAPCA's criteria for setting the standards suggest they'll be tough. The oxide criteria report, for example, emphasizes that there are deleterious effects to man at concentrations as low as 0.04 ppm.

NAPCA's control data reports present detailed appraisals of various methods and equipment, along with estimated costs. As in the case of water, the costs will be high, although some pollutants—mainly sulfur dioxide—will have recovery values. NAPCA is sponsoring a number of research projects to improve technology. Pollution control is being spurred by financial assistance programs (mandated by state law) now operative in the following 28 states:

Arizona, Arkansas, California, Connecticut, Florida, Georgia, Idaho, Illinois, Indiana, Maine, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, Washington, Wisconsin and West Virginia.

In addition, Pennsylvania offers financial aid sanctioned by administrative regulation. Several states, including Utah and Maryland have legislative studies under way.

The incentives take a variety of forms. Most common are exemption from personal property taxes (e.g., Arkansas), fast depreciation (Arizona), exemption from ad valorem equipment and structures taxes (Connecticut), exemption from local taxes for stated period of time (New Hampshire), operating loss deductions (New York); credit against state income tax (Oregon).

Quantity: The large chemical complexes now in vogue make water—and lots of it—a major site criterion. The cooler the water is, the better, for it can reduce the investment in heat-exchange equipment. Occasionally, plants can manage on ground water, but usually surface water is required. That means location on or near the big, drought-resistant rivers. There are less than 200 rivers in the U. S. with minimum flows over 50 cu. ft. per second *(CW Oct. 5, '68, pp. 94-95)*. For companies whose plant needs at least 100 cu. ft/second, the list numbers only 150 (excluding Alaska). Sea water is generally avoided because of high equipment corrosion costs.

Piping water in is expensive. Duval, now opening a 1.5 million tons/year sulfur mine in the arid Northwest area, was forced to install a 36-in., 38-mile-long water line and a 40-million-gal. reservoir. Cost of the water supply system hasn't been disclosed, but it is estimated that the tab was at least several million dollars.

The adequacy of domestic water resources in the year 2000 has recently been evaluated by the Geological Survey. Nationally, projected demand will be 173% of potentially assured supply. Only in three regions, New England, Ohio, and the South Atlantic Eastern Gulf, will future water requirements be easily met. Economic growth may be handicapped in nine regions: Eastern Great Lakes, Lower Mississippi, Upper Missouri-Hudson Bay, Lower Missouri, Western Gulf—Rio Grande, Pecos, Colorado, Great Basin, and Central and South Pacific.

WATER_PCB-SD0000074337

For the first time, a summary of water quality standards set by all 50 states.

	pH Allowable Range	pH Allowable Deviation	Temperature (°F) allowable Maximum	Temperature (°F) allowable increase above ambient	Dissolved oxygen (minimum, mg./l. or %)	Other Requirements
Alabama	6.0–8.5	1.0	90° (24 hrs.) 93° (any 8 hrs.) 93° (cooling water)	10% — 10°	2.0 at 5 ft. or middepth if less than 10 ft.	Radioactivity, Color, Taste and Odor, Toxic Substances: Only in amounts that would not render waters unsuitable for industrial-cooling and process-water supply purposes. Solids: Free from waste materials that cause unsightly or putrescent conditions or interfere directly or indirectly with industrial use.
Alaska	7.0–8.0	0.5	70°	—	5.0	Radioactivity: Not to exceed limits of PHS Drinking Water Standards. Turbidity: No imposed values that would interfere with established levels of treatment. Color: True color less than 50 color units. Taste and Odor: Shall not unreasonably impair esthetic considerations. Solids: No dissolved solids above natural conditions causing corrosion or scaling problems. No visible evidence of other floating solids or sludge deposits. No imposed sediment loads that would interfere with established treatment levels.* Toxic Substances: Chemical constituents should be below concentrations found to be of public health significance.*
Arizona	6.5–8.5	0.5	93°	5°	—	Radioactivity: Not to exceed 1/30 of the MPC$_w$ value given for continuous occupational exposure in NBS Handbook 69. Turbidity: 50 JCU (streams); 25 JCU (lakes). Color: Free from waste materials in amounts sufficient to change existing color enough to interfere with industrial use or to create a nuisance. Taste and Odor: Free from wastes in amounts sufficient to produce enough taste and odor to create a nuisance or interfere with industrial use. Solids: Free from wastes that would be unsightly, putrescent, odorous or in amounts that would interfere with industrial use. Toxic Substances: Free from wastes toxic to human, animal, plant or aquatic life or in amounts that would interfere with industrial use.
Arkansas	6.0–9.0	1.0 (24 hrs.)	95°	5°	4.0 (average for any cross section)	Radioactivity: "Rules and Regulations for the Control of Ionizing Radiation," Arkansas Board of Health, apply. Turbidity: No distinctly visible increases due to wastes. Color: Shall not be increased to the extent that it interferes with industrial use, present or future. Taste and Odor: Must not cause offensive odors or otherwise interfere with industrial use. Solids: No distinctly visible persistent solids, bottom deposits or sludge banks due to wastes. Toxic Substances: Must not be present in amounts toxic to human, animal, plant or aquatic life.
California	6.5–8.6 7.0–8.6 (Coastal waters)	—	71.6°* (fresh water)	None that would cause ecological change or harm aquatic life (coastal waters)*	6.0 Coastal water: 5.0 (unless naturally lower)	Radioactivity: Shall not exceed 1/10 of the MPC$_w$ values given for continuous occupational exposure in NBS Handbook 69. Turbidity: Free from wastes that could alter water's existing turbidity. Color: Free from substances attributable to wastes that produces detrimental color. Taste and Odor: No substances that impart foreign taste or odor. Solids: Dissolved solids in fresh water must not exceed 300 mg./l. at any time; annual mean: 175 mg./l. Settleable solids must not be able to change nature of stream bottom or harm aquatic environment. Toxic Substances: At all times free from concentrations harmful to humans, aquatic life or wild or domestic animals.
Colorado	5.0–9.0	—	93°	—	3.0	Radioactivity: Not to exceed 1/30 of the 168-hr.-week values in NBS Handbook 69. Turbidity: Must not interfere with established levels of treatment. Color: Wastes present must not cause appreciable change in color or interfere with industrial use. Taste and Odor: Free from wastes that cause odor or appreciable change in taste. Solids: Free from wastes that are unsightly, putrescent or odorous or would interfere with use. Toxic Substances: Free from wastes in concentrations or combinations sufficient to harm human or animal life.
Connecticut	6.0–9.0	—	—	None unless it does not exceed recommended limits for industrial use	2.0	Radioactivity: Limits to be approved by appropriate state agency. Turbidity, Color, Taste and Odor: None in such quantities that would impair industrial use. Solids: Limited to small amounts that may result from discharge of appropriately treated wastes. Toxic Substances: Free from chemical constituents in concentrations or combinations harmful to human, animal or aquatic life.
Delaware	6.5–8.5	—	—	5°	50%* or 4.0	Radioactivity: Alpha emitters limited to 3 pc/l.; beta emitters, to 1,000 pc/l. Color, Taste and Odor: None in concentrations that cause color, taste or odor. Solids: Free from unsightly and malodorous nuisances due to floating solids or sludge deposits. Toxic Substances: None in concentrations harmful (synergistically or otherwise) to humans, fish, shellfish, wildlife or aquatic life.
Florida	6.0–8.5	1.0	—	—	4.0	Radiation: Gross beta—1,000 pc/l. (in absence of Sr-90 and alpha emitters). Turbidity: 50 JCU. Color: Must not render water unfit for industrial-cooling or process-water supply purposes. Taste: Must not render water unfit for industrial use; phenols 0.001 maximum. Solids: Dissolved solids must not exceed 1,000 mg./l.; monthly average: 500 mg./l. Must be free from floating wastes that are unsightly or deleterious or other wastes that settle to form putrescent or objectionable sludge deposits. Toxic Substances: Free from wastes harmful to human, animal or aquatic life. Cu, 0.5 mg./l.; Zn, 1.0; Cr, 0.05; Pb, 0.05; Fe, 0.3; As, 0.05; F, 10.0; Cn, none detectable.

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WATER_PCB-SD0000074338

	pH Allowable Range	Deviation	Temperature (°F) allowable Maximum	Increase above ambient	Dissolved oxygen (minimum mg./l. or %)	Other Requirements
Georgia	6.0–8.5	—	93.2°	10° (above intake)	2.5 3.0 (daily average)	Radioactivity: Must conform to state statutes. Turbidity, Color, Taste and Odor: Free from wastes that cause objectionable conditions or interfere with industrial use. Solids: Free from wastes that are unsightly, putrescent or otherwise objectionable or would interfere with industrial use. Toxic Substances: No wastes in concentrations that would prevent fish survival or interfere with industrial use.
Hawaii	6.5–8.5	—	—	—	4.5	Radioactivity: Not to exceed 1/30 of the values given by NBS Handbook 69. Turbidity: Free from soil particles from erosion caused by land development or agricultural use. Taste and Odor: Wastes, after dilution and mixture, must not interfere with industrial use. Toxic Substances: Free from substances in concentrations harmful to human, animal, or marine life or that make waters unsuitable for industrial use.
Idaho	6.5–9.0	0.5	—	2° Only if water 68° or less	75% (at seasonal low)	Radioactivity: Not to exceed limits of '62 PHS Drinking Water Standards. Turbidity: No objectionable turbidity that can be traced to a point source. Solids: No floating or submerged matter; no sludge deposits that could adversely affect industrial use. Toxic Substances: No wastes of other than natural origin in concentrations of public health significance or that could adversely affect industrial use.
Illinois	5.0–9.0	—	95°	—	2.0 3.0 (for 16 hrs. in any 24-hr. period)	Color, Taste and Odor: Free from wastes that produce color, odor or taste in such a degree as to create a nuisance. Solids: Free from floating wastes that settle and form unsightly, deleterious or putrescent deposits. Toxic Substances: Free from wastes in concentrations or combinations harmful to human, animal, plant or aquatic life.
Indiana	5.0–9.0	—	95°	—	1.0 2.0 (daily average)	Color, Taste and Odor: Free from wastes that produce color, taste or odor in such a degree as to create a nuisance. Solids: Dissolved solids must not exceed 1,000 mg./l.; monthly average. 750 mg./l. Must be free from unsightly, putrescent, deleterious or otherwise objectionable wastes. Toxic Substances: Free from wastes in concentrations or combinations harmful to human, animal, plant or aquatic life.
Iowa	—	—	—	—	—	Color, Taste and Odor: Free from wastes that produce color, taste or odor in such a degree as to be detrimental to industrial use. Solids: Free from floating wastes in amounts that would be unsightly or deleterious or other wastes that settle to form putrescent or objectionable sludge deposits. Toxic Substances: No wastes in concentrations or combinations detrimental to human, animal or aquatic life or to industrial use.
Kansas	6.5–9.0	—	90°°	—	4.0°	Turbidity: No increase that causes substantial visible contrast with natural appearance or that is detrimental to industrial use. Color: Discharges of color-producing substances limited to concentrations not detrimental to industrial use. Taste and Odor: Concentrations limited to those that would not result in noticeable offensive odors or otherwise interfere with industrial use. Solids: Free from floating debris or material in amounts that would be unsightly or detrimental to industrial use. Toxic Substances: Pollutional substances must be maintained below concentrations detrimental for industrial use.
Kentucky	5.0–9.0	—	95° 73° (Dec.-Feb.)	2°/hr 10°/day	—	Color, Taste and Odor: Wastes must not create a nuisance. Solids: Dissolved solids must not exceed 1,000 mg./l.; monthly average: 750 mg./l. No floating wastes in unsightly or deleterious amounts; no other wastes that settle to form putrescent or objectionable sludges. Toxic Substances: No wastes in concentrations or combinations harmful to human, animal, plant or aquatic life.
Louisiana	6.0–9.0	—	96.8°	5.4°	50%	Radioactivity: Specific limits set for all radioactive isotopes released as waste. Solids: None that would produce floating masses, sludge banks or beds on bottom, either organic or inorganic. Toxic Substances: No wastes in concentrations or combinations harmful to animal or plant life.
Maine	6.0–9.0°	0.5°	90°°	—	2.0°	Radioactivity: Not to exceed '62 PHS Drinking Water Standards. Turbidity, Color, Taste and Odor: Free from wastes that impart turbidity, color, taste or odor or impair industrial use. Solids: Free from sludge deposits, solid refuse and floating solids. Toxic Substances: No chemical constituents from waste sources harmful to humans or that adversely affect industrial use.
Maryland	5.0–9.0 (unless natural)	—	100°	—	4.0 (unless naturally lower)	Color, Taste and Odor: Free from waste materials that change existing color or produce taste and odor to such a degree as to create a nuisance or interfere with industrial use. Solids: Free from wastes that float, settle to form deposits, create a nuisance or interfere with industrial use and are unsightly, putrescent or odorous. Toxic Substances: Free from toxic wastes that interfere with industrial use or that are harmful to human, plant, animal or aquatic life.
Massachusetts	6.0–9.0	—	90°	—	2.0	Radioactivity: None in concentrations harmful to human, animal or aquatic life. Turbidity, Color, Taste and Odor: None in concentrations that would impair industrial use. Solids: None allowed except that which may result from the discharge from waste-treatment facilities providing appropriate treatment. Toxic Substances: None in concentrations or combinations harmful to human, animal or aquatic life.

WATER_PCB-SD0000074339

Water quality standards

	pH Allowable Range	pH Allowable Deviation	Temperature (°F) allowable Maximum	Temperature (°F) allowable increase above ambient	Dissolved oxygen (minimum mg./l. or %)	Other Requirements
Michigan	6.5–8.8	0.5	—	10°	*Enough to prevent nuisance*	*Radioactivity:* Standards to be established when information is available on deleterious effects. *Turbidity, Color:* No objectionable unnatural turbidity or color in quantities sufficient to interfere with industrial use. *Taste and Odor:* Below levels that are or may become injurious to industrial use. *Solids:* Dissolved solids must not exceed 750 mg./l.; monthly average: 500 mg./l. No floating solids or objectionable deposits in quantities that would interfere with industrial use. *Toxic Substances:* Limited to concentrations less than those that are or may become injurious to this use.
Minnesota	6.0–9.0	—	86°	—	—	*Color, Taste and Odor, Solids:* Free from wastes that cause nuisance conditions, such as material discoloration, obnoxious odors, significant floating solids, excessive suspended solids or sludge deposits.
Mississippi	6.0–8.5	1.0	93°	10°	3.0	*Color, Taste and Odor:* Free from wastes that produce color or odor in such degree as to create a nuisance. *Solids:* Dissolved solids must not exceed 1,500 mg./l.; monthly average 750 mg./l. Must be free from floating wastes that settle to form unsightly, deleterious, objectionable or putrescent deposits. *Toxic Substances:* No wastes in concentrations or combinations harmful to human, animal or aquatic life.
Missouri	6.5–9.0	—	90°	9° (average of cross section)	4.0*	*Radioactivity:* Gross beta: 1,000 pc/l. (in absence of Sr-90 and alpha emitters). Sr-90: 10 pc/l. Dissolved Ra-226: 3 pc/l. *Color:* Wastes must not cause substantial visible contrast with natural appearance of stream or interfere with industrial use. *Taste and Odor:* Limited to concentrations that would not result in noticeable offensive odors or otherwise interfere with industrial use. *Solids:* No noticeable organic or inorganic deposits or floating materials in unsightly or deleterious amounts. *Toxic Substances:* Concentrations not detrimental to industrial use or toxic to humans, fish, wildlife. F:1.2.
Montana	6.5–9.5	0.5	—	No adverse change	—	*Radioactivity:* Not to exceed '62 PHS Drinking Water Standards. *Turbidity:* Must not interfere with established levels of treatment. *Color, Taste and Odor:* Water shall be maintained in condition not offensive to sense of sight or smell. *Solids:* No floating solids and sludge deposits in amounts deleterious to industrial use; no sediments or settleable solids that affect treatment levels. *Toxic Substances:* Amounts present must not adversely affect industrial use.
Nebraska	6.5–9.0	1.0	90°	5° (May-Oct.) 10° (Nov.-Apr.) Rate: 2°/hr.	5.0	*Radioactivity:* Must conform with Radiological Health Regulations (1st. ed.), State of Nebraska, '66. *Turbidity:* No more than 10% increase above normal level. *Color:* No evidence of matter that creates nuisance conditions. *Taste and Odor:* Less than amounts that would degrade water quality for industrial use; phenol: 0.001 mg./l. *Solids:* Dissolved solids must not exceed 1,500 mg./l. No more than 20% increase (limit 100 mg./l.) from any point source. No waste solids that permit deposition or are deleterious to industrial use. *Toxic Substances:* None in concentrations or combinations that would render water unsuitable for industrial use.
Nevada	6.5–8.5 Annual median: 7.4–8.3	—	77.0° (summer) 57.2° (winter)	—	5.0 6.0 (average, June–Sept.)	*Radioactivity:* Limited to 1/10 of the 168-hr.-week values in NBS Handbook 69. *Turbidity, Color, Taste and Odor:* Free from wastes in amounts sufficient to change existing turbidity or color enough to create a nuisance or interfere with industrial use, or to produce taste or odor in the water. *Solids:* Free from floating or other wastes that settle to form sludge banks or deposits in amounts that would be unsightly or odorous or interfere with industrial use. *Toxic Substances:* Free from wastes in concentrations or combinations toxic to human, animal, plant or aquatic life or that interfere with industrial use.
New Hampshire	6.0–8.5 (unless natural)	—	90°*	No increase that would interfere with this use*	5.0	*Turbidity, Color, Taste and Odor:* None in objectionable amounts. *Solids:* No floating solids or sludge deposits in objectionable amounts. *Toxic Substances:* None in toxic concentrations or combinations.
New Jersey	6.5–8.5 (unless natural)	—	87° (unless natural)	5° (up to 87°)	4.0*	*Turbidity, Solids:* None noticeable in water or deposited along shore. *Color, Taste and Odor:* None that are offensive to humans or detrimental to aquatic biota. *Toxic Substances:* None that would affect humans or be detrimental to aquatic biota.
New Mexico	6.6–8.6	—	—	Must not pollute or make water unfit for this use	No oxygen demand that would cause pollution	*Radioactivity:* Not greater than 1/10 of the 48-hr. value in NBS Handbook 69. *Turbidity:* Shall not cause substantial visible contrast with natural appearance. *Color:* Should not create an aesthetically undesirable condition. *Taste and Odor:* No odors, other than of natural origin, that are esthetically objectionable or obnoxious. *Solids:* No objectionable floating solids or debris and sediment that significantly alter properties of bottom. *Toxic Substances:* No amounts toxic to humans, plants, fish, animals.
New York	6.0–9.5	—	86°	5° (average 7 days) Rate: 2°/hr. 9°/24 hrs.	3.0	*Color:* No colored wastes that alone or in combinations make water unsuitable for industrial use. *Solids:* No floating or settleable solids or sludge deposits that are readily visible and attributable to wastes. *Toxic Substances:* None alone or in combinations that would impair industrial use.

NVF 000049

WATER_PCB-SD0000074340

Water quality standards

	pH Allowable Range	pH Allowable Deviation	Temperature (°F) allowable Maximum	Temperature (°F) allowable Increase above ambient	Dissolved oxygen (minimum) mg./l. or %	Other Requirements
North Carolina	Normal for area, usually 6.0–8.5; as low as 4.3 in swamps	—	95°*	7°	3.0	Color: Must not render water unfit for industrial cooling. Solids: Must not, after dilution and mixture, make water unfit for industrial cooling. Toxic Substances: Must not make water unfit for industrial cooling.
North Dakota	6.0–9.0	0.5	93°	10°	3.0 5.0 (for 16 hrs./day)	Radioactivity: No discharge allowed unless materials are readily soluble or dispersible and of quantities acceptable to state health department. Color, Taste and Odor: No wastes that color water or result in objectionable odors to a degree that impairs industrial use. Solids: No unsightly floating wastes that would adversely affect industrial use or wastes that settle to form putrescent or objectionable deposits. Toxic Substances: No concentrations or combinations harmful to human, animal or aquatic life.
Ohio	5.0–9.0	—	95°	—	1.0 2.0 (daily average)	Color, Taste and Odor: Free from wastes that produce color or odor to a degree that creates a nuisance. Solids: Dissolved solids must not exceed 1,000 mg./l.; monthly average: 750 mg./l. Must be free from floating or other wastes that settle to form putrescent or objectionable deposits or that are unsightly or deleterious. Toxic Substances: No wastes in concentrations or combinations harmful to human, animal or aquatic life.
Oklahoma	6.5–8.5	—	93°	5°	4.0	Radioactivity: Average concentration at points of controlled release shall not exceed State Board of Health Radiation Protection Regulations. Turbidity: None that causes visible contrast with natural conditions. Color: None that is persistent in concentrations detrimental to industrial use. Taste and Odor: No concentrations that would cause offensive odors in vicinity of water or otherwise interfere with industrial use. Solids: Free from floating debris, bottom deposits or other materials. Toxic Substances: None in quantities that make water toxic to human, animal, plant or aquatic life.
Oregon	6.5–9.0	—	—	2° (only if water 70° or less)	5.0	Radiation: Shall not pose external hazard. Turbidity: 5 JCU above natural. Color, Taste and Odor: No objectionable discoloration or conditions esthetically offensive to human senses of taste or smell. Solids: No floating solids, organic or inorganic deposits injurious to industry. Toxic Substances: No conditions injurious to public health.
Pennsylvania	6.0–9.0	—	93°	2°/hr.	4.0 5.0 (daily average)	Color, Taste and Odor: No wastes that produce colors, tastes or odors in amounts harmful to industrial use. Solids: Dissolved solids must not exceed 750 mg./l.; monthly average: 500 mg./l. No floating wastes or substances that settle to form sludge in amounts harmful to industrial use. Toxic Substances: None in amounts harmful to industrial use.
Rhode Island	6.0–8.5	—	—	4°	3.0* 5.0* (16 hrs./day)	Radioactivity, Toxic Substances: No concentrations or combinations harmful to human, animal or aquatic life. Turbidity, Taste and Odor: None in concentrations that would impair industrial use. Solids: No solid refuse, floating solids or sludge deposits.
South Carolina	6.0–8.5 5.0–8.5 (swamps)	—	93.2°*	10°*	3.0* 2.5* (swamps)	Turbidity, Color, Taste and Odor: Free from wastes that change the existing turbidity or color or that produce taste or odor to such a degree as to cause a nuisance or interfere with industrial use. Solids: None from waste sources in amounts that are unsightly, putrescent, odorous or that cause a nuisance or interfere with industrial use. Toxic Substances: Free from wastes harmful to human, animal, plant or aquatic life or that interfere directly or indirectly with industrial use.
South Dakota	6.0–9.5	1.0	—	—		Radioactivity: None permitted in water unless readily soluble or dispersible and in quantities allowed by federal or state agencies. Color, Taste and Odor: No wastes that produce material discoloration or undesirable odors. Solids: Dissolved solids must not exceed 2,000 mg./l. No wastes producing floating solids, sludge deposits or other offensive effects. Toxic Substances: None in concentrations toxic to human, animal or aquatic life.
Tennessee	6.0–9.0	1.0 (24 hrs.)	93°	10° Rate: 3°/hr.	Enough to prevent offensive conditions	Radioactivity: None that could adversely affect industrial use. Turbidity, Color: None in amounts or concentrations that could not be reduced to acceptable levels by conventional treatment. Taste and Odor: None that would result in taste or odor that would prevent use for industrial processing. Solids: Dissolved solids must not exceed 500 mg./l. No distinctly visible solids, bottom deposits or sludge banks that could be detrimental to industrial use. Toxic Substances: None that produces toxic conditions that would adversely affect water for industrial use.
Texas	5.0–8.5 6.0–9.0 (cooling water)	—	—	—	4.0	Radioactivity: Regulated by Texas Radiation Control Act and Texas Regulations for Control of Radiation. Turbidity: No substantial increase due to wastes. Color: No substantial visible contrast with natural appearance of receiving waters after wastes receive best practical treatment. Taste and Odor: No concentrations that produce offensive odors. Solids: Dissolved solids must not exceed 1,000 mg./l., unless water used only for cooling. Must be essentially free from floating or settleable suspended solids that would adversely affect industrial use. Toxic Substances: Shall not show acute or chronic toxicity to humans, animals or aquatic life to such an extent as to interfere with industrial use.

NVF 000050

WATER_PCB-SD0000074341

Water quality standards

	pH Allowable Range	pH Allowable Deviation	Temperature (°F) allowable Maximum	Temperature (°F) allowable Increase above ambient	Dissolved oxygen (minimum mg./l. or %)	Other Requirements
Utah	6.5-9.0	—	—	—	—	Radioactivity: Shall not exceed 1/30 of MPC values for continuous occupational exposure in NBS Handbook 69. Turbidity, Color: No wastes in amounts that would change existing turbidity or color enough to create public nuisance or interfere with industrial use. Taste and Odor: No wastes in amounts that would produce taste or odor. Solids: No floating wastes that are unsightly or that interfere with industrial use; no wastes that settle to form unsightly or odorous sludge or bottom deposits. Toxic Substances: No wastes in concentrations or combinations toxic to human, animal, plant or aquatic life or that would interfere with industrial use.
Vermont	6.0-8.5	—	—	4°	3.0* 5.0* (16 hrs./ day)	Radioactivity: To be approved by appropriate state agency. Turbidity, Color, Taste and Odor: None in concentrations that would impair industrial use. Solids: No floating solids, sludge deposits or solid refuse. Toxic Substances: No chemical constituents in concentrations or combinations harmful to human, animal or aquatic life.
Virginia	5.0-9.0 (swamps as low as 4.3)	—	95°* (unless naturally higher)	No sudden changes that could harm aquatic life	1.0* 2.0* (daily average)	Color, Taste and Odor: No wastes that change existing color or produce odor to such a degree as to create a nuisance or interfere with industrial use. Solids: No floating wastes that are unsightly or create a nuisance or other wastes that settle to form unsightly, putrescent or odorous deposits. Toxic Substances: No wastes in concentrations or combinations that would interfere directly or indirectly with industrial use.
Washington	6.5-8.5	0.5	70°	$t = 110/(T+15)$†	6.5 or 70%	Radioactivity, Toxic Substances: Below concentrations that could adversely affect industrial use. Turbidity: Less than 10 JCU over natural conditions. Color, Taste and Odor, Solids: Dissolved, suspended, floating or submerged matter shall not reduce esthetic values so as to affect industrial use.
West Virginia	Process water: 5.5-9.0 Cooling water: 5.0-9.0	—	Cooling water: 93° (May-Nov.) 73° (Dec.-Apr.) Process water must permit fish passage	5° Rate: 2°/hr. (Dec.-Apr.)	1.0 2.0 (daily average)	Color: None that is objectionable. Taste and Odor: No objectionable odors in vicinity of the water. Solids: No distinctly visible floating, settleable or suspended solids of unreasonable kind or quantity. No objectionable bottom deposits or sludge banks. Toxic Substances: No concentrations of materials poisonous to human, animal or fish life.
Wisconsin	6.0-9.0	0.5	89°	—	1.0 2.0 (daily average)	Color, Taste and Odor: No materials producing color, taste or odor in amounts that would create a nuisance. Solids: Dissolved solids must not exceed 1,000 mg./l.; daily average: 750 mg./l. No floating or submerged debris or waste substances that would cause objectionable deposits in amounts to create a nuisance. Toxic Substances: None in concentrations or combinations toxic to humans or of public health significance.
Wyoming	6.5-8.5	—	—	4° 2° (for streams where temp. not over 70°)	6.0	Radioactivity: Not to exceed 1/30 of NBS Handbook 69 values. Turbidity: No more than 15 JCU above natural (when turbidity is 150 JCU or less); otherwise, no more than 10% above natural. Color: Essentially free of wastes that visibly alter natural color of water or impart color to vessels or structures. Taste and Odor: Essentially free from substances that would produce detectable odor at site of use. Solids: Essentially free from floating or settleable solids that are unsightly or settle to form sludge, bank or bottom deposits. Toxic Substances: Free from toxic substances in concentrations or combinations toxic to human, animal or aquatic life.

* Standard reserved from Federal Water Pollution Control Administration approval.
† t = total cumulative heat addition allowed from unnatural waste sources, at any point throughout the given stream reach. T = highest occurring temperature for a given period, in a specific stream reach.
Abbreviations: PHS—Public Health Service; NBS—National Bureau of Standards; JCU—Jackson Candle Units; pc/l.—picocuries per liter.
Source: Water Quality Standards of the United States, Territories, and the District of Columbia, American Public Health Assn., Subcommittee on Water Quality Control, and Engineering and Sanitation Section.
Note: Specific limits for coliforms, biologic oxygen demand, plant nutrients, oil, grease, scum, bottom deposits, pesticides, specific conductance, carbon chloroform extract, synthetic detergents not included. Some states set standards for each stream reach or river basin; in such cases, table shows least stringent requirement.

This reprint is an excerpt from the "Plant Sites, '69" report that appeared in the October 29, 1969 issue of CHEMICAL WEEK

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NVF 000051

WATER_PCB-SD0000074342

MAY 26 1970

bcc: G. W. Buhrmann
E. H. Fording - New Yo
R. V. Johnson
F. M. Luckett - Chicag
W. B. Papageorge
→ P. S. Park
W. E. Schalk/J. E. Springgat
W. F. Waychoff
J. D. Wright

May 25, 1970

Mr. E. M. Toby, President
American Mineral Spirits Company
Division of Union Oil of California
1345 Avenue of the Americas
New York, New York 10019

Dear Mr. Toby:

You have received previous communications from us regarding the allegations that certain polychlorinated biphenyls (PCBs) had been found in the environment and were contaminants. Since that time, other reports concerning PCBs have been published. An examination of the PCB matter now indicates that their use in modifier and plasticizer applications may be a source of the alleged environmental contamination.

Monsanto has sold PCB-containing materials under the trade name of Aroclor®. These Aroclors® included:

Aroclor® 1232
Aroclor® 1242
Aroclor® 1248
Aroclor® 1254
Aroclor® 1260
Aroclor® 1262
Aroclor® 1268
Aroclor® 4465
Aroclor® 1100 Series
Montar® 1

Toluene or xylene blends of the above products also contained PCB.

NVF 000052

WATER_PCB-SD0000074343

In review of the allegations which have been made concerning PCBs, and being a concerned and responsible member of the world community, we have come to a decision to discontinue the sale of the above PCB-containing products for modifier and plasticizer applications effective August 30, 1970.

We will notify our direct customers using the above products of this decision by June 1, 1970. As a distributor of these products, it would seem appropriate that you follow the same course of action at as early a date as is feasible. A record should be kept of all customers notified, along with the dates on which the letters were transmitted.

Recognizing that this action will result in considerable effort to define replacement products on your part and on the part of your customers, we have prepared data sheets outlining suggested alternatives for most applications. Copies of these sheets for your use and for the use of your customers will be sent to you and to your regional offices prior to June 1. Additional copies may be obtained from the appropriate Monsanto regional office. A list of these sales offices is enclosed with this letter.

We regret the work that this action will create for you. However, as a responsible supplier, we feel that we have a duty to keep our customers informed on matters concerning the safe handling and use of our products. We appreciate your support in this matter. As in the past, we stand ready to assist you in any way possible.

Very truly yours,

W. E. Schalk
Director of Sales
Plasticizers

/dbw

WATER_PCB-SD0000074344

Monsanto

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

June 1, 1970

Dear Customer:

You have received our letter mailed February 27, 1970 notifying you of the allegations that certain polychlorinated biphenyls (PCBs) had been found in the environment and were contaminants. Since that time other reports concerning PCBs have been published. An examination of the PCB matter has indicated that their use in synthetic resin compositions may be a source of the alleged environmental contamination.

Monsanto has sold PCB-containing materials under the trade name of Aroclor®. These Aroclors® included:

Aroclor® 1232
Aroclor® 1242
Aroclor® 1248
Aroclor® 1254
Aroclor® 1260
Aroclor® 1262
Aroclor® 1268
Aroclor® 4465
Aroclor® 1100 Series
Montar® 1

Toluene or xylene blends of the above products also contained PCB.

WATER_PCB-SD0000074345

In review of the allegations which have been made concerning PCBs, and being a concerned and responsible member of the world community, we have come to a decision to discontinue the sale of PCB-containing products for modifier and plasticizer applications effective August 30, 1970.

Recognizing that this action will result in research effort on your part to find adequate replacements, we have prepared a series of data sheets outlining suggested alternatives for most applications. Copies of the report for your application may be obtained by calling the regional office closest to you as shown on the attached sheet.

We urge that you consider initiating now any necessary work on your part to effect the change to a new material. We stand ready to assist you in any way possible.

Very truly yours,

W. E. Schalk
Director of Sales
Plasticizers

ek

Attachment

WATER_PCB-SD0000074346

MONSANTO COMPANY
REGIONAL SALES OFFICES

Akron Marketing & Research Center
260 Springside Drive
Akron, Ohio
(216) 666-4111

Chicago Sales Office
3158 Des Plaines Avenue
Des Plaines, Illinois 60018
(132) 296-6688

Everett Plant
Everett Station
Boston, Massachusetts 02149
(617) 387-5010

New York Sales Office
277 Park Avenue
New York, New York 10017
(212) 922-4111

St. Louis Sales Office
800 North Lindbergh
St. Louis, Missouri 63166
(314) OX 4-1000

Wilmington Sales Office
2005 Concord Pike
Wilmington, Delaware 19803
(302) OL 8-6531

NVF 000056

WATER_PCB-SD0000074347

DISTRIBUTORS

A list of our distributors and their regional offices is attached. The letter that was sent to the head offices of the distributors on 5/25/70 is enclosed.

WATER_PCB-SD0000074348

AMERICAN MINERAL SPIRITS COMPANY

Baltimore, Maryland

Charlotte, North Carolina

Conshohocken (Philadelphia), Pennsylvania

Miami, Florida

Palatine (Chicago), Illinois

Plainfield, New Jersey

Providence, Rhode Island

Tucker (Atlanta), Georgia

WATER_PCB-SD0000074349

CENTRAL SOLVENTS & CHEMICALS COMPANY

Allegheny Solvents & Chemical	Pittsburgh, Pennsylvania
Amsco Solvents & Chemical	Cincinnati, Ohio
Buffalo Solvents & Chemical	Buffalo, New York
Central Solvents & Chemical	Santa Fe Springs, Califor
Central Solvents & Chemical	San Francisco, California
Central Solvents & Chemical	Portland, Oregon
Central Solvents & Chemical	Kent, Washington
Dixie Solvents & Chemical	Louisville, Kentucky
Hoosier Solvents & Chemical	Indianapolis, Indiana
Missouri Solvents & Chemical	St. Louis, Missouri
Missouri Solvents & Chemical	Kansas City, Missouri
Ohio Solvents & Chemical	Cleveland, Ohio
Texas Solvents & Chemical	Dallas, Texas
Texas Solvents & Chemical	Houston, Texas
Toledo Solvents & Chemical	Toledo, Ohio
Western Eaton Solvents	Detroit, Michigan
Wisconsin Solvents & Chemical	Milwaukee, Wisconsin
Wolverine Solvents & Chemical	Grand Rapids, Michigan
Southern Solvents & Chemical	New Orleans, Louisiana

WATER_PCB-SD0000074350

GREAT WESTERN CHEMICAL COMPANY

Portland, Oregon

Richmond, California

Seattle, Washington

WATER_PCB-SD0000074351

May 25, 1970

You have received previous communications from us regarding the allegations that certain polychlorinated biphenyls (PCBs) had been found in the environment and were contaminants. Since that time, other reports concerning PCBs have been published. An examination of the PCB matter now indicates that their use in modifier and plasticizer applications may be a source of the alleged environmental contamination.

Monsanto has sold PCB-containing materials under the trade name of Aroclor®. These Aroclors® included:

Aroclor® 1232
Aroclor® 1242
Aroclor® 1248
Aroclor® 1254
Aroclor® 1260
Aroclor® 1262
Aroclor® 1268
Aroclor® 4465
Aroclor® 1100 Series
Montar® 1

Toluene or xylene blends of the above products also contained PCB.

NVF 000061

WATER_PCB-SD0000074352

In review of the allegations which have been made concerning PCBs, and being a concerned and responsible member of the world community, we have come to a decision to discontinue the sale of the above PCB-containing products for modifier and plasticizer applications effective August 30, 1970.

We will notify our direct customers using the above products of this decision by June 1, 1970. As a distributor of these products, it would seem appropriate that you follow the same course of action at as early a date as is feasible. A record should be kept of all customers notified, along with the dates on which the letters were transmitted.

Recognizing that this action will result in considerable effort to define replacement products on your part and on the part of your customers, we have prepared data sheets outlining suggested alternatives for most applications. Copies of these sheets for your use and for the use of your customers will be sent to you and to your regional offices prior to June 1. Additional copies may be obtained from the appropriate Monsanto regional office. A list of these sales offices is enclosed with this letter.

We regret the work that this action will create for you. However, as a responsible supplier, we feel that we have a duty to keep our customers informed on matters concerning the safe handling and use of our products. We appreciate your support in this matter. As in the past, we stand ready to assist you in any way possible.

Very truly yours,

W. E. Schalk
Director of Sales
Plasticizers

/dbw

NVF 000062

WATER_PCB-SD0000074353

Monsanto

ORGANIC CHEMICALS DIVISION

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

August 14, 1970

Dear Sir:

During the week of August 10, 1970, Monsanto is sending to all its direct customers for Aroclors in plasticizer/ modifier application 1) a letter summarizing the latest information on PCBs, and 2) the most recent Aroclor technical bulletin. This bulletin replaces and supercedes O/PL-306 - Aroclor Plasticizers. In as much as some important information concerning recent FDA actions and changes to Monsanto's returned goods policy are discussed, we strongly urge you to forward copies of this bulletin and a letter to your Aroclor customers. Copies of both have been enclosed for your use.

The change in returned goods policy for our direct customers involves a two month extension of the deadlines for returning material to Monsanto. The same two month extension will apply to our distributors. A copy of our revised returned goods policy is attached.

We realize that this additional communication provides an added workload for your people. However, in view of the importance of this matter, we feel it is necessary for you as our distributor to assist in this matter.

Very respectfully,

Walter E. Schalk

Walter E. Schalk
Director of Sales
Plasticizers

/dbw

NVF 000064

WATER_PCB-SD0000074354

Monsanto

ORGANIC CHEMICALS D

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

August 14, 1970

Dear Customer

Dear Sir:

You have received our letters of February 27, 1970 and June 1, 1970 covering Monsanto's withdrawal of polychlorinated biphenyls (PCBs) from the market. The February 27 letter reviewed some of the potential hazards of PCBs and of environmental polution in general. The June 1 letter announced that we were withdrawing all polychlorinated biphenyls used as plasticizers or modifiers from the market, and that the last shipment of these materials would be made August 30, 1970.

In as much as you may have some inventory of these materials which you might be planning to use during the period in which you change over to other products, we felt it imperative to inform you of the latest information concerning PCBs.

It was recently brought to our attention that the Food and Drug Administration has apparently established guidelines setting forth suggested maximum levels of PCBs allowable in certain foods. These levels, as we understand them, are 5 parts per million in fish and 0.2 parts per million in milk. Monsanto, therefore, strongly recommends that PCBs not be used in applications which could lead, either directly or indirectly, to the contamination of food and water supplies for humans or animals. Examples of applications which would seem particularly hazardous would be coatings for water treatment facilities, coatings for food handling equipment, or coatings for such farm items as silos and feed hoppers.

NVF 000066

WATER_PCB-SD0000074355

It has recently come to our attention that PCBs have been found in cows milk. This adds emphasis to Monsanto's recommendation that PCBs not be used in any application where they might come in contact with or otherwise contaminate food, silage, water supplies, etc.

The latest available bulletin on our line of Aroclors is enclosed for your use. This publication replaces and supercedes bulletin O/PL-306 - Aroclor Plasticizers. The only products listed which will be sold after August 31, 1970 are 1) Aroclor 1221, a monochlorinated biphenyl which is readily biodegradable, and 2) Aroclors 5442 and 5460, both chlorinated terphenyls which have not shown themselves to be environmental contaminants. Please pay special attention to the section of this bulletin which relates to environmental hazards.

In addition to the products listed above which will remain on the market, Monsanto will sell a series of blends of Aroclor 1221 and Aroclor 5460 which will replace the polychlorinated biphenyls for many applications.

During this withdrawal of PCBs from the market, Monsanto has had in effect a modified returned goods policy stating that unopened containers less than one year old could be returned for full credit through July 31, 1970. From August 1 through August 31, 1970, 90 percent credit would be allowed. From September 1 through December 31, 1970, 50 percent credit would be allowed. The customer will pay all return freight. All of the dates in the time schedule for this returned goods policy are hereby extended an additional two months.

Monsanto realizes that the removal of these products from the market has caused a great deal of concern and expense for our customers. This is certainly regrettable. However, it appears to us that as a responsible supplier, this is the only reasonable course of action. We stand ready to assist you as we can with your reformulation work.

Very respectfully,

Walter E. Schalk

Walter E. Schalk
Director of Sales
Plasticizers

/dbw

NVF 000067

WATER_PCB-SD0000074356

Monsanto

ORGANIC CHEMICALS DIVISION

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

September 23, 1970

Subject: Aroclor Plasticizers - A new series of inert, chemically-resistant, fire-retarding plasticizers compatible with a wide variety of resins

Dear Customer:

Monsanto's withdrawal of PCB-containing Aroclors from the market has led to extensive realignment of our product line and modifications to our pricing policies. We have enclosed for your use a new product bulletin which contains data on our new Aroclor line, and also a price list for these products. I believe that you will find this new series of Aroclors an extremely valuable family of products which combines the properties of chemical stability, compatibility, adhesion, fire retardancy, and low cost which have been so useful in the past. Further, they have not shown any of the apparent environmental effects which have been attributed to PCB products.

We look forward to supplying your plasticizer needs in this area in the future. Please contact us if we can be of service to you.

Very truly yours,

Walter F. Waychoff

Walter F. Waychoff
Product Manager
Plasticizers

/dbw

NVF 000092

WATER_PCB-SD0000074357

D. H. Bechtold - 11
G. W. Buhrmann - B3
W. S. Clark
→ Aroclor W&N File

September 27, 1971

Mr. J. W. Schrage
American Mineral Spirits Company
Div. of Union Oil Company of Calif.
3100 South Meacham Road
Palatine, Illinois 60067

Dear Mr. Schrage:

On September 30, 1971, Monsanto will be sending a letter out to all of our present Aroclor customers. The purpose of this letter is two-fold. First, it defines the differences between our old PCB-based Aroclors and our current non-PCB-based line of products. Second, this letter states clearly Monsanto's position on the use of these products in food or food-related applications, in potable water systems, in animal feed systems, and in pharmaceuticals. A copy of this letter is attached.

In light of the current situation with respect to PCBs, we believe that it is important to communicate this information to our customers. As our distributor, we expect you to send the same letter, or a similar letter, to each of your customers, keeping a record of the date sent. We would be happy to provide you with additional copies of our letter if you so desire.

If you have any questions on this subject, please give us a call.

Very respectfully,

W. E. Schalk
Director of Sales
Plasticizers

/dbw

cc: Mr. A. S. Hoyer
Mr. P. E. Schmeal

NVF 000108

Monsanto

ORGANIC CHEMICALS

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

September 30, 1971

Dear Sir:

As you may recall, on August 31, 1970, Monsanto terminated sales of polychlorinated biphenyls (PCBs) as plasticizers and resin modifiers because it appeared that these products might be associated with some problems in the environment. Monsanto is now selling a line of non-PCB plasticizers under the same trade-name - Aroclor® - as was used in the past. This letter is intended to eliminate any confusion which might result from the fact that this trade-name has been used on both PCB and non-PCB products.

Our Aroclor® product line is now made up of polychlorinated terphenyls, monochlorinated biphenyl, and blends of these products. None of these materials has been shown to create any environmental problems. On the other hand, Food and Drug Administration approval has not been obtained for any of these products. Accordingly, the Aroclor® plasticizers should not be used in connection with food or food-related products, with food wrapping or food container materials. Further, Monsanto strongly recommends that these products not be used in any other application such as non-FDA regulated food systems, in potable water systems, in any animal feeding systems, or in pharmaceuticals.

Very respectfully,

W. E. Schalk

W. E. Schalk
Director of Sales
Plasticizers

/dbw

NVF 000109

WATER_PCB-SD0000074359

Monsanto

MONSANTO INDUSTRIAL CHEMICALS CO.
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

December 31, 1971

Dear Sir:

We are writing to advise you that Monsanto has made the decision to cease the sale of polychlorinated terphenyls for use as plasticizers and for use in other open system applications effective March 31, 1972. These products have been sold by Monsanto under the trade name Aroclor®.

Normal volumes of our existing Aroclor product line may be purchased between now and March 31, 1972, however, no shipments will be made after that date. Sales during the last six months of 1971 will determine normal order quantities.

Monsanto is working to develop a list of suggested replacement products and suppliers to be used as a guide in replacing our Aroclor® products in existing formulations. This list may be obtained by contacting any of our regional offices whose addresses and telephone numbers are shown on the attached sheet.

Very truly yours,

W. E. Schalk

W. E. Schalk
Sales Director
Plasticizers

/dbw

NVF 000110

WATER_PCB-SD0000074360

NAME	ADDRESS	DATE MAILED	PER
145. N.V.F. Company	Lafayette & Cedar St. Kennett Square, Pa. 19348	10-Sep-71	hc

NVF 000111

WATER_PCB-SD0000074361