

WESTERN DISTRICT OF VIRGINIA  
 DANVILLE DIVISION  
 CAROLYN B. FISHER, Executrix,  
 of the Estate of Ralph L. Fisher, )  
 Deceased, Plaintiff, )  
 vs. ) Cause No. 93037D  
 MONSANTO COMPANY, a Delaware )  
 Corporation, Defendant. )

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VIDEO TAPE EVIDENTIARY DEPOSITION OF  
 ROBERT EMMET SKILL, M.D.  
 Attest: ROBERT EMMET SKILL, M.D., Plaintiff  
 WALTER REBERT TRILL, INC. 1994  
 400 Olive Street, Suite 1506  
 St. Louis, MO 63101  
 (314) 621-2571

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WESTERN DISTRICT OF VIRGINIA  
 DANVILLE DIVISION  
 CAROLYN B. FISHER, Executrix,  
 of the Estate of Ralph L. Fisher, )  
 Deceased, Plaintiff, )  
 vs. ) Cause No. 93037D  
 MONSANTO COMPANY, a Delaware )  
 Corporation, Defendant. )

VIDEO TAPE EVIDENTIARY DEPOSITION OF  
 ROBERT EMMET SKILL, M.D. produced, sworn and examined  
 on behalf of the defendant, March 1 and April 11, 1994  
 between the hours of eight o'clock in the morning and  
 six o'clock in the afternoon of those days, at the  
 offices of Hutch & Spensinger, 400 North Broadway, St.  
 Louis, Missouri, before RALPH A. OLLICK, a registered  
 Professional Reporter and a Notary Public within and for  
 the State of Missouri.  
 A P P A R T S  
 the Plaintiff, as represented by Mr. David S. McCrea of  
 Bloomington, Indiana, 47405  
 the Defendant, as represented by Messrs. Gerard H.  
 Davison, Halme, and Ronald Owen, Jr. of the law firm  
 of Smith, Halmey, Mullins & Owen, P.L.C. 400 North  
 400 North Street, Suite 1400, Greensboro, North Carolina  
 27401.

1                   IT IS HEREBY STIPULATED AND AGREED by and  
2                   between Counsel for the Plaintiff and Counsel for the  
3                   Defendant, that this deposition may be taken in  
4                   shorthand by FAITH A. OLLIGES, a Registered Professional  
5                   Reporter and Notary Public, and afterwards transcribed  
6                   into typewriting.

7   o   o   o

8                   ROBERT EMMET KELLY, M.D.,  
9                   of lawful age, being produced, sworn, and examined on  
10                  the part of the Defendant, deposes and says:

11   DIRECT EXAMINATION

12                  QUESTIONS BY MR. GERARD DAVIDSON, JR.:

13                   Q     Good morning, Dr. Kelly.

14                   A     Good morning, Mr. Davidson.

15                   Q     This is the deposition of Dr. R. Emmet Kelly  
16                   taken pursuant to notice by both transcription and  
17                   videotape in the case of Ralph Fisher versus Monsanto.  
18                   My name is Gerard Davidson. I'm with the law firm of  
19                   Smith, Helms, Mulliss and Moore in Greensboro, North  
20                   Carolina. My firm represents the defendant, Monsanto  
21                   Company. Dr. Kelly, let me begin by asking you to state  
22                   for the record your full name.

23                   A     Robert Emmet Kelly, M.D.

24                   Q     And where do you live, Dr. Kelly?

25                   A     665 South Skinker, St. Louis, Missouri, 63105.

1 Q And are you a medical doctor?

2 A Yes, I am.

3 Q Have you ever been employed by Monsanto

4 Company?

5 A Yes, I have.

6 Q And what period of time was that?

7 A I was employed as a part time physician at the  
8 Queeny Plant in St. Louis from the first part of January  
9 1936 until March of 1942 when I went in the service, and  
10 I returned in March of '46 and remained there as a  
11 full time physician position until November of nineteen  
12 forty 1974. Then I was a consultant for a year after  
13 that.

14 Q Were you ever Monsanto's medical director?

15 A Yes, I was. I was their first medical  
16 director, and that was from 1946 until 1974.

17 Q All right, sir. And how old are you now, sir?

18 A 84.

19 Q And how is your health?

20 A It's good for 84.

21 Q Okay. Are you currently under the care of a  
22 physician?

23 A Yes, I am. Several.

24 Q And where did you obtain your college and  
25 medical degrees?

1           A     I received my Bachelor's degree from St. Louis  
2           University in 1930. It was a Bachelor of Science in  
3           Medicine. It was a combined course that led to the M.D.  
4           degree in 1932 from the same institution.

5           Q     And are you board certified in any areas of  
6           medical specialty?

7           A     Yes. I'm board certified in internal medicine,  
8           I'm recertified in internal medicine, and I'm board  
9           certified again for medicine under the subspecialty of  
10          occupational medicine.

11          Q     All right, sir. And would you tell us some of  
12          the medical or the professional organizations to which  
13          you have belonged or continue to belong now?

14          A     Well, I belong, of course, to the local medical  
15          society, the Missouri Medical Society, and the American  
16          Medical Association. I was a member of     a fellow of  
17          the American College of Physicians. I still am. And I  
18          was a member of the American Academy of Occupational  
19          Medicine and the American Occupational Medical  
20          Association.

21          Q     All right, sir. Tell me again when you first  
22          went to work for Monsanto

23          A     January 15th, 1936.

24          Q     What were your job duties when you first went  
25          to work?

1 A I was a plant physician at their largest plant  
2 in St. Louis, the Queeny Plant.  
3 Q What was the name of the plant?  
4 A Queeny.  
5 Q All right, sir.  
6 A Called Plant A at that time.  
7 Q And did Monsanto have a person designated a  
8 medical director at that time?  
9 A No, they did not.  
10 Q What were your duties as the plant physician?  
11 A It was twofold. One was the treatment of any  
12 occupational illnesses or any accidents that fell within  
13 my specialty. In other words, I wasn't setting  
14 fractures or doing something like that. And then also  
15 it was a question of establishing a preventive medical  
16 program to prevent any occupational illnesses as well as  
17 to develop any incipient disease that would be not  
18 related to their work.  
19 Q Did you as a plant physician ever have occasion  
20 to tour the plant?  
21 A Oh, yes. Quite frequently.  
22 Q And did you ever treat or give medical advice  
23 to the workers themselves?  
24 A Yes, I did.  
25 Q And when did you become Monsanto's medical  
1 director?  
2 A When I returned from the service in I believe  
3 it was March of 1946.  
4 Q Okay. And what, if you could very briefly,  
5 were your responsibilities as the medical director?  
6 A Well, they were several fold. First, it was to  
7 insure that we did have an adequate or an excellent  
8 medical representation in each of our plants and  
9 laboratories, and also I was to obtain toxicological  
10 information on any of our raw materials or products that  
11 we did not know about, that we had no previous knowledge  
12 about. Third, I was to interface with the customers  
13 about any warning labels or any precaution statements  
14 dealing with toxicology or safe handling of our products  
15 that we would have in our sales bulletins, marketing  
16 bulletins or development bulletins.  
17 Q You used the term "toxicity". Could you define  
18 that for us?  
19 A It's the property of a compound to cause harm  
20 to a person if taken in undue amounts.  
21 Q All right, sir. As time went by, did it become  
22 or did it evolve upon you to organize a medical  
23 department at Monsanto?  
24 A Yes.  
25 Q Could you tell us what in your view at that  
1 time and as time passed were the responsibilities of a  
2 medical department?  
3 A Well, they were to insure that a safe working  
4 environment was present for our employees. It was also  
5 to insure that we would furnish excellent medical  
6 service from both the preventive aspect of medicine as  
7 well as the treatment aspect of medicine for all  
8 injuries and illnesses sustained in their employment.  
9 We did not function as an HMO or as a family physician.  
10 Q All right, sir.  
11 A Also, we had to obtain toxicological  
12 information on our raw materials and products.  
13 Q At the time you were forming a medical  
14 department, what did you understand to be the role of a  
15 medical department as it relates to occupational  
16 medicine for a company such as Monsanto or any other  
17 company?  
18 A Can you say that over?  
19 Q What did you understand to be the role of the  
20 medical department as it relates to occupational  
21 medicine in a company such as Monsanto?  
22 A Well, I think the role was twofold. One, you  
23 were the interface between the worker and the employer.  
24 In a sense you were the worker's physician because you  
25 had he was your patient. You wanted to be sure that

1 he was not exposed to any ill effects from his working  
2 career with Monsanto. The other facet was you had to  
3 insure that adequate information was dispensed to our  
4 customers so that they recognized what we knew about the  
5 toxicity of our products and how they should be handled  
6 safely.

7 Q And how did you How would a medical  
8 department normally go about learning about the toxicity  
9 of its products?

10 A Well, suppose we're going to make Product X,  
11 and the manufacturing department would send a letter, a  
12 memorandum to me saying, "We're going to make Product  
13 X." First, I would look up in the literature to see if  
14 there was any toxicity information concerning Product X.  
15 Well, the chances are there wasn't any in those early  
16 days. There wasn't much done. Then I would ask our  
17 manufacturing people, "Is there any other company making  
18 this?" And if it was a B2 compound, had been made by  
19 DuPont or Dow or one of the other compounds  
20 companies, I would call up their medical director and  
21 say, "What do you know about the toxicity of this? Do  
22 you have any unpublished materials? What's your  
23 experience thus far as the employees are concerned?"  
24 Then if he didn't have anything, or if it was a compound  
25 that had not been made by someone else, we'd go out and

1 do some toxicity of our own.

2 Q You're referring to toxicity testing?

3 A Testing of animals.

4 Q All right. Do you in your own mind  
5 differentiate between the toxicity of a substance and  
6 the hazard associated with a substance?

7 A Oh, yes. Quite a bit. I think they are both  
8 intertwined. The toxicity is the inherent property of a  
9 compound to do harm to somebody if you get an excessive  
10 dose. The hazard is if you have an excessive exposure.  
11 If you've got something inside a kettle or inside pipes,  
12 it isn't going to hurt anybody, but if you've got an  
13 open operation where there are fumes and the liquids are  
14 open to the air, you're liable to get both skin contact  
15 and inhalation contact. So you have to take both the  
16 exposure and the inherent toxicity when you're making a  
17 judgment call about what should be done with a product.

18 Q All right, sir. I would like now to ask you  
19 about some policies and procedures that you used or  
20 adopted at Monsanto as its medical director, and I'd  
21 like to start out You mentioned a minute ago that one  
22 of the things a medical director or a medical department  
23 would do would be to review the literature. Did you  
24 have a practice of reviewing the medical and scientific  
25 articles that related to Monsanto's products?

1 A Yes.

2 Q And

3 A When I was a solo operator and I was the only  
4 person in the medical department, there were luckily  
5 only a few journals in the English language that were  
6 devoted to either industrial hygiene problems or  
7 toxicological problems, so we certainly subscribed to  
8 those.

9 Q Could you I'm sorry. Go ahead. I didn't  
10 mean

11 A That was the early days. Later on, when we  
12 when there were more journals, more specialized  
13 journals, some of our toxicologists and industrial  
14 hygienists reviewed those and sent me abstracts of them.

15 Q All right, sir. And you mentioned that you  
16 subscribe to some of these journals. Can you remember  
17 the names of any of the ones that existed in the early  
18 days?

19 A Yes. In the United States, there was the  
20 "American Journal of Industrial Hygiene and Toxicology".  
21 That ceased publishing about, oh, in the '50's, I  
22 believe. And then there was the "Journal of the  
23 Industrial Medical Association". The A.M.A. had an  
24 occasional article or a case report. That was the  
25 "Journal of the American Medical Association". There

1 was also some reviews in the "New England Journal of  
2 Medicine," which was mostly devoted to internal  
3 medicine, but every so often they had a review of some  
4 material dealing with the clinical aspect of chemical  
5 exposure. Then in England, there was the "American  
6 Journal" I mean, the "English Journal of Industrial  
7 Hygiene" that we subscribed to as well as "Lancet,"  
8 which is sort of similar to the "New England Journal of  
9 Medicine," only it was published in the United Kingdom.

10 Q Are you aware, Dr. Kelly, that the Fisher case  
11 involves allegations relating to polychlorinated  
12 biphenyls or PCBs?

13 A Yes, I do I am.

14 Q And if I use those terms interchangeably, PCBs,  
15 you understand that means polychlorinated biphenyls?

16 A That's correct.

17 Q There's a term that I've seen in various  
18 publications called chlorinated diphenyl. What is the  
19 relationship between chlorinated biphenyl and  
20 chlorinated diphenyl?

21 A They are the same. They just changed The  
22 American Chemical Society did something about changing  
23 the names of a lot of chemicals someplace along the line  
24 from 1936 on, and they changed the prefix "di" to "bi".

25 Q Was the term "chlorinated diphenyl" used first,

1 and then it was later changed to "polychlorinated  
2 biphenyl"?

3 A That's correct.

4 Q But when we talk about either, we're talking  
5 about the same thing?

6 A That's correct.

7 Q All right. Did you have occasion to review the  
8 literature on the toxicity of PCBs in the 1930's up  
9 until you left the company?

10 A Yes, I did.

11 Q And you mentioned that as time went by others  
12 in the medical department would review that literature  
13 as well; is that accurate?

14 A That's correct.

15 Q Now, I'd like to focus in particular on the use  
16 of PCBs in electrical equipment, such as transformers  
17 and capacitors. Did you find any reports in the  
18 scientific literature from the 1930's to 1974, when you  
19 retired, about any adverse health effects to persons who  
20 were exposed to PCBs in such electrical equipment?

21 A No, I did not.

22 Q Did you review any articles while you were at  
23 Monsanto that indicated that PCBs could not safely be  
24 used in electrical equipment?

25 A No, sir, I did not.

1 Q And did you yourself form an opinion back in  
2 the 1930's as to whether or not PCBs could be safely  
3 used in such electrical equipment?

4 A Well, in the late '30's. I mean, I came in  
5 with Monsanto in '36, and I probably heard about PCBs  
6 sometime a year later, and through the rest of the '30's  
7 I did have the opinion they could be used and were being  
8 used safely in electrical equipment such as you  
9 described.

10 Q All right, sir. And could they be used without  
11 any particular precautions?

12 A Oh, no.

13 Q What precautions were necessary in your opinion  
14 in the late 1930's and early 1940's?

15 A The same precautions that I believed in all the  
16 way through. That you should avoid prolonged and  
17 repeated skin contact, and you should avoid breathing  
18 materials at elevated temperatures or in confined  
19 spaces. It was an industrial chemical. It was not  
20 intended to be taken by mouth.

21 Q Did you at any time during your tenure at  
22 Monsanto until your retirement in 1974 come to the  
23 opinion that PCBs were unreasonably dangerous for use in  
24 electrical equipment?

25 A No, sir, I did not ever come to that

1 conclusion.

2 Q Well, did you believe, let's say at the end of  
3 the 1930's, beginning of the 1940's, that PCBs had any  
4 toxic properties to them?

5 A Certainly they did. All industrial chemicals  
6 have toxic properties. But I considered this to be in a  
7 mild to moderate toxicity as far as an industrial  
8 chemical is concerned.

9 Q We'll get to a more detailed discussion of your  
10 precise opinions and detailed opinions in a moment, but  
11 let me ask you briefly what were in your opinion the  
12 toxic properties of PCBs in the 1930's and '40's?

13 A I'm sorry. I lost you.

14 Q In your opinion, as it existed in the 1930's  
15 and '40's, what were the toxic properties of PCBs for  
16 which precautions needed to be taken?

17 MR. McCREA: Plaintiff will object to the  
18 question unless a foundation has been presented as to  
19 his qualifications based on studies, examination of  
20 workers, knowledge of the literature, knowledge of the  
21 chemical PCBs and its contaminants and whether or not  
22 he's qualified to express an opinion.

23 Q Go ahead and answer, doctor,

24 A Would you I would like to have the question  
25 repeated.

1 Q All right. In your opinion, in the late 1930's  
2 and early 1940's, what were the toxic properties of PCBs  
3 for which precautions needed to be taken?

4 A The material could be absorbed through the  
5 skin. It could be absorbed by inhalation. It could  
6 cause a chemical hepatitis. It could cause liver  
7 problems if prolonged exposure occurred. It could cause  
8 chloracne.

9 Q All right, sir. And upon what did you base  
10 that opinion generally?

11 A What were the time frames again?

12 Q The late 1930's and early 1940's.

13 A Well, we had some acute studies that showed  
14 that the target organ was the liver. It also showed  
15 that it could be absorbed through the skin. There was  
16 work done by Drinker on inhalation as well as feeding of  
17 the material, which again showed the liver to be the  
18 target organ.

19 Q Were these materials published in the  
20 scientific literature?

21 A The Drinker studies were published, yes.

22 Q During the period of time that you were the  
23 medical director, what department at Monsanto had the  
24 responsibility for approving the toxicity and safe  
25 handling information that was given to Monsanto's

1 customers?

2 A Medical department.

3 Q And when was that policy instituted?

4 A Well, it was sort of a It was officially  
5 instituted in 1946 when the Central Medical Department  
6 was established, but prior to that it was a sort of  
7 unofficial policy because I was in the Queeny Plant,  
8 which is right next to the central office and the  
9 corporate offices, and when any problems would come up,  
10 they were very happy to unload the problem and send them  
11 down to me, and after awhile my the knowledge that I  
12 was available went through the company. So it was  
13 unofficial, but not as completely thorough as when as  
14 in 1946 when the Executive Committee put out a statement  
15 that all such statements should all such toxicity  
16 information should be handled by the medical department.

17 Q Was that policy instituted at your request?

18 A Yes.

19 Q Why did you institute such a policy?

20 A Because I knew more about the toxicity of PCB  
21 than anybody else in the company.

22 Q Well, how did Monsanto typically publish the  
23 toxicity and safe handling information to its  
24 regarding its products?

25 A Well, it varied with the audience that they

1           were sending it to. We published it     And we also have  
2           to divide it into     You said safe handling as well as  
3           toxicity?

4           Q     Right.

5           A     Well, safe handling, obviously, we started  
6           first putting it on the labels, the safe handling  
7           information, because that's what the workers saw and  
8           that's what we wanted the worker to be cognizant of. So  
9           we had the caution statements on the label as to how to  
10          protect themselves against any ill effects. Then we had  
11          more elaborate information in our bulletins, which were  
12          of various types.

13                 There were development bulletins when people  
14          were trying to     when we were trying to see where this  
15          material could be used, where customers might have some  
16          idea for its use that we didn't have. And we had this  
17          development bulletin which listed the physical chemical  
18          properties, the dielectric properties, and we listed the  
19          toxicological properties.

20                 Then there were marketing bulletins that had  
21          much of the same information, but this was     A  
22          marketing bulletin was directed to a specific use, and  
23          so that information was more or less targeted at that  
24          use.

25                 Then there were letters and telephone calls

1           that I got all the time from various companies, various  
2           products, but the ones on PCB were rather infrequent.  
3           But when we did get any of these letters or telephone  
4           calls, we sent out either toxicity information or  
5           reviews of toxicity by knowledgeable organizations, such  
6           as the American Conference of Governmental Industrial  
7           Hygienists, or, in some cases, our own toxicological  
8           reports that we had obtained from work we sponsored.

9           Q     Did you use all of these means to inform  
10          Monsanto's customers as to the need to take any  
11          precautionary measures that were necessary?

12          A     Oh, yes. That was the purpose of them.

13          Q     You mentioned that you received telephone calls  
14          and letters and so forth. What was Monsanto's policy  
15          regarding those inquiries about possible toxic effects  
16          of its products?

17          A     To tell them everything we knew.

18          Q     All right, sir. Who in the company responded  
19          to those inquiries?

20          A     Usually one of our doctors at the headquarters.  
21          Sometimes, if it were an industrial hygiene matter, the  
22          industrial hygienist might send it. But if there were  
23          any health aspects involved, it came from the medical  
24          department. If it were just a plain request for  
25          toxicity, a toxicologist might respond. But I can say

1           that I probably reviewed or saw carbons of all the  
2           correspondence leading       dealing with these matters.

3           Q       When you referred to the fact that an  
4           industrial hygienist might answer a particular inquiry  
5           or a toxicologist might answer a different inquiry, were  
6           all of those individuals under your direction in the  
7           medical department?

8           A       Yes.

9           Q       Was it possible that toxicity and safe handling  
10          information could come from other departments at  
11          Monsanto?

12          A       No, sir. It all depends on what you mean.  
13          Suppose a salesman goes into Ford Motor Company and he  
14          is offering PCB as an hydraulic fluid. The purchasing  
15          agent at the Ford Motor Company says, "Is this safe to  
16          use?" Well, certainly, if this man has been selling to  
17          General Motors for ten years, he would say, "Yes, it  
18          certainly is. General Motors used it for ten years I've  
19          been calling on them. I've had no problems." But if  
20          the man said, "Well, I'd like to have something I could  
21          talk to our doctor about. I'd like to have something  
22          more definite." He felt the man       Our salesman would  
23          say, "Well, send your request on to the medical  
24          department, St. Louis, and you'll hear from them."

25          Q       You mentioned that at the beginning you were

1 the medical department yourself. When did anyone else  
2 come to join you in the medical department?

3 A Elmer Wheeler came to do the industrial hygiene  
4 work probably in 1937, as I recall.

5 Q 19

6 A '47. '47.

7 Q 1947?

8 A That's correct.

9 Q All right, sir. And what was Mr. Wheeler's  
10 background?

11 A He was a chemical engineer. He had gone to  
12 He had done some work on his Master's. I don't know if  
13 he had a Master's. He had worked as an industrial  
14 hygienist for the State of New Hampshire. He worked in  
15 the Army, with the Army Industrial Hygiene Laboratory,  
16 for a period of one or two years, and he was a qualified  
17 industrial hygienist.

18 Q Do you remember who the next person was that  
19 joined the medical department?

20 A Jack Garrett, who Jack was a Master's who  
21 was working in the research department at Texas City for  
22 a couple of years, and he came to us I think in 1952,  
23 '51 or '52. We sent him up to Liberty Mutual to get  
24 some background in industrial hygiene. Then he did  
25 considerable on the job training with Wheeler.

1 Q Okay. I'm not going to ask you to name the  
2 names of the individuals, but over the years after that,  
3 did the medical department continue to grow and add  
4 specialists?

5 A Yes. We had started adding toxicologists.  
6 When I left, we ended up with four toxicologists and  
7 four industrial hygienists and a couple of extra  
8 full time physicians. That's all in the Central Medical  
9 Department. We had people out at the plant, too, but  
10 they were plant employees, although there was a dotted  
11 line to the medical department.

12 Q Okay. Did you at any time participate in an  
13 organization that was composed of medical directors of  
14 companies around the country?

15 A Yes.

16 Q What was that?

17 A Well, there was a Medical Directors Forum,  
18 which was an organization of 35 medical directors of  
19 multi plant operations. There was the American Academy  
20 of Occupational Medicine, which was a group of full time  
21 employees. They didn't have to be medical directors.  
22 There were also committees of various groups, the  
23 Manufacturing Chemists Association and American  
24 Petroleum Institute, whose members were mostly medical  
25 directors of large companies.

1 Q As the medical director of Monsanto, did you  
2 ever have occasion to visit Monsanto's manufacturing  
3 plants?

4 A Yes. I saw all of them in the United States  
5 and Canada until the late '60's, and then I saw some  
6 or the late '50's, and then I saw some of our European  
7 operations.

8 Q Was this just one time visits?

9 A Oh, no. The United States operations I saw  
10 sometimes I tried to see once every year, sometimes  
11 twice a year. But if it were a small plant We had a  
12 small plant in Norfolk, Virginia that had about 50  
13 employees that just had one operation. They had They  
14 would refine caffeine from cocoa butter, and there was  
15 no hazard there, so I only saw them once every two or  
16 three years. We had a couple of small bottling plants.  
17 But any of our chemical plants I saw at least once a  
18 year or sometimes oftener.

19 Q All right, sir. As medical director, did you  
20 institute a policy that would provide physical  
21 examinations for Monsanto's employees?

22 A Yes. We did have a policy at certain of the  
23 plants. When I came there, they were still they were  
24 giving examinations at the Plant A in St. Louis, but it  
25 wasn't widespread. So I instituted a policy that all

1 wage roll employees would be examined at various  
2 intervals depending on their age and depending somewhat  
3 on the possibility of exposure.

4 Q And was that a voluntary examination?

5 A It was voluntary, but I think it had 98 percent  
6 at least compliance because everybody thought it was  
7 compulsory.

8 Q In connection with your monitoring the  
9 employees of Monsanto, did you keep records over the  
10 years with respect to any instance of cancer in your  
11 employees?

12 A Yes. In 1949, I believe it was, I started  
13 there was considerable discussion about the role of  
14 chemicals in cancer, so I thought I will keep a list of  
15 all the people that show up on our insurance program  
16 with cancer. And at first the cancer or the  
17 insurance program was partly defrayed by the employee,  
18 but we still about 90 percent of the people were  
19 under that, even though they paid ten percent of the  
20 premium or something like that. But then after, shortly  
21 after, in the '50's it became noncontributory as far as  
22 the employees were concerned, so everybody was covered,  
23 both wage roll and salaried employees. So I had the  
24 insurance company in St. Louis, our insurance  
25 department, make a list of all the malignancies that

1           came in, and she sent them to me, and every quarterly  
2           or every quarter I went over them to see if there was  
3           any clustering of any cancers in any of the departments.  
4           I didn't find any.

5           Q     When did Monsanto start producing PCBs?

6           A     They bought a company called the Swann Chemical  
7           Company in 1935, so they produced     Swann had been  
8           producing it since either '29 or '30. So Monsanto was  
9           producing it from 1935 until they ceased in 1977.

10          Q     Did Monsanto have a trade name that it applied  
11          to its PCB products?

12          A     Yes. It was Aroclor. And this was Aroclor.

13          Q     Do you know whether that was a name that was  
14          first adopted by the Swann Chemical Company and then  
15          taken over by Monsanto?

16          A     I don't know for certain, but I think it was.

17          Q     All right. Now, I've also heard the various  
18          products designated by a numerical system, Aroclor with  
19          a number following it. Can you give us a brief  
20          explanation of that?

21          A     Yes. First, you have to realize that all  
22          Aroclors are not P     are not chlorinated biphenyls.  
23          There are some Aroclors that are chlorinated  
24          diphenylbenzene and some Aroclors that are mixtures of  
25          chlorinated diphenylbenzene and chlorinated diphenyl.

1           So the 1200 series was the pure diphenyl, chlorinated  
2           diphenyl. They had       The first two numbers were 12,  
3           and the last designated the average, the mean  
4           chlorination. So 1242 would mean a chlorinated biphenyl  
5           chlorinated to 42 percent in the case of Aroclor 1242.  
6           1254, it would be chlorinated to an average of 54  
7           percent. Then they would get into the 4400 series.  
8           4465, which was a mixture of chlorinated diphenyl and  
9           chlorinated diphenylbenzene chlorinated to 65 percent.  
10          Then you would get into the 5400 series, which was the  
11          pure chlorinated diphenylbenzene. I think the only one  
12          of any prominence was 5460, which is a chlorinated  
13          diphenylbenzene chlorinated to 60 percent of chlorine.

14           Q       All right. Were there benefits from using PCBs  
15           in electrical equipment, such as transformers and  
16           capacitors?

17           A       Oh, no question about it. That's why we sold  
18           millions of pounds.

19           Q       What were the attributes that made it  
20           attractive?

21           A       Well, it was a good dielectric. That means it  
22           didn't transmit electrical fluid. But the big point was  
23           it was relatively noninflammable. Previously they had  
24           used mineral oil, but the problem with mineral oil is if  
25           you got a fire in a transformer you can have quite a

1 raging fire. Some of these transformers, you know, are  
2 not like the little transformer that runs an electric  
3 train in your house. They have They are eight feet  
4 tall or something like that. So they're a big piece of  
5 equipment, and there's a lot of fluid in there. And if  
6 it's a flammable fluid, if it's struck by lightning or  
7 something and catches on fire, you've got a good sized  
8 fire going. So I think inflammability was a good one  
9 was a main purpose.

10 Q Do you know who in the United States were major  
11 manufacturers of electrical equipment such as  
12 transformers and capacitors?

13 A Westinghouse and GE were the big ones.

14 Q And did Monsanto manufacture PCB dielectric  
15 fluid for GE and Westinghouse?

16 A Yes. It was GE Yes, they manufactured, and  
17 I presume they sold them to other manufacturers also.

18 Q Do you happen to know

19 A I mean other users, not manufacturers.  
20 Manufacturers of equipment.

21 Q Do you happen to know what trade name  
22 Westinghouse applied to the dielectric fluid that they  
23 used?

24 A Inerteen.

25 Q And do you happen to know what the trade name

1 was that General Electric used?

2 A Pyranol.

3 Q Are you aware who held the patents on using  
4 PCBs in dielectric fluid for transformers and  
5 capacitors?

6 A General Electric.

7 Q Were there other uses Let me strike that.  
8 When you came with the company in the early years, were  
9 there other uses for PCBs other than dielectric fluid?

10 A Not that I can recall. I mean, eventually  
11 there were, but when I came in 1936 and learned about  
12 PCBs in 1937, I do not recall that there were other  
13 uses.

14 Q As the years went by and other uses developed,  
15 can you briefly tell us what some of those were?

16 A Yes. They started using it as a plasticizer.  
17 They used it as an hydraulic fluid to I don't think  
18 it was used in automobile hydraulic fluids, but it was  
19 used in die casting machinery and stuff like that. They  
20 used it as a heat transfer agent fairly widely, and they  
21 used it in carbonless carbon paper.

22 Q During the years that you were the medical  
23 director of Monsanto, were there any PCB related health  
24 problems in any of Monsanto's workers that were exposed  
25 to PCBs?

1 MR. McCREA: To which Plaintiff will object  
2 unless it can be established that Dr. Kelly or Monsanto  
3 Company established an appropriate medical protocol to  
4 detect both acute and chronic health problems.

5 Q Would you like for me to repeat the question?

6 A Yes, please.

7 Q During the time that you were the medical  
8 director, were there any PCB related health problems  
9 reported to you in any of Monsanto's PCB workers?

10 MR. McCREA: Same objection.

11 A No, there were none.

12 Q And to your knowledge, did Monsanto ever have a  
13 personal injury or workers' compensation claim filed  
14 against it because of exposure to PCBs?

15 MR. McCREA: Plaintiff objects to the question  
16 again for the reason that in order to present a claim  
17 one would have to undergo an appropriate medical  
18 protocol to detect any acute or chronic injuries caused  
19 by the exposure to PCBs. It's simply not been  
20 established that there was a medical protocol  
21 established by Monsanto Company or any other company to  
22 detect acute and chronic health problems caused by  
23 systemic actions of PCB.

24 A What was the question again?

25 Q To your knowledge, did Monsanto During the

1 time that you were the medical director, did Monsanto  
2 ever have a personal injury claim or a workers'  
3 compensation claim filed against it as a result of  
4 claiming that a worker was injured as a result of  
5 exposure to PCBs?

6 MR. McCREA: Same objection.

7 A No, sir, they had there were none.

8 Q Did you review the workers' compensation claims  
9 that were filed against Monsanto?

10 A From 1946 on, all the workmen's compensation  
11 claims or all the reports of occupational injury,  
12 occupational illness, were reviewed by the medical  
13 department on a quarterly basis. We got the reviews,  
14 the reports from the insurance company on a quarterly  
15 basis for our workers.

16 Q And let me ask you again then, did you ever see  
17 any of those reports of claims that were related to PCB  
18 exposure?

19 MR. McCREA: Again, Plaintiff objects for the  
20 reason that there is no evidence showing that any of the  
21 workers who were exposed to PCBs participated in a  
22 medical protocol to detect acute or chronic health  
23 problems caused by PCBs. Plaintiff would note that  
24 there's no evidence whatsoever that Monsanto had any  
25 investigation with respect to chronic health problems.

1 In addition, to analyze workers' compensation records,  
2 which we don't have before us, and which have never been  
3 made available, would require knowledge of statistics as  
4 that field is related to epidemiology. Therefore,  
5 Plaintiff objects to the question.

6 A I think we were side tracked. I have to have  
7 the question back.

8 Q Okay. Did your review of the workers'  
9 compensation claims reports that you have described ever  
10 indicate to you that a claim was based upon exposure to  
11 PCBs?

12 MR. McCREA: Same objection.

13 A There were no such claims that I saw, and I saw  
14 the insurance reports every quarter from 1946 on.

15 Q What, if any, part did the fact that you had no  
16 worker claims or complaints about PCBs play in your  
17 opinions about PCBs?

18 MR. McCREA: Again, we've got the cart in  
19 front of the horse here. It's not been shown that  
20 Monsanto Company developed a medical protocol to detect  
21 systemic health problems caused by PCBs on an acute and  
22 chronic basis. There's absolutely no showing that a  
23 protocol was implemented by Monsanto Company to  
24 determine if these workers with exposure to PCBs  
25 suffered from systemic poisoning of PCBs. Therefore,

1 the lack of any data has no meaning unless it's been  
2 established that there was an appropriate protocol to  
3 collect the data.

4 Q Would you answer the question?

5 A I really can't keep following both sides.  
6 Would you repeat it, please, Mr. Davidson?

7 MR. DAVIDSON: I'd ask, Mr. McCrea You've  
8 made your speech on the same issue, same speech, three  
9 times. Let's just note an objection this time so he can  
10 go ahead and answer the question.

11 MR. McCREA: Counsel, if I can incorporate  
12 that same objection, so stipulated.

13 MR. DAVIDSON: Well, you said "same objection"  
14 before, so that will be fine. I'm going to ask the same  
15 question again. You don't have to make the speech  
16 again. It's on the record.

17 MR. McCREA: All right. Understood.

18 Q All right. Dr. Kelly, what, if any, part did  
19 your knowledge that there were no worker claims based  
20 upon exposure to PCBs play in your opinions about the  
21 toxicity of PCBs?

22 A It showed that It reinforced my opinion that  
23 the material can be used safely in industry in the  
24 electrical field based on the absence of any claims or  
25 complaints by our workers and any ill effects found on

1           our medical examinations of these workers which was done  
2           on a periodic level.

3           Q     Dr. Kelly, during your years as the medical  
4           director at Monsanto, did the medical department receive  
5           any complaints from customers or users of chloracne or  
6           any other claimed health effects from using PCBs?

7           MR. McCREA: Counsel, again, same objection.  
8           There's absolutely no evidence in this record that any  
9           of the customers of Monsanto Company implemented any  
10          medical protocols to determine if the workers exposed to  
11          PCBs were being systemically injured by PCBs, so the  
12          lack of a report has no meaning unless there was a  
13          medical protocol implemented to produce the information.  
14          It just simply is impossible to present anything that's  
15          meaningful unless Dr. Kelly knows that General Electric  
16          and Westinghouse and other customers, in fact,  
17          implemented a medical protocol, can describe the  
18          adequacy of that medical protocol, the data collected,  
19          and then appropriate interpretation of that data. To my  
20          knowledge, no such medical protocols were ever  
21          implemented, and I base that on previous depositions of  
22          Monsanto personnel, General Electric personnel and  
23          Westinghouse.

24          MR. DAVIDSON: All I'm asking is did the  
25          medical department ever receive any complaints.

1 MR. McCREA: I understand.

2 MR. DAVIDSON: And I don't care what you think  
3 about where they came from or how they got them. It's  
4 irrelevant.

5 MR. McCREA: Well, I'm making

6 MR. DAVIDSON: So you've made the speech.  
7 Make the same objection. It's on the record. That's  
8 all you need to do.

9 MR. McCREA: I'm making the objection based on  
10 the fact that one cannot complain about what one does  
11 not know, and if one does not seek to determine if there  
12 are adverse health effects caused by PCBs, obviously one  
13 cannot complain.

14 MR. DAVIDSON: Well, that's not the question  
15 he's being asked, so

16 MR. McCREA: Counsel, I understand your  
17 question

18 MR. DAVIDSON: It's on the record. Just make  
19 the objection, and you can elaborate on it to Judge  
20 Kiser whenever you want to.

21 MR. McCREA: The objection is on the record.

22 Q (By Mr. Davidson) Dr. Kelly, during your  
23 period of time as the medical director at Monsanto, did  
24 the medical department ever receive any complaints from  
25 users or customers about chloracne or any other ill

1 health effects caused by PCBs?

2 A In what uses?

3 Q In any uses.

4 A Yes.

5 Q And how many of those?

6 A Less than five.

7 Q All right. I'll come back to those in a  
8 minute, but during your decades of employment, did you  
9 ever receive any complaints of chloracne or other ill  
10 health effects from customers or users in the use in  
11 electrical equipment, such as transformers or  
12 capacitors?

13 MR. MCCREA: Counsel, do we show a continuing  
14 objection?

15 MR. DAVIDSON: That's fine.

16 MR. MCCREA: Thank you.

17 A No, sir, I did not.

18 Q Did any of those complaints that you  
19 received you indicated I think there are  
20 approximately five involve any fatalities or serious  
21 long term health effects?

22 MR. MCCREA: Same For the record, can I  
23 have a continuing objection to this line of questioning?

24 MR. DAVIDSON: Yes.

25 A No, they did not. You have two questions

1           there. There were no long term effects. I believe that  
2           in one case some people were hospitalized, so you could  
3           consider that serious. This was an acute episode. But  
4           there were no long term effects.

5           Q     Could you give us a couple     some examples of  
6           the complaints that you got?

7           A     Yes. These two dealt with heat transfer  
8           agents. One was in Indiana, where the material was a  
9           jury rigged temporary affair, and it leaked, and three  
10          people developed a chemical hepatitis from breathing the  
11          material at elevated temperatures. They developed  
12          jaundice and were hospitalized, I believe, and  
13          recovered. I checked back with the physician who  
14          reported the cases.

15          Q     I take it that you had some     How did you  
16          learn about this incident?

17          A     I don't recall, but it was     I had a letter  
18          from a Dr. Spolyar, who was the head of either health or  
19          health department in the state of Indiana, and I think  
20          he published it in some relatively obscure magazine,  
21          like the "Journal of the Indiana Medical Association" or  
22          something like that, and I don't know how I got it, but  
23          I called up Spolyar and asked him about the details.

24                   The other case was also a case of Crown  
25          Chemical Company, who was using it as a heat transfer

1 agent, and their people developed nausea and gastric  
2 upset after exposure, much the same situation. It was a  
3 temporary condition that leaked. And I recall I told  
4 them to watch out for liver problems, run some liver  
5 functions on them, and they'd maybe get jaundice, and he  
6 called me back and said in a couple of weeks and he  
7 said, "You're right. They did get jaundice, but they  
8 are doing fine now. The jaundice is abating." And I  
9 called him two week later, and he said, "They are fine.  
10 They are back at work." Those are two of the cases.

11 I remember the third case was also a heat  
12 transfer agent in New England someplace, which was  
13 written up in the medical literature by a Dr. Meigs,  
14 which had very mild chloracne.

15 The fourth case was a thermometer company  
16 someplace in New England also that they made oven  
17 thermometers in those days. That was, I guess, in the  
18 early '40's, in which you filled sort of like a onion  
19 bulb with this material, with PCBs, and they filled it  
20 by dipping their hands and dipping the whole apparatus  
21 in the liquid 1242 and filling it up, and they developed  
22 some chloracne in their workers. And I was interested  
23 in that, and I went up to see it, and I said, "Can't you  
24 get some sort of a forceps or a gadget that you don't  
25 have to put your hands in this?" And they said, "Well,

1           that's a good idea." And so they did that and that took  
2           care of that problem.

3                       Those are the ones I remember. May have been  
4           another one or so, but I can't recall it.

5           Q     In your investigation of these incidents that  
6           you have given us as examples, did you determine that  
7           they were not correctly following the instructions that  
8           Monsanto had given them?

9                       MR. McCREA: Counsel, Plaintiff would object  
10          based on hearsay. I don't know how it's possible for  
11          Dr. Kelly to answer that question without relating  
12          information that was communicated to him by individuals  
13          unknown.

14                      MR. DAVIDSON: Well, I disagree because in at  
15          least one or two of those instances he described he went  
16          and observed the situation himself. But let's go ahead  
17          and answer the question.

18          A     What was it again?

19          Q     The question was, in your investigation of  
20          these incidents you've described, did you find that the  
21          people were not following the instructions that Monsanto  
22          had given with its product?

23          A     Well, certainly I found out they weren't  
24          following it because if we say avoid repeated or  
25          prolonged skin contact and you're dipping your hands in

1 the stuff all day, that certainly violated that one. If  
2 you say do not breathe it at elevated temperatures, and  
3 they say, "We've got this hot liquid dripping out, and  
4 the people have been breathing it for the last three  
5 days," that certainly violates the other caution  
6 statement that we caution recommendation that we give  
7 them.

8 Q Dr. Kelly, during the time that you were the  
9 medical director of Monsanto, do you know whether or not  
10 Westinghouse had a medical director?

11 A Yes.

12 Q And do you know Do you remember who that  
13 was?

14 A Dr. T. Lyle Hazlett.

15 Q Can you tell us anything about Dr. Hazlett or  
16 his qualifications?

17 A Well, when I I was new to the business in  
18 1936. Here I was just practically just out of  
19 residency, so I was I started going around After I  
20 was attached to Monsanto, even on a part time basis, I  
21 went around to the Industrial Medical Association  
22 meetings, and I met him there, and he was one of the  
23 pillars of the business. He was in the inside circle.  
24 He was sort of a pioneer in it. He was quite well known  
25 and quite an authority on it, on industrial medicine.

1 Q Do you know whether either at that time or in  
2 subsequent years Westinghouse employed industrial  
3 hygienists?

4 A Yes, I do know that.

5 Q Do you remember the names of any of them?

6 A One was Henry Speicher, and the other one was  
7 a Ph.D. was either Grant or I'm not certain about  
8 the last name, but I certainly know Speicher's name.

9 Q To your knowledge, did Westinghouse have  
10 knowledge about the subject of the toxicity and safe  
11 handling of PCBs?

12 MR. McCREA: To which plant? I would object.  
13 This witness is not capable of describing what  
14 Westinghouse people knew or didn't know.

15 Q Can you answer the question?

16 A Yes, they did.

17 Q And how are you able to determine that?

18 A First of all, I was able to determine it by the  
19 fact that I've talked to Hazlett on quite a number of  
20 occasions, and he certainly seemed knowledgeable to me  
21 about PCBs. Also, there was letters from our department  
22 to the industrial hygiene department of Westinghouse  
23 that explained fully the toxicity of PCBs. We also  
24 would send copies of our reports to Westinghouse, the  
25 toxicological reports to Westinghouse on PCBs. And,

1 finally, I understood later on in the '70's that there  
2 was a toxicological work carried on by Dr. von  
3 Oettingen, who submitted this The document was  
4 receive dated in Westinghouse's file in the '30's.

5 MR. McCREA: Plaintiff objects to testimony  
6 based on hearsay, the lack of production of any of these  
7 documents for cross examination purposes and any  
8 specific references to a von Oettingen study, which has  
9 never been authenticated by Westinghouse as having been  
10 received by that corporation. It's simply an impossible  
11 situation to have Dr. Kelly answering for Westinghouse.  
12 Westinghouse needs to answer for Westinghouse.

13 Q Did any member of Westinghouse's medical  
14 department ever report to you that they had any problems  
15 with their workers who were exposed to PCBs?

16 MR. McCREA: Objection. Hearsay.

17 A No, sir, they did not.

18 MR. McCREA: Counsel, I don't want to  
19 interrupt your questioning, but can I have a continuing  
20 objection on any reports with respect to health problems  
21 on the basis that there's no showing that a medical  
22 protocol was implemented?

23 MR. DAVIDSON: I thought we had already done  
24 that.

25 MR. McCREA: Well, sometimes it gets confusing

1 when you get deep into the record.

2 MR. DAVIDSON: Just make your objections.

3 Q (By Mr. Davidson) Dr. Kelly, you testified  
4 just a little bit ago that you've reviewed the medical  
5 literature beginning you started reviewing the  
6 medical literature when you came with Monsanto. I'd  
7 like to show you have you look at some exhibits and  
8 ask you some questions about some of those items at this  
9 point in time, and I placed in front of you a stack of  
10 the exhibits, and they are numbered, so if you would  
11 kindly look at Exhibit No. 1, I'd like to ask you to  
12 identify that exhibit for us.

13 A Exhibit No. 1 is an article by Dr. Jones and  
14 Alden that was published in the "American Archives of  
15 Dermatology and Syphilology," and it was read

16 Q What date was it published?

17 A That's hard to say. The date on the front said  
18 it was published in 1936, Volume 33, but I do not see  
19 that date in the article itself.

20 Q All right. What does it describe?

21 A It describes an acneform dermatergoses, which  
22 Let's say it describes chloracne, and it describes  
23 this treatment of workers from the Swann Chemical  
24 Company who were exposed to a chemical manufactured by  
25 Swann Chemical.

1 Q All right. Do you Did you read this article  
2 at some point early in your career at Monsanto?

3 A Yes, I did.

4 Q And were you Is the Swann Chemical Company  
5 you referred to the same Swann Chemical Company that was  
6 purchased by Monsanto in 1935?

7 A That's correct.

8 Q And when did this incident occur at the Swann  
9 Chemical Company?

10 A 1933 to the best of my recollection. I think  
11 that's when he said these people were exposed.

12 Q Now, after Monsanto purchased this Swann  
13 Chemical Company, I believe you said in 1935, did you  
14 have occasion to visit the plant?

15 A Yes, I did.

16 Q And that was the plant where this incident  
17 occurred?

18 A That's correct.

19 Q And did you have occasion to see any of the  
20 workers that were involved in this study?

21 A Yes, I did.

22 Q What did What was their situation or  
23 condition when you saw them?

24 A Well, the chloracne was pretty well resolved.  
25 There were scars from the pustules where Dr. Jones had

1 opened them. But they were working. They had no  
2 symptoms. Their liver function tests, which were pretty  
3 crude in those days, were normal. They had no  
4 complaints, no symptoms.

5 Q Was there a plant physician at that plant when  
6 you visited there?

7 A Yes.

8 Q And do you remember his name?

9 A Dr. "Somebody" Martin. I don't recall his  
10 first name.

11 Q And did you talk to him about the situation?

12 A Yes, I did.

13 Q What, if any, conclusions had he reached with  
14 regard to the chloracne?

15 MR. McCREA: Objection, hearsay, and also the  
16 previous objection with respect to no showing a medical  
17 protocol was implemented.

18 Q Go ahead and answer, if you would.

19 A Say it over. I got mixed up on the medical  
20 protocol.

21 Q What were Dr. Martin's conclusions about the  
22 health of those workers that had chloracne?

23 A When I saw them?

24 Q Yes.

25 A He said they were fine, they had no problems,

1 no medical problems. He examined them, gave them a good  
2 clinical examination. He had run some liver function  
3 tests on them, and they were in good shape.

4 Q Did you actually examine any of the workers?

5 A No. I saw their faces.

6 Q Did you examine any of their medical records?

7 A Yes, I did.

8 Q And did you form a conclusion yourself about  
9 the chloracne outbreak?

10 MR. McCREA: Objection unless the medical  
11 records are produced.

12 Q Go ahead.

13 A Yes, I did.

14 Q And what was your opinion?

15 A Well, there are two. It all depends which  
16 aspect you're interested. Are you interested in the  
17 cause of the

18 Q Let's take that second. I'll get to that next.

19 A Well, whatever happened to them, they had  
20 recovered from it with the exception of the scarring of  
21 some of the areas where they had pretty serious  
22 chloracne.

23 Q After that time that you visited there and  
24 until the time you left Monsanto in 1974, was there ever  
25 any other chloracne reported at the Anniston at that

1 plant?

2 A No, sir, there was not.

3 Q All right. Now, what did you learn when you  
4 visited there about the cause of the outbreak?

5 MR. MCCREA: Objection, hearsay. Same  
6 continuing objection as to whether or not there was any  
7 other chloracne. There's no showing of any  
8 dermatological examinations for chloracne or that there  
9 was anybody qualified to detect chloracne.

10 Q What did you learn about the cause of the  
11 chloracne outbreak?

12 A I learned from both the written report of  
13 Dr. Jones and from my talk with the manufacturer and  
14 research people at the Anniston plant that they believed  
15 the chloracne was due to a contaminant in the process  
16 due to a change in benzene suppliers because the product  
17 that was used the product that was manufactured with  
18 this substituted benzene was of a different color than  
19 the usual Aroclor. It was had different dielectric  
20 products different dielectric properties, and it had  
21 caused chloracne, whereas previously they had when  
22 they were using a different benzene supplier, they had a  
23 different color, better dielectric properties, and no  
24 chloracne. So they finally got smart and got rid of the  
25 substitute supplier. When they went back to the old

1           supplier, the quality of the Aroclor improved and the  
2           epidemic of chloracne disappeared. So I was convinced,  
3           along with Dr. Jones and along with everybody at the  
4           plant, that something had happened from this secondary  
5           supplier of benzene.

6           Q     Is that reported in the article that's been  
7           listed as Exhibit 1?

8           A     Yes. He makes some representations of what he  
9           thought it might be. But that was I don't think the  
10          investigation was too sophisticated back in 1936.

11          Q     Does Exhibit 1 indicate why Drs. Jones and  
12          Alden got involved with this incident in the first  
13          place?

14          A     Well, I don't know if this did. Somebody sent  
15          them the patients. I mean, here he is in Atlanta, and  
16          we're in Anniston, which is, what, 90 miles away or a  
17          hundred miles away from Atlanta. And obviously  
18          Dr. Martin sent them to Jones, sent the patients to  
19          Jones.

20          Q     Does the article indicate that they were  
21          actually treating these men that were affected?

22          A     Oh, certainly they treated them.

23          Q     What actions did Swann take to prevent any  
24          further outbreaks?

25          A     Well, I don't know except changed the benzene

1 supplier. They may have done other things, but I don't  
2 know that.

3 Q I'd like to ask you to look now at or turn to  
4 Exhibit No. 2. But before we get to that, let me ask  
5 you this. Can you explain to the jury what you  
6 understand the substance Halowax to be?

7 A Yes. I can say what I thought it was at that  
8 time. I don't know if it's still being manufactured.

9 Q All right. Yes. What you thought it was.

10 A It was a compound manufactured by the Bake Lite  
11 Corporation, which was a subsidiary of Union Carbon and  
12 Carbide, whatever the name of the company was at that  
13 time, that was composed It was a series of  
14 chlorinated naphthalenes, which were chlorinated to  
15 various percentages, trichlornaphthalene,  
16 quadrachlornaphthalene, pentachlornaphthalene, various  
17 naphthalene compounds. In one of this series, they used  
18 ten percent of a different compound, which they had  
19 called chlorinated diphenyl.

20 Q Okay. Before we get ahead, let me ask you  
21 this. What was Halowax used for? If you know.

22 A I know one use. I don't know what it was used  
23 for. It was used as a to impregnate wire, the  
24 coating of wire. In those days, they did not have vinyl  
25 or rubber coating on household wiring and presumably

1 industrial wiring. They had a cotton or a fabric  
2 covering, and on that was impregnated hot Halowax. So  
3 it was a sticky material. You're too young to remember  
4 the old extension cords you would have, but if you'd  
5 pull on some of these wires, you'd get this brown stuff  
6 on your hands, and that was Halowax.

7 Q And you testified a minute ago that it was made  
8 up of what chemical?

9 A The majority of the cases of the series was  
10 chlorinated naphthalene. In one of the series, ten  
11 percent of a compound that they said was chlorinated  
12 diphenyl was used. That turned out to be that ten  
13 percent was a mixture of chlorinated diphenyl and  
14 chlorinated diphenylbenzene.

15 Q Okay. I'd like to come back to that in a  
16 minute and ask you some more questions about it, but is  
17 chlorinated naphthalene something different than PCBs?

18 A Yes. Entirely different.

19 Q And did Monsanto manufacture the naphthalene  
20 that went into the Halowax?

21 A No, and they did not chlorinate it. We had  
22 nothing to do with naphthalene either, at all, and  
23 didn't chlorinate it, didn't sell a chlorinated  
24 naphthalene to anybody.

25 Q Now, you were telling us a minute ago, and I

1 want to get back to that, that there was some Monsanto  
2 product that was included in one or more of these  
3 Halowax products. Would you explain that again?

4 A Would I explain that again?

5 Q Yes, please.

6 A Well, I was told by Halowax, the Bake Lite  
7 people, rather

8 MR. McCREA: Objection, hearsay.

9 Q Go ahead.

10 A I was told by the Bake Lite people that there  
11 was ten percent of a Monsanto product in one of the  
12 Halowaxes. As I said, there was a whole series of  
13 Halowaxes, and one of those contained ten percent of a  
14 Monsanto product.

15 Q And I believe you testified what that Monsanto  
16 product was. Could you tell me that again?

17 A Yes. I'll have to tell you what it was  
18 reported by some people to be chlorinated diphenyl,  
19 biphenyl, but Monsanto stated this was chlorinated  
20 diphenylbenzene and chlorinated diphenyl in roughly a  
21 60/40 percent, with the majority being chlorinated  
22 diphenylbenzene chlorinated to 65 percent.

23 Q Was there a Monsanto trade name designation  
24 that was attached to that product?

25 A Well Yes. It was chlorinated It was

1 Aroclor 4465.

2 Q You mentioned earlier that there were some  
3 people who were exposed to the Halowax compounds that  
4 suffered health problems. Would you elaborate on that a  
5 little bit?

6 A Yes. There were pretty serious health problems  
7 both from very severe chloracne to atrophy, yellow  
8 atrophy the liver, and three cases of death. But the  
9 deaths, as I understood it from the other reports, were  
10 that the deaths were not associated with the compound  
11 that had that Monsanto product in it.

12 MR. McCREA: Objection. Move to strike.  
13 Hearsay.

14 Q All right. Dr. Kelly, I would ask you if you  
15 recall attending a symposium at the Harvard School of  
16 Public Health in 1937.

17 A Yes, I did.

18 Q And what was the subject of that symposium?

19 A The subject was health effects of Halowax.

20 Q And were there discussions at that symposium  
21 about these effects that you just told us about on  
22 persons exposed to Halowax?

23 A Yes, there were. Most considerable.

24 Q And did you learn how they From those  
25 discussions, did you learn how they became exposed?

1           A     Yes. They were pulling the wires with their  
2 hands. They were over impregnating tubes or gutters,  
3 troughs, where the wire went through, and the hot  
4 Halowax was melted and soaked up by the fabric covering  
5 the wire.

6           MR. McCREA: Plaintiff would simply note for  
7 the record that those discussions are published in the  
8 "Journal of Industrial Hygiene and Toxicology" and speak  
9 for themselves and would object to the witness's  
10 description of discussions for the reason that they're  
11 fully reported.

12          Q     Dr. Kelly, you were present at the symposium;  
13 were you not?

14          A     Yes, I was.

15          Q     And you were present at the time of the  
16 discussions; were you not?

17          A     Yes.

18          Q     Do you know how the research by Dr. Drinker  
19 came to be?

20          A     Yes.

21          Q     Would you explain that to us?

22          A     The Halowax     The Bake Lite president, whom I  
23 had met, called me in St. Louis and said, "We are going  
24 to have an investigation of the toxicological aspects of  
25 Halowax done by Dr. Drinker. It's going to cost X

1           thousands of dollars. You're a customer     You're a  
2           supplier of ours of one of your Aroclors which goes into  
3           one of our Halowaxes. How would you feel about chipping  
4           in and help sponsor this?"

5                         So I don't know the percentage of the expenses  
6           that we defrayed, but I talked to the management of that  
7           particular product line and said, "What do you want to  
8           do?" And he said, "Well, sure. We'll go ahead with it.  
9           Let's find out what's going on. They're a good customer  
10          of ours and we've got to keep them." So Halowax, the  
11          Bake Lite people, made all the arrangements, and all we  
12          did was pay them whatever we said we were going to do.

13                        Q     All right. So Monsanto shared in some of the  
14           funding for these studies?

15                        A     That's correct.

16                        Q     Did Monsanto ever employ or engage Dr. Drinker  
17           and his research group to do any tests for Monsanto  
18           alone?

19                        A     Yes.

20                        Q     And did that come after this symposium?

21                        A     Yes.

22                        Q     We'll get to that in a minute then. And  
23           Dr. Drinker was with what organization?

24                        A     Harvard School of Public Health. He was a very  
25           well known person in toxicology and industrial medicine

1 and in industrial hygiene. There were two Drinkers, and  
2 this man was One was a Ph.D., but I believe Cecil was  
3 an M.D. as well as a Ph.D.

4 Q Did Dr. Drinker present the results of his  
5 research at this symposium you attended?

6 A Yes, he did.

7 Q And you were present for that presentation?

8 A Yes, I was.

9 Q Do you recall any other individuals who were  
10 present at the symposium?

11 A Yes, sir.

12 Q Can you give us a few examples of those? I'm  
13 not asking you to list every one of them from memory.

14 A Well, there was Von Oettingen was there.  
15 The head Vossburgh was there, the head of GE. There  
16 were people from the state organizations and the health  
17 organizations in Connecticut and Massachusetts and New  
18 York, I believe. They're all listed in the Everybody  
19 who got up and talked was listed in this, in the back of  
20 the article.

21 Q Did that necessarily include everyone who was  
22 there?

23 A Not everybody talked, though.

24 Q Was there any discussion or report by General  
25 Electric at the symposium about any of its manufacturing

1 operations that used the Halowax Corp the Halowax  
2 product?

3 A Yes. I'd have to look at this. Two of the  
4 manufacturing people, as I remember, were there. There  
5 was a Mr. Kaimer, and he said he had quite a few people  
6 afflicted with some chloracne. There was a Let's  
7 see. Who else was there? Kaimer seems to be the only  
8 one from GE outside of Vossburgh. I know Vossburgh was  
9 there. I guess that's it.

10 Q Okay. You've been looking at Deposition  
11 Exhibit 2. Is that the publication that reported  
12 Dr. Drinker's results that were orally reported at the  
13 symposium?

14 A Yes.

15 Q Was the "Journal of Industrial Hygiene and  
16 Toxicology" one of the journals that you subscribed to  
17 for Monsanto?

18 A Yes, it was.

19 Q And do you recall receiving the exhibit or a  
20 copy of Exhibit 2 in your publication at the time  
21 shortly after it was published?

22 A Yes.

23 Q Can you describe generally for us the types of  
24 tests that Dr. Drinker ran and reported on?

25 A He did inhalation tests, and I think he did

1           some feeding tests, and he did a combination test giving  
2           the carbon tetrachloride, which is a known liver poison,  
3           along with these various Halowaxes. It was sort of a  
4           provocative test that he did. It was inhalation and  
5           feeding mostly. I don't think he did skin absorption.

6           Q     Are the results of those tests reported in that  
7           published article?

8           A     Yes, they are.

9           Q     And did his work include a report of work on  
10          any Monsanto product?

11          A     Yes.

12          Q     And in that Exhibit No. 2 paper, what Monsanto  
13          product did he report that he had tested?

14          A     He reported that he had tested the chlorinated  
15          diphenyl chlorinated to 65 percent chlorination.

16          Q     All right. Let me ask you then to look at  
17          Exhibit 3 and ask if you will identify Exhibit 3 for me.

18          A     Yes. This is an article published by Drinker's  
19          group in February of 1938 devoted to the pathology of  
20          rats that received        were exposed to certain  
21          chlorinated hydrocarbons.

22          Q     Was this also a paper reported at the  
23          symposium?

24          A     I'm not so sure. I don't recall that.

25          Pathology is        He probably said something, but I don't

1 think he went into as much detail as this.

2 Q All right. And that also was published in the  
3 "Journal of Industrial Hygiene and Toxicology"?

4 A Yes.

5 Q Do you remember seeing a copy of this at that  
6 time or shortly after it was published?

7 A Oh, yes.

8 Q Was the "Journal of Industrial Hygiene and  
9 Toxicology" a widely read and distributed journal in the  
10 occupational medicine field?

11 A Oh, yes. It was the only one in the United  
12 States that dealt with it. And I have to amend my last  
13 answer because there's a footnote that said this is the  
14 second of three papers read at the symposium, so and so,  
15 so the whole thing was read there.

16 Q All right.

17 A I guess I didn't pay as much attention to  
18 pathology as I should have.

19 Q All right. When you use the term "pathology,"  
20 what are we referring to? Could you explain that to the  
21 jury?

22 A Well, it's what It's a change in the normal  
23 anatomical appearance, either grossly or  
24 microscopically, of parts of the animal's body. In  
25 other words, if you have a pneumonia, you have changes

1 in pneumonia that can be noticed on gross examination  
2 and also see what happens if you take a slice and put it  
3 under a microscope.

4 Q Would it be correct to say then that Exhibit  
5 No. 2 and Exhibit No. 3 together comprise the entire  
6 report of Dr. Drinker's research up to that point?

7 A Well, he said second of three papers. I don't  
8 know what the third paper was. I don't know unless  
9 But that's all there was.

10 Q All right. Do you recall what the conclusion  
11 of Dr. Drinker and Dr. Bennett was with respect to the  
12 relative toxicity of chlorinated naphthalene and what  
13 they reported in Exhibit 2 and Exhibit 3 as chlorinated  
14 diphenyl?

15 A Yes. He said The thing that stood out in my  
16 mind was where he said chlorinated diphenyl appears to  
17 be the most injurious compound of all those tested.

18 Q Do you recall hearing that conclusion at the  
19 symposium?

20 A I think I did, yes. I recall it.

21 Q Now, you testified a couple of times that what  
22 he reported was chlorinated diphenyl. Did you later  
23 come to doubt that that was accurate?

24 A Oh, I doubted it as soon as I heard it because  
25 we didn't have the problems that Halowax, that GE were

1           experiencing from chlorinated naphthalene, and when he  
2           says that the diphenyl was the most toxic, I thought  
3           something was wrong here. Either I'm wrong or he's  
4           wrong.

5           Q     What did you subsequently do about that, if  
6           anything?

7           A     I called him up, and I said, "Look, I don't  
8           consider this as toxic as"

9           MR. McCREA: Objection, hearsay.

10          MR. DAVIDSON: I don't believe that's hearsay.

11          Q     Go ahead.

12          MR. McCREA: Well, I don't mind what he says  
13          to Dr. Drinker. I do mind what Dr. Drinker says to  
14          Dr. Kelly.

15          Q     Go ahead.

16          A     I called Dr. Drinker, and I said, "Look, we  
17          don't believe that this is as toxic, and, anyway, we  
18          don't make a compound, an Aroclor or chlorinated  
19          diphenyl, that's chlorinated to 65 percent. Where did  
20          you get this compound?" He said, "I got it from  
21          Halowax. They said it was Chlorinated Diphenyl 12     or  
22          something. Chlorinated diphenyl chlorinated to 65  
23          percent." And I said, "Well, let's run it over. I'll  
24          send you some honest to goodness stuff right off our  
25          production line that we know is chlorinated diphenyl.

1 We don't make a 1265. We make a 1262, and we make a  
2 1268. I'll send you the 1268 because that's got more  
3 chlorine in, and if it's going to be toxic, the more  
4 chlorine you had in, we would expect it to be more  
5 toxic." So he said, "Fine. Send it up, and I'll repeat  
6 it. It will cost you so much," whatever it was. I  
7 said, "We'll take care of it."

8 Q And was this the separate research that  
9 Monsanto asked Dr. Drinker to do that I asked you about  
10 earlier?

11 A That's correct.

12 Q Did you ever determine what the product was  
13 that he had tested originally?

14 A Not that I can recall. I don't know if he had  
15 any left that he sent back to us to analyze or not. I  
16 don't know that. But I do know that if he said it was  
17 chlorinated to 65 percent it had to be 4465 because that  
18 was the only one that we made with 65 as the last two  
19 numbers.

20 Q Now, earlier you told us that 4465 referred to  
21 a Monsanto product known as Aroclor 4465; is that  
22 correct?

23 A That's correct.

24 Q And that product consisted of what chemicals?

25 A Chlorinated Roughly 40 percent chlorinated

1 diphenyl and 60 percent chlorinated diphenylbenzene.

2 Q All right. When you engaged Dr. Drinker to do  
3 this additional research, what products did you send him  
4 to do research on?

5 A I think we sent him 5460.

6 Q Which is a what?

7 A A pure A hundred percent chlorinated  
8 diphenylbenzene.

9 Q All right.

10 A We sent him 1268, which is a pure what I'd  
11 say a pure production run chlorinated diphenyl  
12 chlorinated to 68 percent, and we probably sent him some  
13 4465, I believe, which is a mixture.

14 MR. DAVIDSON: We've been going about an hour  
15 and a half. I'd like to take a break at this point.

16 THE WITNESS: Yes. It's fine with me.

17 (Whereupon, there was a brief recess.)

18 Q Dr. Kelly, before we took a short break, we  
19 were discussing the symposium that Dr. Drinker conducted  
20 back in the late 1930's. Let me ask you whether or not  
21 Dr. Drinker or anyone else at the symposium ever  
22 suggested that Halowax was too dangerous to be used in  
23 the wire and cable industry?

24 A No, sir, he did not.

25 MR. McCREA: Can I have a continuing objection

1 to hearsay?

2 MR. DAVIDSON: Sure.

3 Q Did anyone at the symposium or Dr. Drinker in  
4 any of the statements or any of the published materials  
5 ever suggest that what he identifies as chlorinated  
6 diphenyl should not be used in the electrical industry?

7 A No, sir.

8 MR. McCREA: Counsel, I think I better get my  
9 objections on the record; otherwise, they can be lost.  
10 Plaintiff objects to any hearsay statements from the  
11 symposium.

12 Q Do you recall a Dr. Schwartz being present at  
13 the symposium?

14 A Yes.

15 Q Who was he?

16 A He was with the Public Health Service. He was  
17 a senior dermatologist. He had done quite a bit of work  
18 on industrial dermatology.

19 Q I'd like to ask you to look now at what's been  
20 marked as Exhibit No. 4. I believe that's this next up.

21 A Yeah.

22 Q Look another Exhibit No. 4 and I'll ask you if  
23 you can identify that for us.

24 A This is a report by Dr. Drinker to Monsanto,  
25 dated September 15th, 1938. It's a report on the

1 investigation on Aroclor 4465.

2 Q And is this report the basis for the data  
3 reported in what was marked as Deposition Exhibit 2 with  
4 regard to what was identified at that time as a  
5 chlorinated diphenyl?

6 A That's correct.

7 Q And, once again, would you tell us what 4465  
8 was composed of?

9 A Yes. 4465 is composed of 60 percent  
10 chlorinated diphenylbenzene and 40 percent chlorinated  
11 diphenyl. In fact, he refers to this as chlorinated  
12 diphenyl in this particular He refers to Aroclor 4465  
13 in this report as chlorinated diphenyl also.

14 Q And that's an error?

15 A Yes. That's an error.

16 Q All right. Let me ask you then to take a look  
17 at the next exhibit, which has been listed as Exhibit  
18 No. 5, and I ask if you can identify that exhibit.

19 A It's a report dated September 15th, 1938 by  
20 Dr. Drinker, a report to Monsanto Company on several  
21 different compounds.

22 Q Was this report sent to you at or about the  
23 time it's dated in September 1938?

24 A That's correct.

25 Q And is this the report Dr. Drinker submitted on

1 the research that was separately funded by Monsanto?

2 A That is correct.

3 Q What were the substances that were contained in  
4 this report?

5 A The first two we could dismiss. They were  
6 compounds that people had some thought that they were  
7 going to be used in some sort of a soft drink operation  
8 or something like that. Chlorinated Or diphenyl  
9 phthalate, and chlorcosane was the other compound.  
10 Those were One was a plasticizer, and the other one,  
11 I don't know what it was, but

12 Q Were they related in any way to PCBs?

13 A No.

14 Q Were they related in any way to the chlorinated  
15 naphthalene/halowax issue?

16 A No. Completely separate.

17 Q So which are the ones that we're concerned  
18 with?

19 A Chlorinated diphenyl 1268 and a mixture of  
20 chlorinated diphenyl and chlorinated diphenylbenzene  
21 5460. He's still got that one wrong, too.

22 Q All right. Because 5460 is what or was what?

23 A A pure chlorinated When I say "pure," 100  
24 percent chlorinated diphenylbenzene.

25 Q Were Aroclor 1268 and Aroclor 5460 the two

1 substances that you sent to Dr. Drinker for the  
2 research?

3 A Yes.

4 Q All right. In connection or based upon Exhibit  
5 No. 5, what did Dr. Drinker conclude about chlorinated  
6 diphenyl number 1268?

7 A Well, his conclusion was In conclusion,  
8 1268, if handled with ordinary precautions as to  
9 ventilation, should be entirely harmless to workmen. It  
10 cannot be given a complete absolutely clean bill of  
11 health. It's preferable to 4465 and 5460. But he also  
12 stated that even though he increased the concentration  
13 of 1268 the rats had no problems. They were very  
14 healthy throughout the period. There were almost  
15 uniform gain in weight. He said there was some swelling  
16 of the granularity of the liver cells, but they were  
17 not progressive.

18 Q All right. I'd like you to look now at  
19 Deposition Exhibit 6 and tell me if you can identify  
20 that for us, please.

21 A Yes. This is an article by Dr. Drinker that  
22 was published in the "Journal of Industrial Hygiene and  
23 Toxicology" volume in May of nineteen thirty I can't  
24 make it out '39 is it? May '39. "Further  
25 Observations on the Possible Systemic Toxicity of

1 Certain of the Chlorinated Hydrocarbons."

2 Q And did Dr. Drinker include in this paper any  
3 reference to the chlorinated diphenyls and to his prior  
4 identification of the substance as chlorinated diphenyl?

5 A Yes.

6 Q And what did he say?

7 A Well, "The sixth compound has been listed  
8 previously"

9 Q Are you quoting from the article now?

10 A Yes. Directly.

11 Q And on what page?

12 A That is page 158.

13 Q All right.

14 A The last paragraph.

15 Q All right.

16 A "The sixth compound has been listed previously  
17 as chlorinated diphenyl. It contains 65 percent of  
18 chlorine and proved very destructive to the liver.  
19 Later experiments with Compound 13, which contains 68  
20 percent of chlorine, and which is also labeled  
21 chlorinated diphenyl, were a surprise to us since the  
22 second compound was almost nontoxic.

23 On inquiry, it was found that Substance 6 was  
24 in reality a mixture of chlorinated diphenyl and  
25 chlorinated diphenylbenzene, and that No. 13 was actual

1 chlorinated diphenyl. We have no information as to  
2 whether this compound lacks toxicity because it's not  
3 broken down in the body. . ." So he reversed his  
4 opinion as to the toxicity of chlorinated diphenyl.

5 Q All right. Are you testifying today,  
6 Dr. Kelly, that because of Dr. Drinker's  
7 misidentification of the compound initially that  
8 chlorinated diphenyl had no toxic properties at all?

9 A Oh, no. Certainly, it's an industrial  
10 compound. It's got some. But it's not nearly as bad as  
11 he painted it in his first paper.

12 Q All right. And as a result of these  
13 acknowledged toxic properties, did you at that time in  
14 the 1930's and 1940's believe that it was prudent to  
15 take certain precautions if handling PCBs?

16 A Yes.

17 Q And did the literature that you reviewed in the  
18 1930's and '40's and '50's demonstrate to you that there  
19 was some safe level at which PCBs could be used?

20 A What years?

21 Q The '30's and '40's and '50's.

22 A Yes. I do not know when the American  
23 Conference of Government Industrial Hygienists published  
24 a standard for an MAC, Maximum Allowable Concentration,  
25 which was the term used at that time, but we carried out

1 work on 1242 and 1254 at the Kettering Laboratory that  
2 gave us gave the Government Industrial Hygienists the  
3 basis for coming out with a safe level.

4 Q All right. Dr. Kelly, earlier you were  
5 identifying reports in the literature of effects caused  
6 or allegedly caused by exposure to PCBs, and you  
7 mentioned a Dr. Meigs. I'd like for you to take a look  
8 now at what's been marked as Exhibit No. 7 and ask you  
9 if you could identify that for us, please.

10 A Yes. This is an article from the "Journal," I  
11 believe, "of the American Medical Association" by  
12 Dr. Meigs of April 1954 stating about chloracne from an  
13 unusual exposure to Aroclor.

14 Q And could you briefly describe what had what  
15 is described by Dr. Meigs in this article?

16 A Yes. He had described the exposure from  
17 Aroclor. He did not define the Aroclor, describe the  
18 Aroclor. And he stated that it had been brought to his  
19 attention that some of the workers had developed mild  
20 chloracne, and he said he had seven cases that occurred  
21 among 14 chemical operators who were working there from  
22 five to 19 months. He said also there was leakage of  
23 vapors from the heat exchange system.

24 Q Did you read Dr. Meigs' article when it was  
25 published in 1954?

1 A Yes, I did.

2 Q And what did you do, if anything, as a result?

3 A I wrote him.

4 Q I'd like you to look at what's been marked as  
5 Exhibit No. 8 and ask you to identify that for us.

6 A Yes. This is a letter of mine to Dr. Meigs in  
7 which dated April 28th, '54, in which I asked him  
8 It was confusing to me because he stated he was using  
9 He had found .1 .1 milligram per cubic meter as a  
10 concentration these people were exposed to, and I said,  
11 "We've been exposing people to four times that much, and  
12 they've had no chlorine. What Aroclor were you using?  
13 Are you at liberty to tell me what the product was? Is  
14 there any other chlorinated compound in the plant?", et  
15 cetera.

16 Q And did you receive a response?

17 A Yes, I did.

18 Q I'd like to ask you to look at Exhibit No. 9  
19 and ask you if you'll identify that for me.

20 A Yes. This is a reply from Dr. Meigs to me  
21 dated April May 7th, 1954, in which he answered most  
22 of my questions with the exception he never told me what  
23 Aroclor he was using.

24 Q Well, let's take that one step at a time. What  
25 did he tell you about the exposure that he had?

1 MR. McCREA: Objection.

2 Q What does the letter say about the exposure?

3 A Well, he says Let's start off reading this  
4 stuff. He said that he didn't know, had no good answer  
5 why the air samples were so low, but it appeared that he  
6 had run these samples quite somebody had run these  
7 samples quite some time before he saw the people with  
8 the chloracne.

9 Q Uh huh.

10 A He said it did not organic acid A did not  
11 contain chlorine, nor did anything else in a particular  
12 building. He said he got the Aroclor from one of the  
13 large suppliers. It was a combination of high boiling  
14 chlorinated hydrocarbons. I really don't know what that  
15 means because we don't describe our products like a  
16 high boiling chlorinated hydrocarbon, so I don't know  
17 what he used. Since the repair on the circulating  
18 system had been made, there were no more cases over a  
19 three year period. So it looks like he wrote the  
20 article I mean, he wrote the article three years  
21 after the thing happened. And he also said, "My  
22 conclusion is that chlorinated hydrocarbons should  
23 ultimately be judged as safe or hazardous in  
24 relationship to various observations of the workers  
25 themselves." He also said he's not suggesting a change

1 in the MAC, and he said

2 Q Would you just stop right there and tell us  
3 what does MAC refer to?

4 A MAC is the Maximum Allowable Concentration that  
5 a worker can be exposed to without ill effect to  
6 himself. It was changed sometime after the middle '50's  
7 to Threshold Limit Value, which is supposed to be a safe  
8 level that a worker can be exposed to eight hours a day  
9 for 40 years.

10 Q Okay. There is in this letter, Exhibit 9, a  
11 statement that "None of us here, including the state  
12 health department survey people, have any good answer to  
13 why the air samples were so low. We assume that somehow  
14 other conditions may have existed for a few weeks or  
15 months prior to the recognition of chloracne." When you  
16 read that, what was your understanding about the cause  
17 of this problem at the plant where Mr. Meigs  
18 Dr. Meigs was studying?

19 A I have no basis for any opinion on it. I was  
20 confused as they were.

21 Q Also in that letter, you quoted or you noted  
22 that Dr. Meigs said that he was not suggesting that the  
23 MAC or the Maximum Allowable Concentration for Aroclor  
24 had been set too high. Was that significant to you?  
25 Did that have any bear on your opinion about this

1 incident?

2 A Well, it was, because it appeared to me that  
3 here this man said, "I have been getting chloracne from  
4 workers who were exposed to one fifth of the Maximum  
5 Allowable Concentration, but I don't think we ought to  
6 change the values for the Maximum Allowable  
7 Concentrations." So either he disbelieved his figures  
8 or he thought this particular observation of his was  
9 irrelevant as far That's my opinion as to what he was  
10 thinking, but I can't put myself into his mindset.

11 Q Okay. You noted earlier that the article that  
12 was marked as Exhibit 7 was published in the "Journal of  
13 the American Medical Association". Was that a  
14 widely distributed and read journal?

15 A Oh, yes. Probably the most widely read one in  
16 the United States. Every physician who belonged to the  
17 A.M.A., and in those years probably 80 percent of the  
18 people belonged to it, they got the journal along with  
19 their membership.

20 MR. DAVIDSON: We are at a breaking point at  
21 this time that it would probably be good to break off  
22 and take our lunch break.

23 (Luncheon recess.)

24 Q Dr. Kelly, you've testified already this  
25 morning concerning some testing that Monsanto had done

1 by a Dr. Drinker and his group. I wanted to ask you  
2 whether after the 1930's and after that research  
3 Monsanto continued to sponsor toxicological testing on  
4 its PCB products?

5 A Yes, we did.

6 Q And did that work include sponsoring animal  
7 studies with respect to the toxicity of PCBs?

8 A Yes, sir.

9 Q And did Monsanto perform those tests in house?

10 A No, sir.

11 Q Did Monsanto have a laboratory capable of doing  
12 those sorts of tests?

13 A Not in those days, not until '75.

14 Q All right. Do you recall the names of any of  
15 the laboratories that were used by Monsanto to do  
16 toxicological testing on PCBs?

17 A Yes. We ran acute studies at Scientific  
18 Associates and Younger Laboratories, we did chronic  
19 inhalation work at the Kettering Laboratory of the  
20 University of Cincinnati, and we did long term feeding  
21 tests on various animals at the Industrial Bio Test  
22 Laboratory.

23 Q All right. Let me take an aside and ask you  
24 this. In your view and in your opinion, was it possible  
25 to extrapolate directly from these animal or the

1 results of the animal studies to human beings?

2 A No, not directly.

3 Q Then did you rely on the results of the animal  
4 studies?

5 A Relied somewhat on it. They gave us a target  
6 organ. They gave us an approximation of the regular  
7 of the relative toxicity vis a vis other common  
8 industrial products.

9 Q Would it be accurate then to say that the  
10 results of animal toxicity testing was just one of a  
11 number of factors that you used to form your opinions?

12 A Yes, sir.

13 Q With respect to the testing you mentioned a  
14 minute ago, acute testing, could you elaborate for us  
15 and explain what you mean by acute testing?

16 A Yes. Acute testing involves a response of the  
17 animal to a single dose at one particular time. That  
18 single dose may be administered over a period of one or  
19 two days, but it is more or less of a one shot exposure  
20 to the product.

21 Q Could you describe what kinds of tests would  
22 fall within the category of acute testing?

23 A Yes. Well, what we did We did acute testing  
24 on the eyes. We dropped the material a hundred percent  
25 into the eyes, or dissolved if it were a solid. We

1 applied the material to the skin of shaved skin of  
2 rabbits. We fed it to animals to determine the  
3 approximate lethal dose for 50 percent of the animals,  
4 and we had the animals breathe air saturated as we could  
5 get it at ambient temperatures.

6 Q You mentioned Lethal Dose 50 or LD 50. Would  
7 you explain for the jury what that means?

8 A That's sort of a benchmark for acute toxicity.  
9 It means you give a dose that will kill half the  
10 animals. It's more or less recognized by toxicologists  
11 and people working in the field that that is a sort of a  
12 standard property if you're talking about toxicological  
13 activity.

14 Q And was that a commonly used method for  
15 determining the relative toxicity of various substances  
16 in the '50's?

17 A Yes. I don't know when it came into widespread  
18 use. Previous to that, it was a minimum lethal dose.  
19 You gave varying amounts, and you picked the amount that  
20 did not kill the animal. But they were both acute type  
21 tests.

22 Q Was there a type or species of animal that was  
23 usually used to determine the LD 50?

24 A Yes. The majority was rats for everything  
25 except skin, and rabbits for the skin.

1 Q In the 1950's, did Monsanto conduct these acute  
2 tests on its products containing PCBs?

3 A Yes, they did.

4 Q How did you decide or select which products  
5 would be tested?

6 A Well, I think that You mean Are we  
7 talking about the PCBs?

8 Q Yes. Yes.

9 A Well, if we had a different formulation, if we  
10 had If we were blending the material with other  
11 products in our plant, we would test the finished  
12 product. And if we had gaps in our toxicological  
13 knowledge, we would test a product to fill those gaps  
14 in.

15 Q All right. And were these tests ordered by the  
16 medical department?

17 A Yes, they were.

18 Q Do you know whether or not acute tests were run  
19 on all of the standard Aroclor products that were sold  
20 by Monsanto?

21 A I think so.

22 Q All right. I'd like to have you look now at  
23 the next exhibit, which has been marked as Exhibit 10,  
24 and ask if you can identify that exhibit for us.

25 A This is a test of Scientific Associates, an

1 analysis of the toxicity, LD 50, of Aroclor 1254 for  
2 rats, dated November 10th, 1953.

3 Q And was Scientific Associates one of the labs  
4 that you used for Monsanto?

5 A That's correct. One of the two labs.

6 Q And was this a test requested by you or someone  
7 in the medical department?

8 A That's correct.

9 Q And did you review these test reports when they  
10 were submitted to Monsanto by Scientific Associates?

11 A Yes, I did.

12 Q Is this a typical battery of tests and report  
13 of the type that you would have received with regard to  
14 the various Aroclor products?

15 A Yes. It gives the acute oral toxicity of the  
16 material. It gives the air the inhalation toxicity,  
17 and it gives the eye irritation. And I don't know if we  
18 did the skin absorption or not. Doesn't seem like we  
19 did that in this particular testing. Sometimes we did  
20 all four of them; sometimes we did three; sometimes we  
21 did one.

22 Q All right. I'd like to ask you now to look at  
23 Exhibit No. 11 and ask if you would identify that  
24 exhibit for us.

25 A This is a report from Scientific Associates,

1           dated December 11th, 1963, on the acute oral toxicity of  
2           Aroclor 1242 for rats. We tested the acute toxicity on  
3           that particular product.

4           Q     And, once again, is this a typical type of test  
5           and report that Monsanto had run on its Aroclor products  
6           in the early '50's?

7           A     Well, I wouldn't say it's typical because this  
8           is only the acute oral dose, and in some of the cases,  
9           I'd say the majority of the cases, we ran all four  
10          elements of the package: the skin absorption, the eye  
11          irritation, and the air     the respiratory exposure.

12          Q     Maybe I misspoke. This is an example of one of  
13          those sorts of tests?

14          A     That's correct.

15          Q     And reports?

16          A     That's correct.

17          Q     And would you have reviewed this report when it  
18          was sent to Monsanto sometime around December 1953?

19          A     Yes, I did.

20          Q     All right. Do you know whether or not these  
21          types of reports and certificates of analysis were  
22          shared with Monsanto customers?

23          A     Yes, they were.

24          Q     And, specifically, are you aware or do you know  
25          whether they were ever shared with Westinghouse?

1 A Yes. I know they were.

2 Q Now, given all of the toxicity testing, the  
3 acute toxicity testing that was done in the '50's, did  
4 anything in any of these reports cause you to change  
5 your opinion about the relative toxicity of PCBs?

6 A No. There was nothing there that caused me to  
7 change my opinion.

8 Q All right. I'd like for you to look now at the  
9 next exhibit, which is actually the next two  
10 exhibits, which have been marked Kelly 12 and Kelly 13,  
11 and ask if you will identify those for me, please.

12 A These are two reports by from the Kettering  
13 Laboratory of the University of Cincinnati Medical  
14 School, College of Medicine. I'd refer to them as the  
15 Treon reports because he was the senior author.

16 Q And that's Dr. Joseph Treon that's listed on  
17 the front sheet?

18 A That's correct.

19 Q And could you tell us a little bit about  
20 Dr. Treon and the Kettering Laboratory and how you came  
21 to select them?

22 A Well, the Kettering Laboratory was probably one  
23 of the two academic institutions that did work in  
24 industrial toxicology. The other was the Harvard under  
25 Drinker. And this was the College of Medicine of

1 University of Cincinnati, Treon. They had a full  
2 implement of specialists. They had toxicologists. They  
3 had physicians. They had industrial hygienists. They  
4 had pathologists. So they were a very well thought of  
5 organization. Treon was a Ph.D., and he was a  
6 toxicologist.

7 Q All right. And did Monsanto request that this  
8 research work be done?

9 A Yes.

10 Q And did Monsanto pay for this research to be  
11 done?

12 A Yes, they did.

13 Q What types of tests did Dr. Treon do and report  
14 in these two exhibits?

15 A This was primarily air exposure and respiratory  
16 exposure, in which he volatilized the Aroclors and  
17 subjected quite a mixed bag of animals, cats, rabbits,  
18 mice, rats, I don't know if he had a dog in there or  
19 not, for fairly long periods of time.

20 Q You mentioned You used the word  
21 "volatilize". Would you explain that in layman's terms  
22 for us?

23 A Yes. You volatilize a product if you do  
24 something to it to get the fumes to come off. So we  
25 heated these Aroclors because at room temperature the

1 vapor pressure was negligible, so we had to heat them up  
2 to close to 200 degrees centigrade.

3 Q You say, "We had to heat them up."

4 A He I mean Treon did.

5 Q All right. And you used the term "vapor  
6 pressure" there. If PCBs are at room temperature, do  
7 they give off their vapors?

8 A Some, but at a very negligible amount.

9 Q And does Dr. Treon report in these papers how  
10 he was able to volatilize the PCBs?

11 A Yes. At some times he dropped it on a hot  
12 metal plate, and sometime I think he had inserted a  
13 heated tube into the material to volatilize it.

14 Q Do you know We have two different reports  
15 here, one dated June 22, 1955, which is Kelly 12, and  
16 the other dated June 28, 1955, Kelly 13. Can you  
17 explain very briefly and in layman's terms the  
18 difference between these two reports?

19 A Yes, I think he ran a second test for a longer  
20 period of time in a somewhat smaller concentration of  
21 the material.

22 Q What was the purpose for which Monsanto wanted  
23 to do these have these studies conducted?

24 A Well, at that time, we were into hydraulic  
25 fluids, and there was a possibility, a good probability

1           that they'd be leaking, that people would be exposed to  
2           material at elevated temperatures, and we wanted to see  
3           what a safe level was so we wouldn't harm one of the  
4           workers who was using this material at elevated  
5           temperatures.

6           Q     Were your     Let me back up for a minute. Did  
7           you review these reports when they were received at  
8           Monsanto?

9           A     Yes, I did.

10          Q     And did anything you reviewed in either of  
11          these three reports by Dr. Treon change your opinion in  
12          any way about the toxicity of PCBs?

13          A     No, they did not.

14          Q     Did you find these studies to be basically  
15          consistent with what you had already concluded about the  
16          toxicity of PCBs?

17          A     Yes.

18          Q     Now, did Dr. Treon ever publish any of the  
19          results of these studies?

20          A     Yes. He published them in I think the "Journal  
21          of the American Industrial Hygiene Association".

22          Q     All right. Let me ask you to look at what's  
23          been marked as Exhibit 14 and ask if you will identify  
24          that for us.

25          A     Yes. This is a report on the toxicity of

1 vapors of Aroclor 1242 and 1254, dated Was presented  
2 at the Industrial Hygiene Association on April of '56, I  
3 think.

4 Q Are you reading now from a footnote on the  
5 first page?

6 A Yes.

7 Q Okay. And do you see anything to date the date  
8 of the publication?

9 A Yes. On page Well, MONS 097492 has a date  
10 of June 1956.

11 Q All right. Now, did you read this article at  
12 or about the time it was published in the literature?

13 A Yes, I did.

14 Q And was "The Industrial Hygiene Quarterly," I  
15 believe is the proper name printed on there, was that a  
16 well known widely distributed publication?

17 A It was distributed I think to every industrial  
18 hygienist in the United States. It was addressed to a  
19 number of occupational physicians and to state agencies.  
20 It was the only journal on industrial hygiene that was  
21 existing in the United States at that time, so it was  
22 pretty widely read.

23 Q All right. And did you find that the same  
24 conclusions that Dr. Treon had made in his two reports  
25 to Monsanto that we've seen, Exhibits 12 and 13, were

1 incorporated and included in his published version?

2 A Yes, they were.

3 Q And, generally speaking, what were those  
4 conclusions?

5 A They were that he established what he thought  
6 could be a safe level for TLV or MAC, I don't know which  
7 one he was using at that time, that he thought that we  
8 could have a MAC of two milligrams per cubic meter for  
9 1242 and one milligram per cubic meter of Aroclor 1254.

10 Q All right. Do you know whether or not  
11 Dr. Treon's work was subsequently used by any  
12 organization to establish a Threshold Limit Value?

13 A Yes, it was.

14 Q And what organization was that?

15 A The American Conference of Governmental  
16 Industrial Hygienists.

17 Q And do you know why or what levels they decided  
18 to publish as a TLV?

19 A Yes. They took half of his level, and they  
20 published their standard at one milligram per cubic  
21 meter for 1242 and .5 milligrams per cubic meter for  
22 1254.

23 Q And you may have already told us this when I  
24 asked you about the MAC earlier, but what does TLV mean?  
25 What does that say to a person concerned about

1 occupational medicine or industrial hygiene?

2 A It means that according to the best information  
3 available to workers in that field, physicians and  
4 industrial hygienists, that if you operate under that  
5 level a man can work eight hours a day for 40 years  
6 without any injury to himself from exposure to the  
7 compound.

8 Q And what was the American Conference of  
9 Governmental Industrial Hygienists that you testified  
10 set this TLV?

11 A Well, as the name implied, it was a group that  
12 was composed solely of governmental industrial  
13 hygienists, whether they were at the city level, state  
14 level or federal level. Nobody from industry was  
15 allowed to be a member.

16 Q I'd like for you now to look at what's been  
17 marked as Exhibits 15 and 16 and ask if you can identify  
18 those for me, please.

19 A Yes. 15 is a report from the Younger  
20 Laboratories, an analysis of Inerteen PPO, dated March  
21 the 4th, 1963, in which we ran our acute package of  
22 acute testing. Exhibit No. 16 is the same sort of a  
23 report on a compound of General Electric's, Pyranol  
24 1470.

25 Q And is it also dated in March of 1963?

1 A That's correct.

2 Q And who requested that these tests be done?

3 A Somebody in the medical department.

4 Q So this was a test done for Monsanto?

5 A That's correct.

6 Q You told us earlier in your deposition that  
7 Inerteen was a trade name used by the Westinghouse  
8 Corporation. Do you know what this substance was that  
9 was named Inerteen PPO that was being tested here?

10 A Well, it was a transformer oil, but I don't  
11 know what it was.

12 Q All right.

13 A I knew then, but I don't recall right now.

14 Q Do you know whether it contained some portion  
15 of PCBs?

16 A Oh, yes. And I don't know if it contained  
17 trichlorobenzene or not.

18 Q Was You testified earlier, I believe, that  
19 Pyranol was a trade name for the General Electric  
20 Company?

21 A That's correct.

22 Q Was Pyranol 1470 also a transformer dielectric  
23 fluid?

24 A Yes. That's correct.

25 Q And did it contain at least some part of PCBs?

1 A Yes. The major part was PCBs.

2 Q Do you know now whether we shared these tests  
3 with Westinghouse and GE?

4 A It is my recollection that we did.

5 Q And you indicated that this was the acute  
6 package. You're referring to the series of acute tests  
7 that you described a few minutes ago?

8 A That's correct.

9 Q And that's what these certificates of analysis  
10 report?

11 A That's correct.

12 Q Let me go back to those two exhibits for just a  
13 moment and ask you whether or not anything that was  
14 reported with respect to Inerteen PPO or Pyranol 1470  
15 caused you to change your opinion that PCBs could be  
16 used in dielectric fluid safely if certain precautions  
17 were used?

18 A That's correct. I did not There was nothing  
19 in these two reports that caused me to change my opinion  
20 as to the safety of those products.

21 Q I would like for you to look at the next  
22 exhibit, if you would, which is Kelly Exhibit 17, and  
23 I'll ask you to identify that exhibit for me.

24 A That is a report by the Industrial Bio Test  
25 Laboratories of Chicago, of Northbrook, Illinois, a

1 report to Monsanto on the subacute dermal toxicity of  
2 Aroclor 1254. I might say at this time that the phrase  
3 "subacute" is really a misnomer. You can't have  
4 anything more acute than acute. And it really should be  
5 subchronic. But regardless of what it means, it's a  
6 multiple testing of the material on the skin, not  
7 through a lifetime of the animal, but through a period  
8 of several weeks.

9 Q And did you request or you or someone in the  
10 medical department request that this test be run?

11 A Yes.

12 Q And why did you choose, if you know, the  
13 Industrial Bio Test Laboratories in Illinois?

14 A Well,

15 MR. McCREA: Just a second.

16 A we chose them over

17 MR. McCREA: Counsel, do you mean When you  
18 say "you," do you mean Dr. Kelly?

19 THE WITNESS: Yes.

20 Q Let me clarify it. Do you know whether you  
21 chose to use Bio Test Industrial Bio Test or not?

22 A I did.

23 Q And why did you choose them?

24 A Because they had a wider range of specialists.  
25 They had pathologists. They had analytical chemists.

1           They had bio chemists. This was a little more involved  
2           than an acute study. Scientific Associates or Younger  
3           Laboratories did not have that expertise in those other  
4           fields.

5           Q     Did you know or look into any of the persons  
6           who were operating the Industrial Bio Test Laboratories?

7           A     Oh, yes. I've been     This was in fifty  
8           When did we do this? It was in

9           Q     I believe the date is on the very last page,  
10          16.

11          A     Oh, '63. We had been using it before for other  
12          compounds. We had been using it for agricultural  
13          chemicals. We'd used it for several different types of  
14          compounds, and we knew all about the laboratory.

15          Q     Do you know whether they were being used by  
16          other persons needing toxicological testing?

17          A     Yes, I do. They were used by DuPont. They  
18          were used by Dow, even though they had their own  
19          laboratories. They were used by the U.S. Army and the  
20          FDA, among other government agencies.

21          Q     And was this particular subacute, using their  
22          terminology, subacute dermal toxicity test run on  
23          PCB containing products other than Aroclor 1254?

24          A     Were there other compounds submitted by  
25          Monsanto?

1 Q Yes.

2 A I don't remember whether we did any others or  
3 not. I know we did this one obviously. We have a  
4 report.

5 Q All right.

6 A But I just do not know at the present time  
7 whether we did other ones. It would be sort of unusual  
8 we'd just pick one, but there might have been a specific  
9 application proposed or a proposed use for 1240 54  
10 that might have a possibility of repeated skin contact.

11 Q Do you recall either this test or any other  
12 tests that you may have received from IBT in 1963 on  
13 PCB containing products that caused you to change your  
14 opinion as to the toxicity of PCBs in any manner?

15 A No. There was nothing in any of the reports  
16 that we had received that caused me to change my mind.

17 Q Did it essentially confirm what you already  
18 believed?

19 A That's correct.

20 Q I'd like now to direct your attention,  
21 Dr. Kelly, to some exhibits that relate to Monsanto's  
22 publications, and I'd like to ask you first to take a  
23 look at what has been marked as Exhibit No. 18, and I'd  
24 ask you if you can identify that for me.

25 A 18?

1 Q I'm sorry. Yes. Kelly This one right here.

2 A Oh, 18. I thought it was 19. Yes. This is

3 really not a publication; this is an internal

4 memorandum.

5 Q All right. And who authored this memorandum or

6 whose name is at the bottom?

7 A L. A. Watt.

8 Q Did you know him?

9 A Yes. He was a man who worked for Monsanto for

10 quite some time. He was not a physician or a

11 toxicologist, but he was a chemist who had considerable

12 experience in the development of specialized compounds.

13 And he had Before I came with the company, he had

14 carried out some contact with toxicological

15 laboratories. I don't know if he ever had any work

16 done, but he was familiar with the safe handling

17 procedures for one section of the company.

18 Q What is the date of this memorandum?

19 A October the 11th, 1937.

20 Q So that would have been approximately a year

21 after you joined the company?

22 A Year and a half.

23 Q Year and a half. And while you were still the

24 plant physician

25 A At the Queeny Plant.

1 Q at the Queeny Plant.

2 A Right.

3 Q I'd like for you to refer to the last paragraph  
4 and tell me what the purpose of this memorandum was.

5 A Well, the last paragraph said Watt talked with  
6 me before these paragraphs were written, we agreed that  
7 they might as well be phrased so they can be need (sic.)  
8 not only in the Aroclor booklet, but quoted in  
9 correspondences that may be necessary. That particular  
10 time, I was a part time physician at the Queeny Plant,  
11 and I was not there full time. So if they needed to  
12 answer a letter or inquiry that came in, it would not  
13 come to me because I hadn't been there.

14 Q And is that last paragraph referring to the  
15 information contained in the quotes in the first three  
16 paragraphs?

17 A Oh, yes. He said "before these three  
18 paragraphs were written". There are three paragraphs  
19 above that one.

20 Q Did you approve the language of those three  
21 paragraphs?

22 A Yes, I did.

23 Q Could you read the language that you approved  
24 to the jury, please?

25 A Sure. First, "Experimental work in animals

1 shows that prolonged exposure to Aroclor vapors evolved  
2 at high temperatures or by repeated oral ingestion will  
3 lead to systemic toxic effects. Repeated bodily contact  
4 with the liquid Aroclors may lead to an acneform skin  
5 eruption. Suitable draft ventilation to control the  
6 vapors evolved at elevated temperatures, as well as  
7 protection by available (sic.) garments from excessive  
8 (sic.) bodily contact with the liquid Aroclors should  
9 prevent any untoward effect."

10 Q This language was to be used how?

11 A Any customer that To put it First, the  
12 material would be put in safe handling paragraphs in our  
13 bulletins. It would be used in correspondence with the  
14 customers.

15 Q All right, sir. Let me ask you now a general  
16 question, Dr. Kelly, whether as the medical director of  
17 Monsanto, when you were preparing safe handling  
18 instructions or cautions, did you have a general  
19 philosophy that you followed about how those ought to be  
20 created?

21 A Instructions?

22 Q The instructions, yes.

23 A Yes. Put it down as concisely as you could and  
24 make sure that they prevent if followed, they would  
25 prevent any harm from using our products.

1 Q All right. Earlier

2 A I wanted to be concise because the more  
3 verbiage you put into a caution, the less likely that a  
4 worker is going to read it.

5 Q In your opinion and in your philosophy, what's  
6 the difference between putting the language on a label  
7 that was to go on a product and putting the language in  
8 a bulletin, if any?

9 A Oh, quite a lot of difference. The information  
10 that you put on a label is to tell the individual who is  
11 using the product how to avoid any problem to himself.  
12 The information in the bulletin is more extensive  
13 because you're not sure what particular application the  
14 product is going to be in, so there's more information.  
15 There's information about the toxicity of a product, and  
16 there may be material about the Maximum Allowable  
17 Concentrations or TLV that should be followed when using  
18 the product. And it really depended on the audience  
19 that you were talking to, you were sending this  
20 information to.

21 Q All right, sir. Do you have a recollection as  
22 to when Monsanto began putting any cautionary language  
23 on its products containing PCBs?

24 A I think it was on Some was on when I came to  
25 work with them in 1936.

1 Q All right. I'd like to have you now look at  
2 what has been marked as Exhibit 19 and ask if you would  
3 identify that for me.

4 A Yes. This is a label for Aroclor 1254, which  
5 was manufactured by Monsanto Chemical Company. There's  
6 a written date on it, not a printed date, of August  
7 11th, 1954, if I can read it correctly.

8 Q By looking at the content of this label, is  
9 there does the date of 1954, is that consistent with  
10 what you would believe this label to or when you  
11 would believe this label to have been used?

12 A I think it was around that time because they  
13 call themselves Monsanto Chemical Company, and we  
14 changed the name to Monsanto Company sometime I think  
15 around somewhat after 1954, but I'm not sure.

16 Q Okay. For convenience sake, and so that we can  
17 show this to the jury, I want to hand you a copy that's  
18 simply mounted on a board. Let me ask you this. Does  
19 this label contain any cautionary or warning language?

20 A Yes, it has "Caution! Avoid prolonged and  
21 repeated contact with skin. Avoid prolonged breathing  
22 of vapor and dust."

23 Q Now, who was responsible for writing or for  
24 writing the cautionary language on a Monsanto label?

25 A Ultimately I was. It was either written by me

1 or the associate medical director, or conceivably one of  
2 our industrial hygienists and toxicologists could have  
3 had some input in it, but the responsibility was  
4 ultimately mine.

5 Q Okay.

6 A And I saw whatever we did on it.

7 Q All right, sir. Let me ask you now to look  
8 down at Exhibit No. 20 and ask you to identify that  
9 exhibit.

10 A No. 20?

11 Q Yes.

12 A Is a label for Inerteen 54201 CM. I don't know  
13 what all that means. But it states it's a trademark for  
14 Westinghouse Electric Company, made for Westinghouse  
15 Electric Corporation, and made by Monsanto Company of  
16 St. Louis.

17 Q And are you able to determine at least a  
18 general time period when this label would have been used  
19 on a Monsanto product?

20 A Well, they call themselves the Monsanto Company  
21 at this time, so it was sometime I guess in the '60's, I  
22 believe.

23 Q All right, sir.

24 A Late '50's or '60's. Somewhat later than that  
25 first one.

1 Q And does it contain cautionary language?

2 A Yes, it does. It's got somewhat a little bit  
3 more extensive because it mentions the fact that it  
4 contains chlorinated hydrocarbons. So this presumably  
5 means that we may have blended some trichlorobenzene  
6 into the material.

7 Q All right. Before you put that away, I wanted  
8 to hold the previous exhibit up for a minute so that the  
9 jury can see what was marked as Exhibit 19. And could  
10 you hold that up so that it can be viewed? This was  
11 Exhibit 19 that you read from?

12 A Yes, it was.

13 Q All right. Now I'd like to hand you Exhibit 20  
14 that you have just referred to and ask if you would hold  
15 that up so that the jury could view a copy of Exhibit  
16 20.

17 A Yes. This is the same as the paper label  
18 you've sent me.

19 Q All right. If you would pull that down then,  
20 there's a smaller label or item attached to Exhibit 20.  
21 Can you tell us what that is?

22 A Yes. This is what we call the environmental  
23 sticker. In the late '60's and early '70's, the problem  
24 of environmental contamination with PCB fluids became  
25 prominent, and we had told our customers about the

1           problem and they should not be allowed to escape into  
2           the environment if it could be at all controlled. So  
3           this sticker was applied to all our packages, I use  
4           package loosely, whether that was a drum, a 55 gallon  
5           drum or a tank car or something.

6           Q     Would you read that label, what you referred to  
7           as the environmental label, for me, please?

8           A     Yes. "This product contains polychlorinated  
9           biphenyls, which some studies have shown may be an  
10          environmental contaminant. Extreme care should be taken  
11          to prevent any entry to the environment through spills,  
12          leakage, use, disposal, vaporization or otherwise."

13          Q     And to the best of your knowledge, when did  
14          this label start     Monsanto start applying this label  
15          to its products?

16          A     Early 1970.

17          Q     All right, sir. Let me ask you then to look at  
18          Exhibit No. 21.

19          A     Do I pile this here, or you want it back?

20          Q     Would you identify Exhibit 21 for me, please?

21          A     Yes. This is a     This appears to be a label  
22          for the same product, Inerteen 54201 CM, which is pretty  
23          similar to the other label except that the environmental  
24          sticker is contained on the label and waste disposal  
25          a waste disposal system in which they could send it back

1 to Monsanto for incineration was also mentioned in the  
2 label.

3 Q I'd like to ask you to hold that up so that it  
4 can be viewed by the jury.

5 A Yes. That's the same label as the paper one  
6 you showed me.

7 Q Is the cautionary language the same as the one  
8 we just read?

9 A Yes, it is.

10 Q And the only difference, differences with this  
11 label would be that the environmental language has now  
12 been printed into the label and a notice of a waste  
13 disposal procedure has been included?

14 A That's correct.

15 Q Okay. Thank you very much. And if you now  
16 will take a look at what's been marked as Kelly Exhibit  
17 21 A, please. And this is in two parts. They're  
18 stapled together and labeled as one exhibit. But if  
19 you'd take that out and take a look at it, I'd  
20 appreciate it. And could you identify this for me,  
21 please.

22 A This is a label of the same material, Inerteen  
23 54201, which is made for Westinghouse Electric  
24 Corporation as a trademark of them, and it's somewhat  
25 similar to the previous labels with the exception that

1 the cautionary material and the safe handling is on the  
2 back of the container rather than on the front of the  
3 label. So on the back of the label we have this quite  
4 pretty involved bits of information in seven  
5 different languages.

6 Q Okay. Could you pick out the English language  
7 section of the second portion of this and read that into  
8 the record, please, as to what information Let me  
9 Before we get to that, let me say let me ask whether  
10 you are able to give us an approximate time period when  
11 this label began to be used.

12 A Late '70 or '71, I believe. I'm not any more  
13 certain than that.

14 Q All right. Now, would you look at the English  
15 version of the label?

16 A Yes.

17 Q And read that into the record, please.

18 A It said Starts off saying that it was a  
19 chlorinated diphenyl. I wonder how they got that in  
20 there that late because the next sentence was  
21 chlorinated biphenyl. "This product contains  
22 CHLORINATED BIPHENYL, which some studies have shown may  
23 be persistent, an environmental contaminant and,  
24 possibly, injurious to certain forms of bird, aquatic  
25 and animal life." Then in caps "PREVENT ANY ENTRY INTO

1 THE ENVIRONMENT THROUGH SPILLS, LEAKAGE, DISPOSAL,  
2 VAPOURISATION, RE USE OF CONTAINERS OR OTHERWISE.  
3 SPILLS, LEAKAGE AND WASTE PRODUCTS MUST BE COLLECTED.  
4 "Use of this product must be restricted to applications  
5 which can be controlled so that entry into the  
6 environment does not occur and to applications in which  
7 it cannot come into contact with food, animal feedstuffs  
8 or pharmaceuticals."

9 Then it goes on to say about the safe  
10 handling. The first part was how to safeguard the  
11 environment; now the person using it. "HARMFUL  
12 SUBSTANCE IF TAKEN INTERNALLY OR IF IN PROLONGED CONTACT  
13 WITH THE SKIN. CAUSES IRRITATION OF SKIN AND EYES.  
14 DURING SHIPMENT AVOID SPILLS AND LEAKAGE INTO INLAND  
15 WATERWAYS AND THE SEA. Store away from food, animal  
16 feedstuffs and pharmaceuticals. Keep container tightly  
17 closed. Do not eat or smoke while using. Avoid  
18 breathing vapours, mists or fumes. Do not wear  
19 contaminated clothing. Wash product from skin with soap  
20 and water. Wash eyes by flushing with water."

21 Q Thank you, doctor. Now, so that we can  
22 demonstrate this to the jury, I want to hand you these  
23 two copies of that exhibit and would you show first the  
24 label that contains the product name?

25 A Yes. That is the label.

1 Q And under where it says, "Caution! Contains  
2 chlorinated hydrocarbons," would you read what that  
3 says?

4 A "Read and follow all important safeguard  
5 instructions shown on this container."

6 Q And does that refer to reading this more  
7 extensive label that you just read to us?

8 A That's correct.

9 Q So both of these would be found on the  
10 containers?

11 A That's correct. Do I want to show them this,  
12 too?

13 Q Yes, please. If you would hold the. . . Thank  
14 you very much. I'd like now to ask you to look at the  
15 next exhibit, which is Exhibit No. 22 and ask if you  
16 would identify that, please, for the jury.

17 A Yes. This is a report by a Paul Benignus, a  
18 Monsanto employee. It was revised January 1960,  
19 entitled "The Proper Handling of Aroclors and Their  
20 Mixtures in the Electrical Industry."

21 Q I'd like to direct your particular attention to  
22 a Let me ask you this. Who was Dr. I'm sorry.  
23 Who was Paul Benignus?

24 A Paul Benignus was a scientist, who was also a  
25 development individual in the marketing department whose

1 position was mainly to introduce Aroclors into the  
2 electrical industry.

3 Q All right. I'd like to direct your attention  
4 in this exhibit to page 98, where it begins Chapter 12.

5 A Yes, sir.

6 Q Have you What is the title of this chapter?

7 A "Dermatology and Toxicology".

8 Q And would this section or chapter of  
9 Mr. Benignus' document been prepared by the medical  
10 department?

11 A Yes. The facts were certainly prepared by the  
12 medical department. Whether this final writing was from  
13 the medical department, I don't know at this time. But  
14 the facts in there were certainly submitted by the  
15 medical department, and the material was reviewed by us  
16 before it was released.

17 Q And had it not been approved by the medical  
18 department, would Mr. Benignus have been able to use  
19 this to release this material?

20 A No, he would not.

21 Q Have you had a chance to glance over this,  
22 pages 98, 99 and 100?

23 A Yes.

24 Q Does it generally comport with your  
25 understanding of the toxicity of the Aroclors and the

1 safe handling procedures that were recommended by  
2 Monsanto?

3 A Yes, it does.

4 Q Okay.

5 A Yes, it does. It's somewhat more elaborate.  
6 But it's much like the material that was in some of our  
7 development bulletins and marketing bulletins. But I  
8 agree with the basic facts, the facts in there.

9 Q All right. If you look now at what's been  
10 marked as Exhibit 23, please, and if you would identify  
11 that for the record.

12 A Yes. This is another report on Monsanto  
13 askarel.

14 Q Well, what does askarel mean?

15 A Askarel is a generic name for non relatively  
16 nonflammable dielectric fluids. They Monsanto  
17 Aroclors fall under that, and there are probably some  
18 other askarels not manufactured by Monsanto which were  
19 not PCBs that also fell under this generic  
20 classification.

21 Q Were the dielectric fluids containing PCBs the  
22 only askarels that Monsanto made?

23 A Yes.

24 Q And what is the title of this publication?

25 A "Inspection and Maintenance Guide".

1 Q Do you know how this was used?

2 A I guess they gave it to Frankly, no, I  
3 don't. I'd be speculating.

4 Q Okay. I'd like to direct your attention to  
5 page four of this publication, actually IV and V. Do  
6 you see Section V?

7 A Yes.

8 Q And would you read what that section is titled?

9 A Use Oh, "Directions for Handling".

10 Q Right. Was this information that was provided  
11 to the persons creating this document by the medical  
12 department?

13 A First paragraph, "Keep Dry," was not. That is  
14 a That has nothing to do with health. This means how  
15 to They didn't want water to get into the material.

16 Q Okay.

17 A But from B on, this was material provided by  
18 the medical department.

19 Q So you were saying that at the bottom of page  
20 four under subsection B, the next three paragraphs were  
21 information provided by the medical department?

22 A That's correct.

23 Q And would this brochure have been able to be  
24 published and distributed through Monsanto if the  
25 medical department had not approved of this particular

1 section?

2 A It could not have.

3 Q And in looking through that, does it comport  
4 with your understanding of the general toxicity and safe  
5 handling precautions given by Monsanto?

6 A Yes.

7 Q Now, you testified earlier in your deposition  
8 that one of the ways you communicated or you  
9 dispensed information was through writing letters to  
10 customers. Do you recall whether any of those letters  
11 that you wrote to customers concerned PCBs and the use  
12 of PCBs generally?

13 A Yes. They were asking for information. They  
14 were not I do not recall them relating any problems  
15 with the PCBs.

16 Q All right. Would you look at what's been  
17 marked as Kelly Exhibit No. 24, and I ask you if you can  
18 identify that letter.

19 A Yes. This is a letter from me, dated March  
20 8th, 1961, to a Mr. Sullivan of Lynck Company. I don't  
21 know what that company was, but he must have Well, it  
22 seems like I was referred an inquiry of his from Howard  
23 Bergen, who was in the marketing department. He asked  
24 for acute oral toxicity information on Aroclor products.

25 Q Okay. Is this typical, a typical sort of

1 letter that you might respond to an inquiry about PCBs?

2 A Yes. I think so. This man was more specific.  
3 He asked for just oral toxicity information, so I gave  
4 him the acute information. I told him we didn't have  
5 any chronic information, chronic oral information,  
6 because we didn't consider them advisable for food  
7 products. Then I went a little beyond that and told him  
8 the possibility of dermatitis through repeated skin  
9 contact and the possibility of systemic effects through  
10 repeated inhalation of vapors could have been a problem,  
11 so I told him how to handle it. So it's pretty typical,  
12 yes.

13 Q I notice also in the third paragraph you  
14 referred to the Maximum Allowable Concentration  
15 established by the American Conference of Governmental  
16 Industrial Hygienists.

17 A Yes, sir.

18 Q Was that something that you normally or  
19 typically pointed out to persons who made inquiries?

20 A If I thought the man was at all scientific, I  
21 did. If I thought he was just a salesman or somebody of  
22 the sort who did not have a scientific bent, I don't  
23 think I would go into an explanation of what a Maximum  
24 Allowable Concentration was to him. But if he were  
25 interested in If he asked how to protect people, I

1 would have put it in. So it's pretty typical, I guess.

2 Q All right. Let me ask you now to look at  
3 what's been marked as Exhibit No. 25. Can you identify  
4 this letter for us?

5 A It's a letter from Mr. Elmer Wheeler of the  
6 medical department of Monsanto Company in July of 1956  
7 to a Mr. Speicher, who was the Administrator of  
8 Industrial Hygiene at Westinghouse Electric Company  
9 Corporation in East Pittsburgh, Pennsylvania.

10 Q Is this the same Mr. Speicher you referred to  
11 earlier as being a member of the medical department at  
12 Westinghouse?

13 A Yes.

14 Q And

15 A Well, I don't know whether he was in the  
16 medical department. He was I don't know where the  
17 Industrial Hygiene Department was in the administration  
18 chart at Westinghouse. But he was their industrial  
19 hygienist who dealt with medical problems.

20 Q All right. And do you recognize the signature  
21 on the second page as being that of

22 A Yes. Elmer, sure. I saw that thousands of  
23 times.

24 Q All right. Was there a Let me take an  
25 aside. Was there a procedure in the medical department

1 by which you were able to know what Elmer might have  
2 been writing to Mr. Speicher or vice versa?

3 A Yes. We were In those years, in most of the  
4 years, we were a pretty small department, and in those  
5 years they didn't have computers or processing  
6 apparatus, so we had carbon paper I mean carbons. So  
7 we On our file copy, we had a stamp that had myself,  
8 my assistant, my associate medical director, the  
9 toxicologist, the senior toxicologist, and the senior  
10 industrial hygienist. And whoever dictated the letter  
11 would say, "Check off Kelly. Check off Levinskas.  
12 Check off Johnson." So we saw things that most of us  
13 would be interested in and wanted to be knowledgeable of  
14 Here Westinghouse was a pretty important customer of  
15 ours, and PCBs had been sort of prominent. Even though  
16 there weren't any problems, there was an awful lot of  
17 talk about PCBs. So I certainly saw this at the time it  
18 was written.

19 Q In actually the second paragraph of this letter  
20 and the following paragraphs, there's a good bit of  
21 discussion about some materials that Mr. Wheeler  
22 apparently sent to Mr. Speicher. Do you see that?

23 A Yes.

24 Q What was it that he sent to him?

25 A Well, he sent the Treon reports. That's the

1 ones from the University of Cincinnati.

2 Q Are those the two exhibits that we looked at  
3 earlier, the reports from Dr. Treon?

4 A That is correct.

5 Q And this Go ahead.

6 A Then he went into an awful lot of industrial  
7 hygiene apparatus and limits. Then we also talked to  
8 him about the decomposition of Pydraul. Now, that's a  
9 PCB, but it's somewhat different than the dielectric  
10 compounds.

11 Q I note in the next to the last big paragraph  
12 that's found on page two there's a sentence in that  
13 paragraph that says, "We recommend that repeated and  
14 prolonged skin contact with any of the Aroclors be  
15 avoided." Did you agree with that statement?

16 A Yes.

17 Q Was that the typical or normal advice that was  
18 given out with regard to PCB exposures?

19 A Yes. It was on all our labels. It was in our  
20 bulletins, in all our letters. We said, "Avoid  
21 repeated, prolonged skin contact."

22 Q And in the last paragraph in this letter, and  
23 let me read it, and I want to ask you a question about  
24 it. "As with many chlorinated hydrocarbons, exposure to  
25 sufficient quantities over a long enough period of time

1           could conceivably result in chloracne. In this respect,  
2           however, the Aroclors are not the potent chloracnogens,  
3           such as chlorinated naphthalenes. To our knowledge,  
4           there have never been any cases of chloracne in the  
5           electrical industry's use of these products." Do you  
6           agree with the statements in that paragraph?

7           A     Yes, I do.

8           Q     As a result of this letter, do you know whether  
9           Mr. Speicher or anybody else from Westinghouse reported  
10          that they had had some problems with chloracne?

11          MR. McCREA: Same objection as earlier for the  
12          reason that there's been no showing of any medical  
13          protocols to detect chloracne at any industry, including  
14          Monsanto, Westinghouse, General Electric, et cetera.

15          Q     In response to this or in any other context,  
16          did you ever receive any indication from Westinghouse  
17          that they had had some problems with chloracne?

18          A     No, sir, I did not. In fact, I received the  
19          negative ones from Dr. Hazlett     negative reports that  
20          they did not have any problems.

21          MR. McCREA: I would move to strike that  
22          answer as being volunteered and based on hearsay and not  
23          responsive to the question. If you do have the reports,  
24          however, doctor, I'd like to see them.

25          Q     Well, Dr. Kelly, did you ever receive any

1 reports from Dr. Hazlett as to whether he had had any  
2 problems with chloracne in his work force?

3 A I received oral reports. I did not receive  
4 written reports.

5 Q And those reports were negative?

6 A They were negative.

7 MR. McCREA: Again, objection, hearsay, and  
8 for the reason stated earlier, that there's been simply  
9 no established medical protocol to detect health  
10 problems in the workers, including chloracne.

11 Q If you look now, Dr. Kelly, at what's been  
12 marked as Kelly Exhibit 26, and let me ask you to  
13 identify that letter.

14 A This is another letter to Dr. Speicher, dated  
15 October 23rd, 1959, by Elmer Wheeler.

16 Q And what is the subject of this letter?

17 A Speicher was inquiring about the safe use of  
18 trichlorodiphenyl, which is a PCB, and mixed with  
19 trichlorobenzene.

20 Q And in the second paragraph does he indicate  
21 that that is what they call Inerteen PPO?

22 A That's correct. Well, it's also  
23 hexachlorodiphenyl, so. . .

24 Q I believe you earlier identified the Inerteen  
25 PPO as a trademark name that Westinghouse used for its

1 transformer dielectric fluid; is that correct?

2 A That's correct.

3 Q All right. Could you summarize briefly the  
4 information again that Dr. that Mr. Wheeler provided  
5 to Mr. Speicher in this letter?

6 A Yes. He enclosed a reprint showing the results  
7 of chronic toxicity studies with 1242 and 1254. That  
8 must have been the Treon studies. That was a chronic  
9 inhalation study.

10 Q So he had to send it to him again three years  
11 later?

12 A Yeah.

13 Q Okay.

14 A And then he stated again prolonged skin contact  
15 should be avoided, and he gave as the reasons, he said  
16 there is some reaction in the skin, but then there could  
17 be chloracne, and then he also stated that to avoid  
18 breathing the material at elevated temperatures. He's  
19 referring to the Meigs' article. And then he talked  
20 about the case that I said about workmen dipping their  
21 hands in it. It was really work women. It was work  
22 persons rather than men.

23 Q Okay.

24 A And then he talked about exhaust ventilation  
25 temperatures, and then he brought up information

1 concerning the toxicity of trichlorobenzene. And  
2 that's

3 Q Is this pretty detailed information that he was  
4 providing to Mr. Speicher?

5 A Yes. He was providing it to a man who was also  
6 an industrial hygienist, who had a lot of experience in  
7 industrial hygiene, and they were in the same business,  
8 and they were friendly, and they knew each other by a  
9 first name basis, so. . .

10 Q Let me direct you to the last paragraph of this  
11 letter and ask if you would read that paragraph for me  
12 into the record, please.

13 A Yes. "I have been told your company has had 20  
14 to 25 years' experience with the products discussed  
15 above. It was suggested that James Ford, manager of  
16 transformer manufacturing engineering at Sharon would be  
17 a source of information regarding your experience.  
18 Similarly, Mr. Marbury of the Bloomington, Indiana Plant  
19 has been associated with the use of Aroclor 1244  
20 1242. Perhaps you have already discussed potential  
21 exposures with these gentlemen. If so, I would be  
22 interested in learning of their practical experience  
23 with these products."

24 Q In that last sentence Mr. Wheeler was asking  
25 for any reports of their practical experience. Do you

1 recall whether or not any information came back from  
2 Westinghouse about their experience with PCBs?

3 A I do not.

4 MR. McCREA: Again, to which we would object  
5 unless it's in written form.

6 Q Do you know?

7 A I don't recall, no. This is 35 years ago. I  
8 don't recall any.

9 Q Okay.

10 A Yes or no, I don't know.

11 Q Okay. Let me direct your attention now to  
12 what's been marked as Kelly Exhibit 27 and ask if you  
13 would identify this.

14 A Yes.

15 Q Before we go to No. 27, let me ask you one more  
16 question about the Speicher letter. Is this the sort of  
17 information that Monsanto or Mr. Wheeler or yourself  
18 would typically share with a health professional who  
19 made an inquiry about PCB toxicity?

20 A Yes. In other words, if you're going to talk  
21 to a scientist. But as I said before, if you're talking  
22 to a purchasing agent or something like that, you  
23 wouldn't go in all this much detail.

24 Q Let me ask you then to look at No. 27 and ask  
25 if you'll identify that for me, please.

1           A     That's a letter from     signed by me. Whether  
2           I developed it myself or not, I don't know because it  
3           doesn't seem to have my secretary's name on it, initials  
4           on it. But it was sent to a man in the maintenance  
5           department of the naval station at Kodiak, Alaska, and  
6           he was asking     presumably there was a letter of April  
7           the 15th that went to somebody and was referred to me in  
8           accordance with our Monsanto practice. So I sent him a  
9           booklet which described the transformer fluids and gave  
10          a history of it and gave     talked about the Hygienic  
11          Guide that were     was established by the Industrial  
12          Hygiene Association and told him that the vapor  
13          shouldn't be breathed at elevated temperatures and told  
14          him to avoid skin contact.

15          Q     Is there any indication in this letter that  
16          this Mr. Crow was a health professional?

17          A     I don't think so, although we did send him the  
18          Hygienic Guide, which was really developed for  
19          professionals. We did tell him about the fact that  
20          Even though we had never heard of it, we mentioned  
21          something about it should be avoided to     excessive  
22          vapor inhalation and skin contact can lead to the effect  
23          on the liver, as is the case with many chlorinated  
24          hydrocarbons.

25          Q     Do you find this letter to be typical of

1 letters that you might send to persons making inquiry  
2 about industrial hygiene questions on Aroclors?

3 A I think so. As I said before, we had we had  
4 to sort of tailor it to their audience, to the audience  
5 you're writing to.

6 Q And I assume, of course, to the questions that  
7 they ask you?

8 A Yes. If they ask something specific, yes.

9 Q Let me ask you then to look You just  
10 mentioned that this letter included something called the  
11 Hygienic Guide Series. I'd ask you to look at Kelly No.  
12 28 and ask if you can identify that for us.

13 A Yes. This is a member of the Hygienic Guide  
14 Series dealing with chlorinated diphenyls, 42 percent  
15 and 12 1242 and 1254, dated sometime in. . .

16 Q I believe at the top of the second page there  
17 appears to be a printed date.

18 A Oh, yeah. January and February of 1963. It  
19 was It gave

20 Q Who prepared this Hygienic Guide Series? Who  
21 published this?

22 A The American Conference of Governmental  
23 Industrial Hygienists.

24 Q Okay. And what was its purpose?

25 A Well, to get the information out to the It

1 was published in I think it was published in the  
2 Journal of It was published in the "Journal of the  
3 American Industrial Hygiene Association" or was a  
4 free standing document that the governmental group sent  
5 out up by themselves, I can't remember. But it gives a  
6 pretty exhaustive review of the toxicology, a review of  
7 the history of the compound, and also mentions human  
8 cases of chloracne have not been reported from the use  
9 of these two specific chlorinated diphenyls.

10 Q Is this Do you recall whether or not this  
11 Hygienic Guide Series paper was sent out by Monsanto to  
12 persons making inquiries about PCBs?

13 A Yes, it was. We sent out, oh, I guess a couple  
14 of hundred of them. I don't know. I mean, not a couple  
15 hundred, but we sent out quite a few of them.

16 Q All right. Let me ask you then to look at  
17 Kelly Exhibit No. 29 and ask you to identify that for  
18 the jury, please.

19 A This is a bulletin of our own, of the medical  
20 department, "Toxicity and Safe Handling of Askarel," and  
21 the purpose That's what that is.

22 Q And is this your signature at the bottom?

23 A Yes, it is.

24 Q And what's the date of this?

25 A March 4th, '71.

1 Q All right. And what was this document How  
2 was it used?

3 A Well, I think it was used if somebody wrote  
4 in and we thought they needed just the basic  
5 information, instead of sending them a bundle of  
6 Hygienic Guides and references to Treon's work and  
7 references to Drinker's work, we sent this to them,  
8 which was almost an expansion of the caution material on  
9 our labels. This It would tell them what they needed  
10 to know about toxicity. It gave the Threshold Limit  
11 Value, if they were interested in that, and we told them  
12 what the action would be. It could be absorbed through  
13 the skin. So it was I'd say a convenient situation for  
14 us to get adequate information without going into an  
15 elaborate scientific treatise.

16 MR. DAVIDSON: This is a convenient spot for a  
17 short break if you'd like to take one now.

18 THE WITNESS: No. It's all right with me.

19 MR. DAVIDSON: If everybody else is okay,  
20 we'll proceed ahead.

21 THE WITNESS: All right.

22 Q (By Mr. Davidson) I'd like to change direction  
23 on you for a minute and ask you about something that you  
24 referred to, and we were looking at the labels, and that  
25 is the presence of PCBs in the environment, and I'd like

1 to ask you when did Monsanto first learn that there  
2 might be some problem with PCBs persisting in the  
3 environment?

4 A I think it was late '66. I believe that's  
5 correct.

6 Q And how was it brought to Monsanto's attention  
7 or to your attention anyway?

8 A It was brought to my attention by somebody in  
9 our Belgian office, our Brussels office, or our London  
10 office. They said that there were reports in the  
11 Swedish newspaper that somebody had found PCBs in the  
12 environment and also found it in the feathers of birds  
13 and hair of people. This person's name It was a  
14 group of two people, Widmark and Jensen.

15 Q What did you do when you got these reports?

16 A Well, I received it from David Wood, who was  
17 sort of either development or research in our London  
18 in our European organization, and I said, "Well, we've  
19 got to find out more about it." So I said, "Send me  
20 everything you can get. I don't read the Swedish  
21 newspapers."

22 Q Okay.

23 A And he did, and I sent them over to our  
24 analytical department. Dr. Robert Keller was the chief  
25 of it.

1 Q Okay. Let me interrupt you there and ask you  
2 to take a look at what's been marked as Kelly Exhibit  
3 No. 30, and would you identify this for me, please.

4 A Yes. This is a letter from David Wood, who was  
5 the man I was talking about, in which he enclosed  
6 Jensen's original paper and

7 Q What's the date of his memorandum?

8 A February of '67.

9 Q And the paper that he attached, is that the  
10 paper that you've just described about what Jensen and  
11 Widmark reported?

12 A Yes, it is.

13 Q Okay. And I believe you said that you gave  
14 this information then to the analytical people at  
15 Monsanto?

16 A And said, "Find out is this correct or not. Is  
17 he really talking about PCBs"? Because at that  
18 particular time, this is three months after or so  
19 after the first flurry in the newspaper, there was still  
20 a lot of talk about whether he was really looking at  
21 He was looking for DDT, and he came out with these peaks  
22 in his machine that he couldn't identify, but then he  
23 finally identified them as PCB. So I said to Keller,  
24 "Find out what are we talking about."

25 Q Was it clear at first that he was correct in

1 his identification?

2 A No, it was not. And also it should be noted  
3 that this was in Europe. I didn't know whether it was a  
4 localized situation, some of the outflows of a plant.  
5 In contrast to the United States, in Europe we were  
6 small potatoes in the PCB business. There were at least  
7 four other countries making PCBs in Western Europe, plus  
8 the Soviet Union and Eastern Europe, so. . .

9 Q Did Monsanto at some time confirm that the  
10 findings were accurate and that PCBs were persisting in  
11 the environment?

12 A Yes. But I think it was a couple of years  
13 later before they were 100 percent sure.

14 Q All right. What else did Monsanto do in  
15 response to these reports that PCBs had been found in  
16 the environment?

17 A Well, there was a flurry of conferences with  
18 the government, with analytical people, with We  
19 started some biodegradation studies of our own to see if  
20 the material how was this material being picked up by  
21 avian species and eagles and peregrine falcons.

22 Q Did Dr. Widson (sic.) Did Jensen and Widmark  
23 report that the PCBs they found were having any affect?

24 A No, sir. They just The first was a  
25 qualitative finding of PCBs in the environment and in

1 the feathers and also the fat of some birds and fishes.  
2 They did not ascribe any illnesses to any of these  
3 particular animals that were had picked up PCBs.

4 Q You mentioned that Monsanto initiated  
5 degradation studies. What is a degradation study? What  
6 does that mean?

7 A That means a study to see by what methods a  
8 compound is broken down into its elements. In other  
9 words, some compounds Take a piece of rock, that  
10 could last for 10,000 years. It doesn't biodegrade.  
11 And we thought PCBs was relatively nonbiodegradable  
12 because we had a compound that was insoluble in water,  
13 it was a stable compound, was pretty much unreactive,  
14 and we thought that if it got into the environment  
15 prior to 1966 or '67, if it got into the environment it  
16 would lay out there like a lump of coal or a piece of  
17 gravel.

18 Q So the degradation testing was undertaken to  
19 determine precisely whether they degraded or at what  
20 rate?

21 A That's correct.

22 Q Did Monsanto at this time give any  
23 consideration to doing additional toxicological studies  
24 with respect to PCBs?

25 A Which time are we talking about?

1 Q At the time I'm talking about in reaction to  
2 finding the to having the Jensen/Widmark reports and  
3 confirming that PCBs were present in the environment.

4 A Well, two things happened. I don't know what  
5 the time frame was. Risebrough's study in the United  
6 States showed that PCBs could have been responsible for  
7 some of the eggshell laying of birds that had been  
8 attributed to DDT. The other factor was, and this I  
9 think is what caused us to run the toxicological  
10 studies, was that the material was found in fish and  
11 could conceivably be in the food chain.

12 Q Okay. I'm going to ask you some more about  
13 that in just a minute, but do you know whether or not  
14 you and the medical department began discussing doing  
15 toxicological tests?

16 A Yes, we did.

17 Q Do you remember approximately when that  
18 occurred?

19 A I guess '67 sometime.

20 Q All right. And let me ask you now to turn and  
21 look at Exhibit No. 31 and if you would identify this  
22 for us, please.

23 A This is a letter from Elmer Wheeler to Dick  
24 Richard of the research laboratory giving a copy of a  
25 letter from Industrial Bio Test and their proposed

1 protocols for Aroclor toxicity studies.

2 Q Now, do you know how it came about that IBT  
3 sent these proposed protocols to Mr. Wheeler?

4 A Well, they went to the medical department. I  
5 don't know if they were addressed to him.

6 Q Well, look at the attachment to this memo.  
7 What is the first attachment to the

8 A Oh, yeah. It's to Wheeler. Wheeler did the  
9 administrative work for the toxicological department.  
10 He was not a toxicologist, but until we got a  
11 toxicologist he did quite a bit of the administrative  
12 work, and he was fairly knowledgeable in physiology and  
13 biochemistry and toxicology. He was sort of a  
14 do it yourself toxicologist. So he and I had discussed  
15 the protocol that we were going to run. We went up to  
16 Calandra and discussed the protocol with him.

17 Q When you say "went up to Calandra," who is he?

18 A Bio Test. Joe Calandra was a physician who was  
19 in charge of He was the president of the Industrial  
20 Bio Test Laboratories.

21 Q And is this letter from Industrial Bio Test and  
22 the attached protocols, was that the proposal that IBT  
23 was making to Monsanto as to how these tests should be  
24 run?

25 A Yes. I think so. I mean, I know that's a

1 proposal they made. Whether or not we had incorporated  
2 some of the viewpoints of the Food and Drug  
3 Administration into these protocols or not, I don't know  
4 at this time. We either went up before we formalized  
5 the protocols or went up after we formalized the  
6 protocols and went up with Calandra to the FDA, and  
7 Wheeler was probably along also, and we either said,  
8 "This is what we're going to do. What do you think we  
9 should do? Anything extra?" And I don't think they  
10 could think of anything extra, which is sort of unusual.  
11 But it also could have been We may have made some  
12 suggestions, and they said, "Well, I'll add this or  
13 this" if that was before this final protocol. But I  
14 think this final protocol was the sum of all our points  
15 of view, Monsanto, Industrial Bio Test and the FDA.

16 Q Do you remember who at the FDA you talked about  
17 this protocol with?

18 A Yes. Arnold Lehmann, who was head of the  
19 toxicological branch; Herb Blumenthal, who was head of  
20 the biochemical branch; and Garth Fitzhugh, who was an  
21 old timer in the toxicological department.

22 Q The FDA officials obviously knew that you were  
23 intending to use Industrial Bio Test Laboratories to do  
24 this research; is that correct?

25 A Sure. Calandra was in the room, and he brought

1 up the protocol on this.

2 Q Did they raise any objection to using IBT?

3 A No. They had used them before themselves.

4 Q How many different PCB products were to be used  
5 to run these tests?

6 A Three.

7 Q Do you remember what they were?

8 A 1242, 1254, 1260, I believe.

9 Q And was it necessary to run range finding tests  
10 for the feeding studies?

11 A Oh, sure. If you're going to run a lifetime  
12 experiment We were running two years in dogs, two  
13 years at rats. Well, two years of dogs is not a  
14 lifetime in dogs, but still it's a

15 Q Is two years a lifetime in rats?

16 A Yes. And you don't want to start a two year  
17 feeding test on rats and expect them to go for two years  
18 and find out they are dying at eight months from the  
19 toxicity itself, so you've got to spend about 90 days or  
20 120 days beforehand being sure that you have a dose that  
21 will be high enough to cause some problems, but not high  
22 enough to kill the animals before the experiment is  
23 halfway through. And also you want a dose that they  
24 could tolerate for the whole two years to see if there's  
25 any pathology in the animals or no pathology. We'd like

1 to get a no effect level and an effect level.

2 Q Okay. Let me ask you then to look at Exhibit  
3 No. 32, and would you identify that for the jurors,  
4 please?

5 A This is a letter December the 20th, 1968, in  
6 which we authorize the initiation of the proposed  
7 Aroclor studies. It went from Wheeler to Calandra.

8 Q What was the date of this letter?

9 A December 20th, 1968. Before this was done, I  
10 had called Joe and said, "Joe, we're going to go along  
11 with this. We're waiting for the paperwork to get  
12 through, but go out and get the animals and put them in  
13 quarantine." Because you don't bring in Well, he  
14 had, what, three levels and two different Three  
15 compounds, three levels. That's nine different batches  
16 of rats. You get 50 in each. That's 4,000 rats or  
17 something like that. You've got to get in and be sure  
18 you've got a healthy bunch of rats that aren't going to  
19 get an epidemic and wipe the whole thing out before  
20 you're on for two months. So, yes, he got the dogs and  
21 put them in quarantine and got the rats and put them in  
22 quarantine, even though we hadn't approved the material,  
23 but we wanted to hasten it along.

24 Q Who at Monsanto in the medical department was  
25 responsible for supervising this work at IBT?

1           A     Well, Dr. Hunt, our pathologist, went up there  
2           once a month. He died in the middle of all this. And  
3           George Levinskas came in, and George would also go up  
4           there at monthly intervals. Wheeler went up probably  
5           twice a year.

6           Q     You're referring to Elmer Wheeler?

7           A     Elmer Wheeler. And I went up probably three  
8           times in two years. I didn't go every six months, but I  
9           went probably three times in two years.

10          Q     So you visited the IBT Laboratories yourself?

11          A     Oh, yes.

12          Q     Did you tour the facilities?

13          A     The whole works.

14          Q     Did you ever form the belief that the PCB  
15          studies being performed for Monsanto by IBT were being  
16          conducted in anything less than a professional manner?

17          A     No. And I've been in a lot of toxicological  
18          laboratories. I've been in places in England, I've been  
19          in Washington, Hazelton and Woodard Laboratory and  
20          Kettering Laboratory, and these were top drawer. I mean  
21          that. IBT impressed me as good as any, better than  
22          several of them.

23          Q     Did Monsanto at any time ever instruct IBT to  
24          fabricate any of the data on the PCB studies?

25          A     No, sir, not at all.

1 Q To your knowledge, did IBT fabricate any of the  
2 data on the PCB studies?

3 A No, sir, I have no knowledge of that at all.

4 Q To your knowledge, did anyone at Monsanto ever  
5 ask anyone at IBT to conceal any toxic effects found on  
6 PCBs?

7 A I have no knowledge of any such action.

8 Q Okay.

9 A I would be very surprised if it had occurred.

10 Q Did you or anyone in the medical department  
11 continue to keep the FDA informed of the progress of  
12 these studies?

13 A Oh, sure.

14 Q How did you do that?

15 A I talked to Blumenthal. I sent him progress  
16 reports. We got progress reports every quarter. I sent  
17 him a copy of the progress report. It was a bundle of  
18 stuff we got out there every quarter.

19 Q Okay. Let me ask you to look at Kelly Exhibit  
20 No. 33, the next exhibit, and could you identify that  
21 for the jury, please.

22 A Yes. This is a letter from me to Herb  
23 Blumenthal, and I said We must have talked about it.  
24 I don't know what the reason for the talk was. So I  
25 sent him Xeroxes of the status reports for the chronic

1 toxicity of polychlorinated diphenyl.

2 Q Was this an interim report?

3 A Yes. There were six month studies on rats, I  
4 guess, dogs, I don't know what it was, and the rat  
5 reproduction or the second generation. So they're all  
6 interim reports.

7 Q Okay. Let me ask you then to look at what's  
8 been marked as Kelly Exhibit No. 34, and could you  
9 identify that exhibit for us?

10 A This is an interim report on the  
11 three generation reproduction study in albino rats with  
12 Aroclor 1242, 54 and 60, dated September 1970.

13 Q All right. And is this a typical example of  
14 the type of interim information that you might share  
15 with the FDA?

16 A Yes.

17 Q Was this information shared with any other  
18 government agencies?

19 A Yes. The Department of Agriculture, and there  
20 was some organization that reported to Berger, I believe  
21 his name was. He was the President's scientific  
22 advisor. I don't know what title he had or whether he  
23 had a department. But I had been up there We had  
24 been up there talking to him about PCBs or something  
25 else in agricultural chemicals, so he got it, too.

1 Q Okay. If you could pass that one along, and  
2 I'd ask you to look at what's been marked as Kelly  
3 Exhibit 35, and could you identify that for us, please.

4 A This is the final report on the two year  
5 chronic oral toxicity by Industrial Bio Test in rats,  
6 dated November the 12th, 1971.

7 Q At or about the same time in November 1971, did  
8 you receive similar reports on the other Aroclor  
9 products that were being tested that you named for us a  
10 while ago?

11 A Yes.

12 Q And did you receive and review these final  
13 reports at or about or soon after November 12th, 1971?

14 A Yes, I did.

15 Q Now, were these You've told us that you were  
16 sending to the FDA and other arms of the government the  
17 interim reports. Were the final reports shared with the  
18 government agencies?

19 A Yes, they were.

20 Q Specifically with the FDA?

21 A Specifically with them, specifically with  
22 Agriculture, and to the best of my recollection also  
23 with Berger's office, if he was still in there. I don't  
24 know.

25 Q Were the results of IBT work presented at

1 conferences, scientific conferences?

2 A Yes.

3 Q Did the final results of these studies  
4 demonstrate that PCBs were highly toxic on a chronic  
5 basis?

6 A No, sir, they did not. They showed that 1260  
7 was more toxic than 54, which was somewhat more toxic  
8 than 42. But on the whole for an industrial chemical  
9 Remember, there were very few long term studies on  
10 industrial chemicals that were not going to be food  
11 chemicals, so it was not a particularly toxic compound.

12 Q All right. Dr. Kelly, if you would look at  
13 35 is what we were just looking at. I'm sorry. Okay.  
14 Let me Before we get to the next exhibit, let me ask  
15 you another question, and I want to move away from the  
16 toxicity testing questions that we've just been on and  
17 go back to talking about the analytical developments  
18 that were going on at this time. You mentioned that the  
19 presence of PCBs in the environment was originally  
20 discovered or initially discovered in Europe. Were they  
21 later found to be present in the environment in the  
22 United States?

23 A Yes, they were. They were found by  
24 Dr. Risebrough in California.

25 Q And do you know when Dr. Risebrough published

1 his findings?

2 A I thought I get a little confused on these  
3 dates, but I think it was in '68.

4 Q Okay. Let me ask you to look now at Exhibit  
5 No. 36, and would you identify that for us, please.

6 A This is a letter from Wheeler to, again, Bill  
7 Richard on the subject of PCBs in the environment, and  
8 he gives a presentation of Risebrough's work to a bunch  
9 of toxicologists in Rochester in June of '68. So that's  
10 what So I don't think it was published before that.  
11 Eventually it showed up in "Nature," I believe, if I'm  
12 not mistaken, sometime in '68.

13 Q And the date of this memo is when?

14 A October 21st, '68.

15 Q So to the best of your knowledge, is this the  
16 first information that Monsanto had as to any of the  
17 findings that Risebrough might be presenting?

18 A Unless Yes. Unless there was some talk  
19 between Risebrough and Wheeler. I don't know. But this  
20 is the first I knew about it.

21 Q Okay. And it's your recollection, I believe  
22 you testified just a minute ago, that the actual  
23 published paper appeared in late 1968?

24 A That's what I thought.

25 Q All right. Thank you very much. Was there any

1 other occurrence in the time period in 1968/69 that drew  
2 attention to polychlorinated biphenyls?

3 A That what?

4 Q That drew attention to polychlorinated  
5 biphenyls.

6 A I didn't understand the last two words.

7 Q I'm sorry. Let me rephrase the question. Did  
8 you at some point learn about what was known as the  
9 Yusho accident or incident?

10 A Oh, yes.

11 Q And would you tell us what that was? What was  
12 the incident?

13 A This was a condition that occurred in  
14 prefecture, I believe they call it, in Japan, of Yusho,  
15 and it seems that PCBs of Japanese manufacturing,  
16 manufacturing manufacture, which was called Canaclor,  
17 and I think they used a 12 I don't know which one it  
18 was, but I thought it was 1260. Had been used as a heat  
19 transfer agent, and there was a leakage in this  
20 material, and it got into some soybean oil that was  
21 going to be used by humans as a food, to put it on their  
22 soybean cakes and whatever, rice cakes, whatever they  
23 use for breakfast in Japan, and that was subjected to  
24 more heat, too, when they made the soybean oil. Then  
25 when they cooked it, they cooked it with an open wok. I

1 think that's the Japanese way, but that's the Chinese  
2 one with this open pot, so it got heated some more. So  
3 about a thousand people developed quite a lot of  
4 problems mostly dermatological, some peripheral  
5 neuritis. And the Japanese, of course, investigated  
6 like mad. We didn't hear about it for some months  
7 because we don't get an awful lot of Japanese  
8 newspapers. So we finally heard about it. And I'll get  
9 ahead of my story, but the Japanese PCBs had in the  
10 beginning a higher level of contaminants, eventually in  
11 1974 decided that they were quarterphenyls and  
12 dibenzochlorinated furans that were not only higher to  
13 start than the usual American PCBs, but were enhanced in  
14 concentration by the heat they were subjected to in the  
15 heat transfer unit as well as by cooking the soybean oil  
16 and eventually cooking it in the pots in the Japanese  
17 kitchens. So the Japanese authorities stated that they  
18 believed the cause of the problem was the dibenzofurans,  
19 which was in the PCBs, rather than the PCBs themselves.

20 Q Were dibenzofurans considered a contaminant or  
21 an impurity in this mixture?

22 A Yes.

23 Q And as I understood what you just testified to  
24 was that eventually, in 1974, I believe you said, the  
25 Japanese researchers concluded that the toxic effects

1 observed in the Yusho incident were a result of the  
2 chlorinated dibenzofurans rather than the PCBs?

3 A That's correct. It took them six years to find  
4 it out because the instrumentation was had to be  
5 developed before they could find it out.

6 Q Did it ever come to your attention I'm  
7 sorry. Let me back up and ask you. When did you say  
8 the Yusho incident occurred?

9 A I thought it was 1968.

10 Q And when did you and the other people at  
11 Monsanto learn about it?

12 A Oh, I guess three months after it happened.

13 Q All right.

14 A That's a pretty wild guess.

15 Q All right.

16 A We had one person over in Japan, and he didn't  
17 speak Japanese or read it.

18 Q Up until that point in time, had there ever  
19 been any indication that furans, that chlorinated  
20 dibenzofurans, were a contaminant of Monsanto's  
21 Aroclors?

22 A No. Up to that period of time, no. There was  
23 some work done in the Netherlands, I believe, by a  
24 person by the name of Vos, who examined some European  
25 PCBs from two nations, either Germany and France or

1 Germany and Italy, as well as Monsanto PCB, whether he  
2 used St. Louis PCB or United Kingdom. We had a plant  
3 there that made PCBs. And he found He did not find  
4 dibenzofurans in the Monsanto material, but he did find  
5 it in the two European specimens. He published that in  
6 1970.

7 Q All right. Let me ask you

8 A I think

9 Q I'm sorry. Go ahead. I didn't mean to  
10 interrupt.

11 A I think that was it.

12 Q Let me ask you to skip over to what's marked as  
13 Exhibit No. 39, and if you would take that out and if  
14 you could identify that for the record, please.

15 A Yes. This is Vos' paper. It was at Utrecht in  
16 the Netherlands. "Identification and Toxicological  
17 Evaluation of Chlorinated Dibenzofuran and Chlorinated  
18 Naphthalene in Two Commercial PCBs."

19 Q And when was this paper published?

20 A In 1970. It was received June 1970. Probably  
21 published six months three or four months after that.

22 Q And did Vos in this article report that he had  
23 investigated and looked and analyzed Monsanto one of  
24 Monsanto's PCB products to find out whether he could  
25 find the chlorinated dibenzofurans?

1 A Yes, he did.

2 Q Do you remember what the product was?

3 A What he found or what

4 Q No. What Monsanto's product was that he  
5 investigated.

6 A Well, let's see what he says. He got Aroclor  
7 1260 from St. Louis.

8 Q So Monsanto would have provided him that  
9 sample?

10 A Yes.

11 Q Okay. And did he find the presence of  
12 chlorinated dibenzofurans in the Monsanto Aroclor 1260?

13 A He did not, and I can I'll have to find it  
14 and read it, what it says. It said here that the  
15 identical chlorinated compounds, he's talking there  
16 about chlorinated naphthalenes and chlorinated  
17 dibenzofurans, were present in the fraction from  
18 Phenoclor, which is French, and Clophen, which is I  
19 don't know if that's Italian or what, but not in  
20 well, be sure I got it right here but not in that  
21 from Aroclor. That's on page 628 in the last paragraph.

22 Q When Monsanto learned about this publication by  
23 Dr. Vos, did Monsanto analytical personnel take any  
24 action?

25 A Yes. We tried to duplicate it, but we didn't

1           have the equipment. I mean, this is pretty  
2           sophisticated stuff. Jensen had it. I don't know if we  
3           had it by that time or not. But they were using mass  
4           spectrometry with electron capture and God knows what  
5           else, but it was       We ordered it when we first went  
6           over to see Jensen and Widmark. But this is something  
7           you just don't go in and pick off the shelf of Radio  
8           Shack. It takes some time for the company to build it.  
9           So we got it, and we started looking, but we never found  
10          it in       any dibenzofurans in Monsanto products as long  
11          as I was there. I have no record of any such       seeing  
12          any. Now, they may have found it after I left, but  
13          while I was there I had no knowledge of it being found.

14               Q       Now, let me ask you to look now at what's  
15          marked as Kelly Exhibit No. 37.

16               A       Yes, sir.

17               Q       And could you identify       tell the jury what  
18          this is?

19               A       Yes. This is an abstract of a meeting with the  
20          Executive Committee by some Monsanto employees to  
21          discuss the Aroclor problem.

22               Q       At the top of the exhibit, the first page of  
23          Exhibit 37, it refers to this as the minutes of the  
24          meeting of the Corporate Development Committee. Could  
25          you tell us briefly what the Corporate Development

1 Committee was?

2 A They were the top brass of the company. I'll  
3 read out who they were. Bock was the chairman and CEO  
4 of the committee. He was president of the company, but  
5 he was chairman of the Corporate Development Committee.  
6 Bible was the vice president in charge of  
7 administration. Eck was VP in charge of manufacturing.  
8 Gillis was in charge of marketing, a vice president.  
9 Putzell was a vice president and in charge of general  
10 counsel for the company. Charlie Sommer was the  
11 chairman of the board of directors, and John Ehlers was  
12 the secretary of the company. He was a lawyer.

13 There were two committees that were the same  
14 people, the Executive Committee and the Development  
15 Committee, and they both ran the company. They just  
16 wore The same people wore different hats. I don't  
17 know how they divided what they did as the Executive  
18 Committee and what they did as the Development  
19 Committee.

20 Q All right. And what was the date of the  
21 meeting for which these are the minutes?

22 A November 17th, '69.

23 Q And did you attend Were you present at that  
24 meeting?

25 A Yes, I was.

1 Q Why were you present?

2 A Because I was one of the talkers.

3 Q All right. And what When you say one of the  
4 talkers, what was being presented to the committee?

5 A Well, we were bringing them up to date on what  
6 the problem was and what we were doing about it and what  
7 we needed to do to get authority to do in the future.

8 Q All right. And did that include at least a  
9 briefing or a statement of what the toxicological  
10 effects were known to be at that point in time and this  
11 environmental presence problem?

12 A Oh, yes. We tried to hit all the facets, all  
13 aspects of the problem. That meeting, our part of the  
14 meeting lasted an hour or so as I recall.

15 Q Attached to these minutes appears to be a At  
16 the fourth page it has a number on it FIS 000983. Do  
17 you see that?

18 A 983?

19 Q Yes.

20 A Yes.

21 Q This appears to have been attached to the  
22 minutes. Can you tell us what this is, what this  
23 document is, this attachment?

24 A Well, it looks like it was the scenario for the  
25 way we were going to present this to the You know,

1           when you go up before the top brass of the company with  
2           a problem you're talking about in the millions, that's  
3           in the millions of costs that are going to come up and  
4           millions in the costs that you get out of the product,  
5           you've got to have it pretty well rehearsed, and we had  
6           it pretty well rehearsed, and this was the scenario that  
7           we were going to       how to present the business.

8           Q     Okay. Did you actually make any part of the  
9           presentation?

10          A     Oh, yes. I don't know which part of it. Let's  
11          see what's down there.

12          Q     Do you recall whether there was anyone else  
13          from the medical department with you?

14          A     I'm sure Elmer Wheeler was.

15          Q     Okay. Let me direct your attention to the  
16          bottom of the second page of the minutes. It's got on  
17          it FIS 00981.

18          A     981?

19          Q     981. It's the second page of this exhibit.

20          A     Yes, sir.

21          Q     Down at the bottom of that page, there's a  
22          section that says "Plan of Action".

23          A     Right.

24          Q     And following over into the next page, there  
25          appear to be 12 items under this plan of action. Was

1           this plan adopted by the Corporate Development Committee  
2           at this meeting on November 17th, 1969?

3           A     Let's go down, and we'll know what I know about  
4           it.

5           Q     Okay.

6           A     The first one said, "Appoint a project vendor  
7           to be responsible for the overall management of the  
8           Aroclor pollution problem."

9           Q     Do you know whether that was done?

10          A     That was done.

11          Q     And who assumed that position?

12          A     William Papageorge.

13          Q     And do you know approximately when he began?

14          A     Yes. January the 1st, 1970.

15          Q     All right.

16          A     Number two, "Notify all Aroclor customers of  
17          the PCB problem." That was done very shortly after.  
18          There had been some notification by the marketing  
19          department, but Bill Papageorge sent sort of a  
20          widespread bulletin to all our customers.

21                    Three, "Reduce and effectively control PCB  
22          effluents from Monsanto plants." That was started and  
23          that was done.

24                    "Educate customers on the needs to reduce and  
25          effectively control PCB effluents at their plants," that

1 was done.

2 "Develop and implement new packaging systems  
3 for Aroclor 1254 and 1260," I don't know about that. I  
4 don't know what that really was. That wasn't in the  
5 medical department's purview.

6 Six, "Introduce to market replacement products  
7 for Aroclor 1254, 1260." I don't know if they came up  
8 with any product new products that they could use.

9 Seven, "Continue to expand biodegradation  
10 program with Aroclor series, especially 42, 48 and 54."  
11 Continue That was done.

12 "Continue toxicological test program," that  
13 was done.

14 "Accelerate present analytical test program,"  
15 that was done.

16 "Determine feasibility and the cost of  
17 examining of eliminating five and six chlorines in  
18 Aroclors 42 and 48." It's my impression they did that.

19 "Study incineration products." Well, I knew  
20 they were incinerating this stuff. They started getting  
21 this material back, as you saw in some of these labels.  
22 After 1970 they started getting it back.

23 Then it said, "Develop business plan to  
24 offer." Well, that would be out of my bailiwick. I  
25 can't comment on that.

1 Q Okay. Several of the things that you listed  
2 there would fall within the purview of the medical  
3 department and a number would not; is that accurate?

4 A Well, a number would not, but I knew they were  
5 occurring because they touched on some of the medical  
6 department's activities. But some of them were  
7 completely outside my scope.

8 Q Did you understand that the purpose of  
9 appointing a project manager was to give him the overall  
10 responsibility for implementing this program?

11 A Yes. He was the point man for the whole  
12 problem.

13 Q Okay. During this period of time and in this  
14 decision making process, was Monsanto trying to protect  
15 its profits during this period regardless of harm to the  
16 environment?

17 A No. Certainly not. I mean, Monsanto always  
18 thought as a good neighbor. And we felt The  
19 consensus that I got was that all of us cared as much  
20 about the peregrine falcon and the bald eagle as anybody  
21 else. We didn't want to contaminate the environment if  
22 we could help it. And we didn't want to do it. And, in  
23 fact, Ed Bock, the president, said, "If we can't nip  
24 this problem, we'll quit making the stuff. We won't  
25 handle it anymore. We'll stop it." And that's what

1           happened.

2                   MR. DAVIDSON: I think that's all the  
3           questions I have on direct examination, Dr. Kelly, and  
4           we'll go off the record.

5                   (Whereupon, there was an off the record  
6           discussion.)

7                   (Deposition was recessed to 10:00 a.m. on  
8           April 1, 1994.)

9                   THE REPORTER: Doctor, you're still under  
10          oath.

11                  THE WITNESS: Yes. Thank you.

12                                   CROSS EXAMINATION

13                  QUESTIONS BY MR. McCREA:

14                  Q     Good morning, Dr. Kelly.

15                  A     Good morning, sir.

16                  Q     My name is David McCrea. I represent Carolyn  
17          Fisher, Executrix of the Estate of Ralph Fisher,  
18          Deceased. I'd like to ask you a few questions about  
19          PCBs. Can you give us a brief description of a PCB?

20                  A     Yes. A PCB is a chemical compound that  
21          contains two benzene rings, of which the hydrocarbons  
22          the hydrogen atoms of the benzene rings have been  
23          substituted with chlorine to various degrees.

24                  Q     Do polychlorinated biphenyls appear naturally  
25          in the environment?

1 A Not that I know of.

2 Q Are polychlorinated biphenyls then a man made  
3 chemical?

4 A To the best of my knowledge, yes.

5 Q Did Monsanto Company manufacture  
6 polychlorinated biphenyls or what we call PCBs?

7 A Yes.

8 Q From 1935 until production ceased in 1977, was  
9 Monsanto the sole manufacturer of PCBs in the United  
10 States?

11 A Yes.

12 Q Do you know how many hundreds of millions of  
13 pounds of PCBs Monsanto manufactured from 1935 to 1977?

14 A I would be speculating. I do not know.

15 Q If information indicated that Monsanto  
16 manufactured 1.4 billion pounds of PCBs, would that  
17 figure sound to be correct?

18 A It could be. Still, I would be speculating.

19 Q Where did Monsanto manufacture PCBs in the  
20 United States?

21 A In East St. In our East St. Louis plant and  
22 our Anniston, Alabama plant.

23 Q During what time period did Monsanto  
24 manufacture PCBs in Anniston, Alabama?

25 A From 1935 until 19 I'm not sure when they

1           ceased there, but I thought it was around the '70's, the  
2           middle '70's.

3           Q     For what time period did Monsanto Company  
4           manufacture PCBs in East St. Louis?

5           A     I'm not sure of that. It was a shorter time,  
6           but it was several decades.

7           Q     Is that the Krummerich Plant?

8           A     That's correct. That's the present name for  
9           it.

10          Q     Is it still in existence?

11          A     Yes.

12          Q     Is that location sometimes referred to as  
13          Sauget, Illinois?

14          A     Yes. Yes.

15          Q     Did you ever have an office in the  
16          manufacturing plant at Anniston, Alabama?

17          A     No, sir, I did not.

18          Q     Did you ever have an office location at the  
19          plant in East St. Louis or Sauget, Illinois?

20          A     No, sir, I did not. I used offices there, but  
21          I did not have a permanent office there.

22          Q     Dr. Kelly, can you give us a brief description  
23          of a chlorinated furan?

24          A     Yes. That is a        That consists of two benzene  
25          rings with some substitution of chlorine for some of the

1 hydrogens, and there is a bond between two of the carbon  
2 atoms and a bond an oxygen bond between two other  
3 carbon atoms and the benzene rings.

4 Q Does it structurally look similar to a PCB?

5 A Structurally, yes, it looks somewhat similar  
6 except it has oxygen in it, a PCB does not. But while  
7 it may look structurally it's somewhat similar, it's an  
8 entirely different compound.

9 Q Can you give us a brief description of a  
10 chlorinated dioxin?

11 A Yes. That has the two benzene rings, but there  
12 is a connection between the two benzene rings with two  
13 different oxygens.

14 Q Does a chlorinated dioxin have a similar  
15 structure to a chlorinated furan?

16 A Well, similar is a relative term, Mr. McCrea.  
17 Just the addition The addition of one single oxygen  
18 in an organic compound means enormous differences in the  
19 properties of the chemical. Structurally looking at it,  
20 you say, "Yes, this is the same thing, but it's got one  
21 more oxygen in," but that is not a simple matter.

22 Q Can you describe for us the toxicity of a  
23 chlorinated furan?

24 A How do you mean "describe"? What do you mean  
25 by that?

1 Q The degree of toxicity that is presented by a  
2 chlorinated furan.

3 A It is considerably more toxic than PCBs,  
4 several, at least two magnitudes different.

5 Q Do you know any chemical that is more toxic  
6 than a chlorinated furan?

7 A Yes. Chlorinated dioxin is presumably more  
8 toxic than a chlorinated benzofuran.

9 Q Do you know any chemical that is more toxic  
10 than a chlorinated dioxin?

11 A I don't know of any, but they may exist. I  
12 just do not know.

13 Q So your present state of the knowledge is that  
14 chlorinated dioxin is as toxic a chemical as you know?

15 A Well, inherently, when you talk about toxicity  
16 of a chemical, you have to talk about the inherent  
17 toxicity of it and the hazard it presents, and if there  
18 is no particular exposure or particular there is no  
19 hazard and toxicity is not a prominent feature.

20 Q Do you know of any chemical other than  
21 chlorinated dioxin that is more toxic than a chlorinated  
22 furan?

23 A From the inherent toxicity, no, I do not.

24 Q Before PCBs were manufactured by Monsanto in  
25 the United States and other companies throughout the

1 world, did human beings have any PCBs in their bodies?

2 A I do not know.

3 Q If PCBs are a man made chemical, would it be a  
4 logical assumption that human beings did not have any  
5 PCBs in their body?

6 A I would not know. I don't know what's logical  
7 or not. That's a supposition I have to make.

8 Q You agree and have testified that PCBs are a  
9 man made chemical?

10 A Yes.

11 Q They do not appear naturally on earth, on the  
12 earth?

13 A I do not know whether they appear naturally on  
14 the earth. I do know that they are man made.

15 Q What level of PCBs is in the blood of an  
16 average person?

17 A Probably two to five parts per billion.

18 Q What level of PCBs is in the fat of an average  
19 person?

20 A Probably two to four parts per million.

21 Q Is that another way of saying that the level of  
22 PCBs in the fat of an individual is 1,000 times greater  
23 than the level of PCBs in the blood of an individual?

24 A Yes.

25 Q Dr. Kelly, when did you learn that the level of

1 PCBs in the fat of an individual exceeds that level in  
2 the blood by 1,000 times?

3 A I can't be sure. I think it was I really  
4 can't be sure when the analytical expertise was good  
5 enough to pick up those levels. I can't be sure of  
6 that, when I knew that.

7 Q Can you explain how PCBs have such a  
8 concentration in the fat compared to the blood?

9 A Well, it's a fat soluble compound.

10 Q Is that a way of saying that it is attracted to  
11 fat?

12 A I don't know if "attracted" is the term I would  
13 use. It's certainly picked up by the fat.

14 Q Dr. Kelly, can you name for us customers of  
15 Monsanto who manufactured transformers and capacitors  
16 that purchased PCBs manufactured by your employer?

17 A Well, yes, I could name some. There was  
18 General Electric. There was Westinghouse. There was  
19 Allis Chalmers. There was Maloney Electric. There were  
20 others, but I would only know them anecdotally. People  
21 might tell me that they were selling some PCBs to other  
22 transformer manufacturers.

23 Q Did Monsanto manufacture PCBs and promote the  
24 use of PCBs in other products in addition to  
25 transformers and capacitors?

1 A Yes.

2 Q Were PCBs used as an hydraulic fluid?

3 A Yes.

4 Q Were PCBs used as a heat transfer fluid?

5 A Yes.

6 Q Much as water or steam would circulate through  
7 pipes to provide heating, PCBs performed that task?

8 A Yes.

9 Q When Monsanto sold PCBs to be used in hydraulic  
10 fluid, I believe you stated on direct examination that  
11 you knew the PCBs would leak, and, therefore, you did  
12 testing on the vaporization of PCBs; is that correct?

13 A No, it isn't correct. I said I knew there was  
14 a possibility that there would be leakage in an  
15 hydraulic fluid. We're talking about hydraulic fluids;  
16 aren't we?

17 Q Yes, sir.

18 A In hydraulic fluid applications. And we knew  
19 that avoidance of inhalation of the vapors at elevated  
20 temperatures should be should not be carried out. So  
21 we tested to see what the effects were on animals.

22 Q If you suspected that there was a problem, then  
23 you would do appropriate testing; is that correct?

24 A If there was a problem, yes. You have to  
25 define the problem.

1 Q Did you inform your purchasers of PCB hydraulic  
2 fluid that there was a possibility they would leak?

3 A No, sir. I think the person who was using it  
4 as a hydraulic fluid knew more about whether it was  
5 going to leak than I was. I warned them what to do if  
6 there were

7 Q So to make a long story

8 A if there were inhalation problems.

9 Q So to make a long story short, you issued no  
10 warnings that reflected your knowledge that there was a  
11 possibility that hydraulic fluids would leak?

12 MR. DAVIDSON: Let me object. That  
13 mischaracterizes what he testified to.

14 A No, I didn't say that. I said we warned the  
15 customer that avoidance of breathing the fumes at  
16 elevated temperatures or in a confined space must be  
17 carried out. Whether it leaked or not was his problem.  
18 I didn't know how they used it, but I knew how to warn  
19 them to protect against it.

20 Q Dr. Kelly, were PCBs used for paint in swimming  
21 pools?

22 A I'm not certain.

23 Q You know, of course, that PCBs were used to  
24 coat the inside of silos which stored silage eaten by  
25 milk cows?

1 A Yes.

2 Q You know, of course, that those PCBs that were  
3 used on the inside of silos leaked into the silage and  
4 contaminated milk of cows that ate the silage?

5 A Yes. In some cases.

6 Q Dr. Kelly, did you ever issue a single warning  
7 to anyone that the PCBs inside silos were contaminating  
8 milk?

9 A When we found out that the material could flake  
10 off silos, when we found out that it could be leached by  
11 the fermenting silos, we did warn our customers. We did  
12 remove the We advised against using paint for silos.  
13 Yes, we did that.

14 Q Did you issue warnings in 1970?

15 A Beg your pardon?

16 Q When you found out there was a problem about  
17 PCBs getting into milk, did you issue warnings  
18 immediately upon your knowledge of the problem?

19 A Yes, I think we did.

20 Q Who issued that warning?

21 A I think it was carried out through the health  
22 services. I know there was a Dr. Hill in Michigan where  
23 most of those silos were that we were in correspondence  
24 with Mr. Hill, Dr. Hill, and it was our Elmer Wheeler  
25 that told him about the problem. In fact, he knew about

1 the problem also.

2 Q Well, Dr. Kelly, I'm not talking about what a  
3 state agency knew about the problem of PCBs getting in  
4 milk. My question is, did you ever see a warning that  
5 was issued to your customers describing the problem of  
6 PCBs getting into milk? Did you ever see such a  
7 warning?

8 A Yes. I saw a warning from Mr. Papageorge.

9 Q What was the date of that warning?

10 A Well, he came to his position January the 1st,  
11 1970, so it was sometime after 1970.

12 Q What did the warning say?

13 A I don't recall.

14 Q You knew that farmers had milk contaminated  
15 with PCBs; correct?

16 A At some time in the past, yes, I did.

17 Q Did Monsanto Company ever issue a warning to  
18 the farmers?

19 A I do not know.

20 MR. DAVIDSON: I'm going to object to this  
21 entire line of questioning as being totally irrelevant  
22 to the case of Carolyn Fisher.

23 Q Did you compile an index of all of the  
24 contaminated silos brought to your attention?

25 A They were not brought to my attention. They

1                   were brought to Mr. Papageorge's attention.

2                   MR. DAVIDSON: Same objection.

3                   A     So the answer is, no, I did not.

4                   Q     Did Monsanto compile an index?

5                   A     I do not know.

6                   Q     Dr. Kelly, did you consider the leaching of  
7 PCBs from Silos which contaminated milk as a serious  
8 problem?

9                   MR. DAVIDSON: I'm going to object again. You  
10 want to give me a continuing objection

11                  MR. McCREA: Yes, sir.

12                  MR. DAVIDSON:     to this entire line of  
13 questions?

14                  MR. McCREA: I will give you a continuing  
15 objection.

16                  A     Well, I considered it a problem because we did  
17 not want to contaminate milk. I didn't consider it a  
18 problem that anybody had been hurt, in fact, by the  
19 PCBs. In fact, to the best of my recollection, the Food  
20 and Drug Administration eventually put a limit on PCBs.  
21 So they accepted the fact that there could be some PCBs  
22 in the milk from the silage. I considered it a problem,  
23 but I think your determination of serious problem and  
24 mine might be different.

25                  Q     Were silos condemned in Michigan?

1 A I do not know.

2 Q Were silos condemned in Indiana?

3 A I do not know.

4 Q Were silos condemned in Ohio?

5 A I do not know if any silos were condemned  
6 anyplace.

7 Q When did you learn that PCBs were getting into  
8 milk, Dr. Kelly?

9 A The late Probably '69.

10 Q Dr. Kelly, you have described your duties and  
11 functions as medical director for Monsanto Company,  
12 which I believe was your title after you returned from  
13 the service; is that correct?

14 A That's correct.

15 Q Within the duties and responsibilities as  
16 medical director for Monsanto, you developed information  
17 with respect to cautions for the use of PCBs; is that  
18 correct?

19 A Yes, sir.

20 Q You put that information with respect to  
21 cautions on labels, in bulletins and publications?

22 A Yes, sir.

23 Q Dr. Kelly, did you intend for the customers of  
24 Monsanto Company and users to rely on your information  
25 that you put on labels, bulletins and publications?

1           A     Would you define the users? You've got two,  
2 customers and users.

3           Q     Users would be individuals who came in contact  
4 with your PCB fluids in the use of the product or  
5 perhaps disposal of the product.

6           A     Now, would you say the question over, please?

7           Q     Yes. Did you intend customers and users to  
8 rely on the information which you put on labels,  
9 bulletins and publications?

10          A     Yes.

11          Q     Dr. Kelly, in your direct examination, you  
12 identified Exhibits 1 through 39, and I believe there  
13 was a 21 A, if my memory serves me correct. Would you  
14 please refer to Kelly Exhibit 22 in the Fisher case,  
15 page 99.

16          A     Page     Which?

17          Q     Page 99. That's Bates number JOI 006110. Am I  
18 reading those letters correctly?

19          A     Yes, I have it.

20          Q     Dr. Kelly, I direct your attention to the  
21 fourth paragraph, which begins "the many years".

22          A     Yes, sir.

23          Q     Did you draft that language?

24          A     I don't know whether I drafted it, but I  
25 certainly reviewed it before it was published.

1 Q That statement says, "The many years of  
2 satisfactory and safe use of Aroclors, or askarels, by  
3 the electrical industry for impregnating capacitors and  
4 filling transformers has demonstrated the industry's  
5 ability to handle these fluids without hazard to the  
6 workmen." Did I read that accurately?

7 A Yes. You read that correctly, yes.

8 Q Dr. Kelly, this Exhibit 22 is dated January  
9 1960; is that correct?

10 A That's correct.

11 Q On the date that this paragraph was drafted,  
12 did you have any written health surveys of Monsanto's  
13 workers exposed to PCBs to support this representation?

14 A Did I have any written surveys?

15 Q Yes, sir.

16 A We had physical examinations at yearly  
17 intervals on all the workers that were exposed to PCBs,  
18 and they had no illnesses.

19 Q All right. Dr. Kelly, can you please listen to  
20 my question? Your counsel can ask questions that he  
21 wants answered, but my

22 A But I don't know what you mean by a written  
23 survey.

24 Q Well, do you know what a health survey is?

25 A What I might think a health survey, you may

1           have a different view of it. If I examine a person, I'm  
2           doing a survey of his health.

3           Q     Did Monsanto Company ever institute a protocol  
4           for a health survey of its workers exposed to  
5           polychlorinated biphenyls or PCBs at its plants in  
6           Anniston, Alabama and East St. Louis, Illinois?

7           A     What do you mean by a health survey?

8           Q     A survey that is designed to determine if the  
9           workers have any adverse health effects, such as  
10          chloracne or systemic toxic effects?

11          A     Yes, they did, because, as I told you, they  
12          examined these workers. Monsanto physicians examined  
13          these workers at yearly intervals who were working with  
14          PCBs. Now, that seems to me to be what you were talking  
15          about as a health survey. If you've got a different  
16          idea of a survey, fine, let me know.

17          Q     Well, have you seen health surveys for workers  
18          exposed to specific chemicals to determine if there is a  
19          pattern of illness?

20          A     I don't know if I still don't know what you  
21          mean by a health survey.

22          Q     A protocol similar to the one that was  
23          developed by Industrial Bio Test in which it was going  
24          to do chronic toxicity testing on animals to determine  
25          tissue and organ toxicity. In other words, a

1 specifically designed health survey to elicit whether or  
2 not your workers exposed to PCBs are exhibiting any  
3 health problems. It's just a simple question.

4 A It isn't simple because I've told you that  
5 we've surveyed these people, we have looked them over,  
6 and we found no illnesses in them. They were examined  
7 by physicians, capable physicians. But you do not seem  
8 to believe that that's a survey, and I'm trying to find  
9 out what you mean by a survey so I can answer your  
10 question.

11 Q Okay. Your statement is you found no health  
12 problems; correct?

13 A That is correct.

14 Q Do you have a single document within Monsanto  
15 Company that supports that statement?

16 A Yes. There are single There's a document  
17 for each of the workers, their physical examination for  
18 the years from 1946 to 1960. There are these documents  
19 referring to particular employees, all the employees at  
20 our Anniston Plant who worked with PCBs, yes.

21 Q And those documents are part of a general  
22 medical examination of the workers; is that correct?

23 A Well, that's what I consider a health survey of  
24 a worker, a general medical examination of a worker.

25 Q But you never designed an examination for your

1 PCB workers that specifically focused on the  
2 dermatological or toxic systemic toxic effects that  
3 you knew could be caused by PCBs?

4 A Well, certainly we did. You talk about  
5 dermatological examinations. When you examine a man,  
6 you look at him, and if he's got any dermatological  
7 problems, you look at them. We were looking for  
8 chloracne in these workers because we knew about it from  
9 the Swann episode.

10 Q Who was

11 A But we also took symptoms In a medical  
12 examination, you take a clinical history of the person  
13 to see what symptoms they have. Then you examine them,  
14 and in some cases you do laboratory testing devoted to a  
15 particular illness to a particular organ.

16 Q Dr. Kelly, who was the dermatologist that  
17 examined your workers?

18 A You don't need a dermatologist to find  
19 chloracne.

20 Q So you never employed a dermatologist to  
21 examine your workers?

22 A No. We didn't need to.

23 Q Did you ever employ a toxicologist to examine  
24 your workers?

25 A Toxicologists do not examine humans; they

1 examine animals.

2 Q There are medical toxicologists, Dr. Kelly.

3 A Well, maybe they are, but they are not called  
4 into industrial environments.

5 Q Did you ever employ a medical toxicologist to  
6 examine your PCB exposed workers?

7 A No, we did not. We considered that a clinical  
8 examination was more revealing to us than anything a  
9 toxicologist could find out.

10 Q Did you ever employ an immunologist to examine  
11 your PCB exposed workers?

12 A No, we did not, but we also knew that the  
13 employees did not suffer any immunological problems,  
14 such as an increase in illness.

15 Q Did you ever employ a cardiologist to examine  
16 your PCB exposed workers?

17 A No, sir, we did not.

18 Q Did you ever employ a liver specialist to  
19 examine your PCB exposed workers?

20 A No, we did not need to.

21 Q Did you ever employ an endocrinologist to  
22 examine your PCB workers?

23 A No. We employed a capable industrial  
24 physician, who was able to make an examination of a  
25 worker and come out with a statement that he either had

1                   some illness or he didn't.

2                   Q     Did you ever employ a gastroenterologist?

3                   A     No.  No, we did not.

4                   Q     Did you ever employ a neurologist?

5                   A     No.  And we didn't employ a psychiatrist.  I  
6                   mean, I'll go down all the specialists.  We employed a  
7                   knowledgeable physician who was versed in industrial  
8                   medicine who had been with the plant for years.

9                   Q     Who was that person?

10                  A     Dr. Martin.

11                  Q     Did he develop a specific protocol for your PCB  
12                  workers?

13                  A     No, he did not.

14                  Q     Thank you.

15                  A     He did not need to.

16                  Q     Dr. Kelly, do you have any documents in the  
17                  files of Monsanto Company where workers of General  
18                  Electric were surveyed for health effects caused by PCB  
19                  exposure?

20                  A     I have seen none, and I have had no contact  
21                  with Monsanto files since 1974.

22                  Q     Do you have any records at Monsanto Company of  
23                  any survey of PCB workers in any industry that were  
24                  surveyed for PCB health effects?

25                  A     Do I myself have it?

1 Q Yes.

2 A I do not.

3 MR. DAVIDSON: Are you referring to other than  
4 in the published literature?

5 MR. McCREA: I'm talking about surveys of  
6 PCB exposed workers that were done by corporations that  
7 employed them.

8 MR. DAVIDSON: Well, there are numerous  
9 studies published in the literature, and there are  
10 things available through N.I.O.S.H.

11 MR. McCREA: Name one before Dr. Kelly  
12 retired. Name one.

13 MR. DAVIDSON: I didn't say before he retired.  
14 You didn't ask that either.

15 Q (By Mr. McCrea) Dr. Kelly, your counsel has  
16 stated there were numerous surveys of workers exposed to  
17 PCBs in American industry

18 A Yes, sir.

19 Q that were published. Can you name one

20 A Brown.

21 Q before 1974? Can you name one?

22 A I don't know when Brown's at General Electric  
23 was published.

24 Q Can you name one survey that you read upon  
25 which you based the representation on page 99 of

1 Deposition Exhibit 22 wherein you state workers exposed  
2 to PCBs had no health problems?

3 A I did not see the surveys, but I had my own  
4 information about our workers, I had information that I  
5 received orally from the medical directors of General  
6 Electric and Westinghouse, and I also knew that there  
7 was an absence of any even case records of any workers  
8 having ill effects in the electrical industry by 1960.

9 Q Dr. Kelly, you knew when you became medical  
10 director in 1946 that this statement, in fact, was not  
11 correct?

12 A That's entirely wrong. Why do you say that?

13 Q Dr. Kelly, you

14 A I did not know that that was incorrect, and it  
15 is not it is correct.

16 Q Dr. Kelly, in fact, you knew that workers  
17 exposed to PCBs had suffered systemic health effects in  
18 1946; didn't you?

19 A I knew that the workers at Swann Chemical  
20 Company had problems with contaminated PCBs. I also  
21 knew that before this particular run, these particular  
22 runs of PCBs, the Swann Chemical Company had no  
23 problems. We had no problems from 1935 until 1960. We  
24 didn't have it up to this date. That doesn't mean we  
25 had it after '60. And there were no So your

1 statement that I knew, I don't know where you get that  
2 idea.

3 Q Well, you knew that the workers who were  
4 exposed to PCBs had suffered, in addition to chloracne,  
5 had suffered systemic toxic effects.

6 A Which workers are we talking about now?

7 Q Workers in the industry.

8 A The Swann Chemical workers?

9 Q Yes.

10 A That one episode?

11 Q Yes.

12 A Which was found to be not due to PCBs, but to a  
13 contaminant in PCBs, yes, I knew that. That was the  
14 isolated instance.

15 Q So you knew when you issued your statements  
16 that workers had suffered no adverse health effects  
17 that, in fact, workers had suffered systemic toxic  
18 effects from exposure to PCBs as a result of a  
19 contaminant; is that correct?

20 MR. DAVIDSON: I'm going to object because  
21 you're totally mischaracterizing the paragraph you read  
22 to him.

23 A We're talking here about in the electrical  
24 industry. The Swann people were not in the electrical  
25 industry.

1 Q Well, Dr. Kelly, you, Monsanto Company,  
2 represented time and time again that no worker in  
3 American industry suffered any adverse health effects  
4 from exposure to PCBs until you left Monsanto in 1974.

5 A Well, let's get

6 Q Isn't that correct?

7 A No, it isn't correct. Let's go back to this  
8 particular statement that you were quoting me on.

9 Q All right. And you're looking at You're  
10 looking at

11 A Page 99.

12 Q All right, sir.

13 A "The many years of satisfactory and safe use of  
14 Aroclors, or askarels, by the electrical industry for  
15 impregnating capacitors and filling transformers has  
16 demonstrated the industry's ability to handle these  
17 fluids without hazard to the workmen." And that was  
18 absolutely true in 1960, and I do not know how you make  
19 the statement that I knew that this was wrong.

20 Q Dr. Kelly, if a statement was made by your  
21 company that PCBs have been used in the United States  
22 for 30 years, for 40 years, and I'm talking about dates  
23 preceding your retirement in 1974, without any adverse  
24 health effects, is that an accurate statement?

25 A With the exception of some chloracne, and I

1 will have to quote you what Dr. Renate Kimbrough said,  
2 who was a government epidemiologist and worked on PCBs  
3 for her lifetime, and she said in 1987 twice in  
4 publications that with the exception of chloracne there  
5 have been no demonstrable effects of systemic illness in  
6 workmen using PCBs.

7 Q Do you know what health survey she had to rely  
8 on?

9 A No, but I certainly relied on her knowledge of  
10 the business.

11 Q Is that the same Dr. Kimbrough that Monsanto  
12 criticized for finding that PCBs produced cancer in  
13 laboratory animals?

14 A We did not criticize her. We said that her  
15 interpretation was incorrect, that we found that our  
16 testing did not show it and our experts did not agree  
17 with her pathologist. But we did not criticize her as a  
18 scientist at all.

19 Q Did she find that PCBs caused cancer in  
20 laboratory animals before you left Monsanto?

21 A Yes. She found one PCB, 1260, produced what  
22 her pathologist called cancer, which our independent  
23 pathologist did not agree with.

24 Q Dr. Kelly, is it your position that there were  
25 no reported systemic toxic effects from the use of PCBs

1 in the United States?

2 A When?

3 Q As of 1974.

4 A We're off of '60; is that right?

5 Q As of 1974.

6 A There were epidemiological studies that were...

7 Q Dr. Kelly, we're talking about 1974.

8 A Up till 1974? I do not recall when the  
9 epidemiological studies came in.

10 Q All right. Dr. Kelly, will you turn to Exhibit  
11 1?

12 A Yes, sir. I have it.

13 Q Dr. Kelly, this is the first exhibit that you  
14 have put into evidence; is that correct?

15 A I don't know. I put it into evidence?

16 Q That your counsel.

17 A Well, yes. It's the first one I see, Kelly No.  
18 1.

19 Q And this involved an episode where workers were  
20 exposed to PCBs; is that correct?

21 A That is correct.

22 Q And these workers developed chloracne; is that  
23 correct?

24 A That's correct.

25 Q And, Dr. Kelly, these workers also developed

1 systemic toxic effects; didn't they?

2 A Yes.

3 Q And, Dr. Kelly, those effects were reported in  
4 this article; correct?

5 A Yes.

6 Q And the effects were lassitude; correct?

7 A Those are symptoms, but go ahead. They had  
8 symptoms of lassitude, yes.

9 Q All right. Is that a systemic toxic effect?

10 A I don't know.

11 Q Dr. Kelly

12 A I don't know the details of the lassitude that  
13 he talked about, but go ahead.

14 Q Well, you interviewed these workers.

15 A No, I didn't. I mean, I didn't interview all  
16 of them. I didn't interview them at this time. I saw  
17 these people when they didn't have any symptoms. I saw  
18 them when their chloracne was quiescent.

19 Q And they also had toxic systemic toxic  
20 effects of loss of appetite; is that correct?

21 A They had symptoms of loss of appetite. Whether  
22 that Whether there was a systemic toxic effect, I  
23 cannot make that jump.

24 Q And, Dr. Kelly, they also had systemic toxic  
25 effects of loss of libido; is that correct?

1           A     That is a statement that they made. I do not  
2 know whether that is due to a toxic effect or not. I  
3 mean, it could be due to a lot of factors.

4           Q     So, Dr. Kelly, this article is significant,  
5 isn't it, in that it establishes chloracne of workers  
6 exposed to PCBs?

7           A     Well, wait just a moment.

8           Q     Just a second, please. And it also establishes  
9 three systemic toxic effects.

10           MR. DAVIDSON: I object. And that's a total  
11 mischaracterization of what he just told you.

12           MR. McCREA: Let me finish.

13           MR. DAVIDSON: He said they couldn't be  
14 characterized as systemic toxic effects.

15           Q     And those reported effects are lassitude, loss  
16 of appetite and loss of libido; is that correct?

17           A     Those were reported symptoms, yes.

18           Q     Now, Dr. Kelly, you would agree that the  
19 authors of this report were racist; wouldn't you?

20           MR. DAVIDSON: I object.

21           A     I do not know these people, I cannot make any  
22 judgment about them, and I'm not saying     attributing  
23 racism to anybody in 1935. I would not make one  
24 statement that they made, but I'm not going to  
25 characterize that. I don't know them. It seems to me

1 that's beside the scientific things we're talking about.

2 Q Well, Dr. Kelly, they dismissed the symptom of  
3 lassitude based on racism; correct? You don't deny  
4 that?

5 MR. DAVIDSON: Object.

6 A I'm not certain.

7 Q Well, you've read this article; correct?

8 A Yes, I read it. Yes, I have.

9 Q You're not certain if this statement is racism?

10 MR. DAVIDSON: Object.

11 Q And let me read it. "His complaint of  
12 lassitude was not borne out by anything more than the  
13 usual temperament of the negro toward work."

14 MR. DAVIDSON: Object. Move to strike.

15 A This is not for me to make a judgment about  
16 what this Dr. Jones or Dr. Alden said or made. He  
17 stated that he did not find any physical medical basis  
18 for his complaints. Now, anything past that, that's not  
19 up to me to comment. I don't believe it's my part to  
20 get into a discussion of whether Dr. Jones, whom I never  
21 met, 60 years ago was a racist.

22 Q Well, Dr. Kelly, that statement is pure racism.

23 MR. DAVIDSON: Object and move to strike as  
24 totally inflammatory, irrelevant.

25 Q That's just pure racism.

1 MR. DAVIDSON: Object.

2 A I'm not saying that it is racism or not racism.  
3 I am saying that that is not my point. It's I have  
4 no responsibility for Dr. Jones' or Dr. Alden's work.  
5 These are people These are two doctors who worked for  
6 a company that was not Monsanto, they examined employees  
7 who were not Monsanto employees, and now you are wanting  
8 me to say they are racist or not racist. That is not up  
9 to me to decide.

10 Q Well, Dr. Kelly, I guess we'll let the jury  
11 decide whether or not that statement is racist.

12 MR. DAVIDSON: Object and move to strike.

13 Q Dr. Kelly, isn't it a fact

14 MR. DAVIDSON: You're well aware that that  
15 statement has been excluded from evidence, and you've  
16 been excluded from this line of questioning in the past,  
17 so you're beating a dead horse.

18 Q Dr. Kelly, which symptoms were more significant  
19 to you as a provider of healthcare: the symptoms of  
20 chloracne in these workers or the symptoms of lassitude,  
21 loss of appetite and loss of libido? Which to you had a  
22 greater impact on the health and well being of these  
23 workers?

24 A Well, in the first place, you are confusing  
25 chloracne with symptoms. Chloracne is not a symptom.

1 It is a sign, a medical demonstrable objective sign that  
2 is serious. The fact the chloracne There was still  
3 the residue of the scarring when I saw these people  
4 three years later

5 Q All right, doctor. Just please I'll go  
6 along with you that chloracne's a sign, that lassitude,  
7 loss of appetite and loss of libido are a symptom.

8 A Okay.

9 Q All right? Now, as a provider of healthcare,  
10 which was more significant to you with regard to these  
11 workers and their well being: the sign of chloracne or  
12 the reported symptoms of lassitude, loss of appetite and  
13 loss of libido?

14 A Well, I think I would have to say the chloracne  
15 is because there is something that you can quantitate,  
16 and I do not know how extensive the lassitude was, I do  
17 not know how extensive the loss of libido was. That  
18 certainly would be a part of the person. And what was  
19 the other one? Weakness?

20 Q Loss of appetite.

21 A Loss of appetite. That all depends on had they  
22 lost weight, how serious was this loss of appetite. But  
23 I am saying that the chloracne in my opinion was the  
24 serious thing. That's what brought them to our doctor.  
25 That's what brought them to the specialist. Not our

1 doctor, Swann's doctor.

2 Q So in your mind, Dr. Kelly, the chloracne was  
3 more serious than the symptoms of lassitude, loss of  
4 appetite and loss of libido, which are consistent with  
5 PCBs and its contaminant as a systemic toxin?

6 MR. DAVIDSON: I'd object and move to strike  
7 that entire question. It has nothing to do whatsoever  
8 with anything that's been testified to. It makes  
9 assumptions. It presumes facts that are not in  
10 evidence. It's irrelevant to this entire inquiry. And  
11 you are asking Dr. Kelly to make medical judgments based  
12 upon a reported article, and he wasn't there, and he's  
13 already told you that, examining these people and making  
14 medical judgments.

15 MR. McCREA: Counsel, nothing could be further  
16 from the truth. He interviewed these workers. He  
17 testified that when he became medical director of  
18 Monsanto Company he sat down and interviewed these  
19 workers. To say he was not there, counsel, is simply  
20 not correct.

21 MR. DAVIDSON: I'm saying he was not there at  
22 the time Jones and Alden were doing their investigation  
23 or at the time they were ill. He told you, yes, he  
24 talked to some of these workers three or four years  
25 after the incident occurred and after they were already

1 quiescent and they had no symptoms, and you're asking

2 MR. McCREA: That's not what he said.

3 MR. DAVIDSON: about medical judgment.

4 Yes, it is.

5 Q (By Mr. McCrea) Dr. Kelly, when you  
6 interviewed these workers, what did they tell you about  
7 their lassitude?

8 MR. DAVIDSON: Object.

9 A They did not have any lassitude.

10 Q What did you and the worker discuss in regard  
11 to lassitude?

12 A "How are you feeling?"

13 Q Did you ask him how long the lassitude  
14 persisted?

15 A No, I did not because here is a man that had  
16 been working every day for the past year who was quite  
17 happy with his work and had no lassitude or symptoms  
18 that he could tell me.

19 Q Dr. Kelly, when you asked this worker about his  
20 loss of libido, what did he tell you?

21 A I didn't ask him about a loss of libido. That  
22 is sort of a personal situation that there was no way I  
23 could document it anyway.

24 Q And it's a darn serious medical problem; isn't  
25 it?

1           A     Certainly if you do have loss of libido, but  
2           certainly they did not complain about loss of libido to  
3           me at all when I said, "How are you feeling? Does  
4           anything bother you?" And I believe that if they had  
5           loss of libido they would considerably be bothered by  
6           that and they would have brought it up.

7           Q     You believe.

8           A     Certainly I believe. I've talked to an awful  
9           lot of workers, and if they have loss of libido, they do  
10          not hide it. Not PCB workers; all workers of the  
11          chemical industry.

12          Q     Dr. Kelly, the contaminant that caused these  
13          signs, the sign, chloracne, and the toxic     the  
14          systemic toxic symptoms of lassitude, loss of appetite  
15          and loss of libido, do you know what that contaminant  
16          was?

17          A     First of all, I must take exception to your  
18          statement that a toxic reaction caused these symptoms.  
19          I do not know if that is correct. And to answer your  
20          question, I do not know what that contaminant was.  
21          There was quite a bit of speculation, but that  
22          contaminant, whatever it was, was not present in our PCB  
23          manufacturing for the 38 years following, because we did  
24          not have any chloracne, we did not have any symptoms of  
25          lassitude, weakness and loss of libido.

1 Q In other words, nobody reported that to you?

2 A They were asked They were examined, their  
3 medical history was taken, and they did not report any  
4 of those things.

5 Q But you never asked them?

6 A If you ask a man, "How are you feeling? Do you  
7 have any problems?" and he says, "I don't have any  
8 problems," I don't say to him, "Do you have headaches?  
9 Do you see double? Do you have trouble with your right  
10 arm?"

11 Q Dr. Kelly, you never asked a single worker if  
12 he had lassitude, loss of appetite or loss of libido in  
13 those 38 years?

14 A First of all, I didn't see the workers except

15

16 Q Well

17 A Wait a minute. You are What you are doing,  
18 Mr. McCrea, is not giving me specific questions that I  
19 could answer.

20 Q Dr. Kelly, I'll try and ask a question. If you  
21 don't understand it, tell me.

22 A Fine.

23 Q To your knowledge Not to your knowledge.

24 Did you ever, and by "you" I mean Dr. Kelly, in 38 years  
25 ask a PCB exposed Monsanto worker if he had any of these

1 systemic toxic effects reported by the workers in  
2 Anniston, Alabama?

3 A I may not have asked them specifically that,  
4 but I arrived at it by a different type of medical  
5 history.

6 Q All right. Dr. Kelly, do you know if any  
7 doctor or nurse employed by Monsanto during the entire  
8 time period that you worked there ever asked a single  
9 worker if they had the systemic toxic effects reported  
10 by the Anniston workers?

11 A First of all, I'll have to disagree with  
12 systemic toxic effects. And to the best of my  
13 knowledge, when Dr. Martin carried out his examination  
14 of people, he gave them a good took a good history on  
15 them. Whether he asked those particular questions or  
16 whether he derived that information in a different  
17 manner, I left up to him.

18 Q So you don't know; correct?

19 MR. DAVIDSON: Object. He's answered the  
20 question. Stop recharacterizing.

21 A I said the information could very well have  
22 been obtained by Dr. Martin in a different manner than a  
23 direct question.

24 Q All right. I understand your answer, but just  
25 so the record is straight and so the jury understands,

1           you don't know if Dr. Morgan (sic.) ever asked a single  
2           PCB exposed worker if they had these symptoms reported  
3           by the Anniston workers, consisting of lassitude, loss  
4           of appetite and loss of libido?

5           A     I don't know, but that's only a half truth  
6           because I said that Dr. Martin could very well, and I'm  
7           sure he did because he was a good clinician, get that  
8           information in other manners rather than a direct  
9           question.

10          Q     Dr. Kelly, I next want to talk to you about  
11          cancer.

12               MR. DAVIDSON: We've been going about an hour.  
13          Would this be a good place to take an appropriate break?

14               MR. McCREA: It's up to Dr. Kelly.

15               THE WITNESS: Fine. I'd like to go.

16               (Whereupon, there was a brief recess.)

17          Q     Dr. Kelly, before we talk about cancer, you  
18          made reference to a half truth. What is a half truth?

19          A     Well, you tell the truth, but there are other  
20          aspects of the statement that could reflect on what is  
21          said or could give a person more accurate description of  
22          the truth.

23          Q     Would an example of a half truth be if an  
24          industry manufactured pressure treated wood that  
25          contained arsenic and they issued a warning that

1 carpenters should wear gloves to protect themselves from  
2 splinters, but the real reason and the unstated reason  
3 was to protect themselves from dermal absorption of  
4 arsenic, would you consider that to be a half truth?

5 A No, because if the purpose of the warning would  
6 be to keep the to help to keep the carpenters from  
7 having any injury, and if wearing gloves would protect  
8 against splinters and arsenic, that would not be a  
9 half truth.

10 Q But, Dr. Kelly, could you foresee where a  
11 carpenter would not be concerned about splinters,  
12 therefore, would not wear gloves, but had he known about  
13 arsenic and the absorption of arsenic through his skin  
14 and the systemic poisoning he would have worn gloves?

15 A I don't know if I would make that statement. I  
16 do not I think the average worker will look at a  
17 warning that says to wear gloves, he will wear them, and  
18 I don't think you need to expand this by something that  
19 may or may not be happening.

20 Q But if the company knows the real reason and  
21 the only reason is to protect him from arsenic, but they  
22 tell him the reason is to protect him from splinters,  
23 would you consider that a half truth as you earlier  
24 defined a half truth?

25 A Say that over, please. I want to be sure we

1 got the full

2 MR. McCREA: Could you read it back, please?

3 (Reporter read back as requested.)

4 A I think if the company knew they were  
5 protecting the worker by telling him to wear gloves  
6 And I don't know. I think this is a complete  
7 speculation as to why the company told him to wear  
8 gloves. That they knew they weren't really concerned  
9 about splinters, but they were concerned about the  
10 arsenic, I believe that that's speculation on my part as  
11 to what the thinking was on the part of the company.

12 Q Would that be a half truth?

13 A I don't know. I'd have to know what the  
14 company's thinking was.

15 Q If the company's thinking was proven to be its  
16 concern about arsenic poisoning, but they simply didn't  
17 want to state that because they were fearful people  
18 might not buy their product and the company warned only  
19 that gloves should be worn to protect splinters,  
20 concealing the real reason, would you consider that a  
21 half truth?

22 A I'd have to know more about that before I'd  
23 make such a statement.

24 Q If a representation is made and there's no  
25 supporting data for the representation, would you

1 consider that to be a half truth?

2 A I don't know Would you explain those?

3 Q If an individual makes a representation upon  
4 which he intends someone to rely and he knows that  
5 there's no supporting data for that representation,  
6 would you consider that a half truth?

7 A You've given me an open question that has got  
8 so many possibilities. There are at least two  
9 speculations in this. I can't answer that yes or no.

10 Q Well, let's just bring the point to the case.

11 A Yeah.

12 Q You're familiar with the American National  
13 Standards Institute; correct?

14 A I know what it is. I don't know too much about  
15 it.

16 Q And if Monsanto Company approved in the  
17 issuance of standards a representation that in 40 years  
18 of working with PCBs no worker had suffered an adverse  
19 health effect except for a transitory skin problem and  
20 Monsanto knew there was no data to support that  
21 statement, would that be a half truth?

22 A Well, first of all Now we've got a specific.  
23 You're talking about Monsanto stating that in 40 years  
24 there have been We're talking about electrical  
25 workers now?

1 Q I'm talking about workers exposed to PCBs.

2 A And you said Monsanto had no data supporting  
3 that statement?

4 Q And if Monsanto knew that it had no data to  
5 support that statement that there were no adverse health  
6 effects suffered by workers exposed to PCBs, if it knew  
7 it had no data, but made the representation, would that  
8 be a half truth?

9 A Well, first of all, your premise is wrong.  
10 Monsanto did have data that showed that gave them the  
11 basis for the statement that there were no workers in  
12 the electrical industry that were exposed that  
13 developed any illness due to PCBs, and if they made that  
14 statement, they were correct. It was not a half truth.

15 Q Dr. Kelly, where is that data?

16 A Well, I've told you before that, A, we didn't  
17 have any problem with our workers. B

18 Q By data, I mean compilations of information.  
19 Where is that data?

20 A Well, the data as far as my own the Monsanto  
21 workers is in my head. I've seen the Just a moment.

22 Q I'm not asking what's in your head. I'm asking  
23 where's the data? Where is the compilation of  
24 information?

25 A There may not be a compilation of information,

1 but there is data as far as the workers' physical  
2 examinations are concerned. That's number one. Number  
3 two, there were no case histories in the electrical  
4 industry up to 1944 that showed any

5 MR. DAVIDSON: You said up until 1944.

6 A I mean, I'm sorry, 1974. That showed any  
7 definite illnesses in the workers. Number three, I had  
8 personal communications with the medical directors of  
9 our two largest companies, and they said largest  
10 customers, and they said they had no problems with their  
11 workers.

12 Q But the fact of the matter is, Dr. Kelly, as of  
13 1974 there was no data showing what surveys had been  
14 performed, what medical examinations had been performed,  
15 what signs had been found, what symptoms had been found  
16 in workers exposed to PCBs. There was no data.

17 A There was data. Maybe you didn't know it, but  
18 certainly the medical department, medical directors of  
19 Westinghouse and GE knew it.

20 Q Was it Was there Was there Did you see  
21 a single piece of paper where that was reduced to  
22 writing?

23 A No. But I talked to these people who were  
24 honest, good scientists.

25 Q Dr. Kelly, please listen to my question.

1 A Yes.

2 Q Did you see a single piece of paper that  
3 reported that data?

4 A No. But there again is a half truth.

5 Q Thank you. Dr. Kelly, a few more questions  
6 about PCBs before we talk about cancer. You made  
7 reference yesterday to something that was called a  
8 Maximum Maximum Allowable Contamination; is that  
9 right?

10 A No, not contamination. Concentration.

11 Q Maximum Allowable Concentration.

12 A Right.

13 Q Is that abbreviated MAC?

14 A That's correct.

15 Q Then you made reference to something that had  
16 some numbers and terminology in it that I'd like for you  
17 to explain. You said that the Maximum Allowable  
18 Concentration for the PCB Aroclor 1254 was 0.5  
19 milligrams per cubic meter; is that correct?

20 A For 19 For 1254?

21 Q Yes, sir.

22 A Yes, sir.

23 Q What was does that mean?

24 A That means that at that particular thinking  
25 they used the term Maximum Allowable Concentration to

1 mean that that was the rated level that a person should  
2 be exposed to over an eight hour working period.

3 Q But what is that in terms that a worker can  
4 understand? If you tell a worker, "The Maximum  
5 Allowable Concentration for your exposure to Aroclor  
6 1254 or PCB 1254 is .5 milligrams per cubic meter," and  
7 he says, "Well, how much is that?" how would you  
8 describe that to him?

9 A Well, first of all, we don't tell the workers  
10 anything about Maximum Allowable Concentrations on our  
11 labels. We tell the worker do not breathe this at  
12 elevated temperatures or in confined spaces, and if he  
13 does that he will be under the Maximum Allowable  
14 Concentration. Because I do not think we should expect  
15 the workers to understand what is a MAC, what's a TLV.  
16 I don't believe that that falls into their everyday  
17 usage.

18 Q All right. Can you explain that then for the  
19 jury?

20 A Explain what for the jury?

21 Q What is meant by .5 milligrams per cubic meter  
22 for PCB 1254.

23 A Yes. It means that you should not exceed that  
24 amount of PCB in a cubic meter of breathing air.

25 Q Okay.

1 A 1254. In a weighted average over the day, yes.

2 Q All right. But how much of that air in a cubic  
3 meter is PCB? If you had Say you had The  
4 molecules of air were so many. How many molecules in  
5 that cubic meter are PCB compared to how many molecules  
6 are air?

7 A Without a pencil, I'd probably say one part per  
8 million.

9 Q One part per million?

10 A Yes.

11 Q In other words, if you had a cubic meter and  
12 you had a million marbles in it, only one of those  
13 marbles would be PCB?

14 A If my off the cuff mathematics is correct,  
15 that's correct.

16 Q And if two of those marbles were PCB, it would  
17 exceed the Maximum Allowable Concentration?

18 A If it occurred constantly, yes.

19 Q Now, on direct examination yesterday, you made  
20 reference to PCB vis a vis or compared to other  
21 chemicals, and I am sorry I don't recall exactly what  
22 the context of the question and your answer was.  
23 Monsanto Company manufactured in 1936 I believe 20 to 30  
24 chemicals; is that correct?

25 A In '36? Well, that's really a rough guess,

1           yes.

2           Q     And in 1974, they manufactured hundreds?

3           A     Maybe thousands. I don't know.

4           Q     Maybe thousands. Now, can you name for the  
5 jury chemicals manufactured by Monsanto which had a  
6 Maximum Allowable Concentration of less than one to a  
7 million?

8           A     Well, first of all, let's stick to the  
9 comparable figures, .5 milligrams, and I'm not exactly  
10 sure if that's one part per million. Yes. There was  
11 phenol, there was nitrochloraniline, there was  
12 parachloraniline, there was parathion. I could go down  
13 the list. There were lots of them.

14          Q     All right. What were the Maximum Allowable  
15 Concentrations for those chemicals?

16          A     I don't know offhand, but it's in the  
17 literature. It's in their government ACT     TIH  
18 Handbook.

19          Q     Okay. Do you as you sit here and are  
20 testifying know of any specific chemicals for sure, you  
21 know, based on specific knowledge, not just a frame of  
22 reference, that had a Maximum Allowable Concentration of  
23 less than one part per million?

24                   MR. DAVIDSON: At what time?

25          Q     When the MAC was enforced for Aroclor 1254,

1 which was what year, Dr. Kelly? 1930's?

2 A Oh, no. I don't know when they came out. They  
3 went to They changed from MAC to TLV sometime along  
4 about 1950. I don't know when. But they were roughly  
5 the same. It was a different description of the amount.

6 Q All right.

7 A But certainly parathion is one.

8 Q All right. When did they start manufacturing  
9 parathion?

10 A I don't remember. Certainly paranitroanaline  
11 was one.

12 Q All right. It's a little confusing here. When  
13 was the MAC for PCB 1254 established at one part per  
14 million?

15 A It wasn't established at one part per million.  
16 It was established at .5 milligrams per cubic meter.

17 Q Which you're saying is

18 A I'm saying, my off the cuff translation, I'm  
19 not sure if I got all the zeroes right in this, but

20 Q Which is, according to your math, the same as  
21 one molecule of PCB with a million molecules of air? If  
22 your math is correct.

23 A If my math is correct.

24 Q All right. And it could be wrong?

25 A It could be wrong.

1 Q All right.

2 A When was it established? Is that your  
3 question?

4 Q Yes, sir.

5 A Probably sometime before 1954.

6 Q Before 1954, do you know of any chemical  
7 manufactured by Monsanto which had a Maximum Allowable  
8 Concentration of less than one molecule of the chemical  
9 to a million molecules of air?

10 A If I went over the list, I could probably tell  
11 you. I don't know. Sometimes some of the products that  
12 companies make, there may not be that widespread a use  
13 that people the government industrial hygienists get  
14 around to making a MAC or a TLV for them. But I can  
15 tell you the compounds were much more toxic than PCB.

16 Q That wasn't my question.

17 A What was your question?

18 Q My question is chemicals manufactured by  
19 Monsanto which had a Maximum Allowable Concentration of  
20 less than one molecule of the chemical to a million  
21 molecules of air.

22 MR. DAVIDSON: I'm going to object to you  
23 continuing to use a standard that is not even what the  
24 TLV's and MAC's are stated in, and he said that he'd  
25 prefer to think in terms of what they actually were and

1 not this marbles characterization because he's not  
2 absolutely sure that that's accurate. And, again, are  
3 you limiting it to 1954? Let's talk about what it said  
4 in milligrams per cubic meter and not something that  
5 some other characterization.

6 Q Dr. Kelly, again, let's try and move this as  
7 quickly as we can. Do you know of any other chemical  
8 manufactured by Monsanto before 1954 which had a Maximum  
9 Allowable Concentration of less than one part per  
10 million?

11 MR. DAVIDSON: Object.

12 A I don't know if I I don't know if I can tell  
13 you one right today. If I had the 1953 booklet, I could  
14 tell you which ones were Monsanto's compounds. I  
15 certainly know the parathion that PCBs were not  
16 nearly as toxic as some of the compounds of Monsanto  
17 that I mentioned to you, and I don't know if there were  
18 ever MAC's on it.

19 Q Did Monsanto Company ever take a product off  
20 the market because of its toxicity?

21 A Completely off the market?

22 Q Yes, sir.

23 MR. DAVIDSON: Other than PCBs?

24 Q Other than PCBs.

25 A Well, again, we stopped manufacturing a

1 product.

2 Q Dr. Kelly, I'm not concerned about economics or  
3 whatever. My question is very specific. Did Monsanto  
4 ever take a product off the market because of its  
5 toxicity?

6 A I don't know if we did or not. That doesn't  
7 mean they didn't, but I just do not recall at this  
8 particular point in time whether we did or not.

9 Q Dr. Kelly, did Monsanto Company manufacture  
10 benzene?

11 A No. We bought benzene.

12 Q When did you first know that benzene was a  
13 carcinogen?

14 A Probably in the '60's.

15 Q How did you warn your workers that benzene was  
16 a carcinogen?

17 A I don't know if we told them it was a  
18 carcinogen or not. We warned them how to avoid getting  
19 in contact with the benzene.

20 Q As medical director for Monsanto Company,  
21 knowing that benzene was a carcinogen in the '60's, you  
22 do not know as you sit here today if you warned your  
23 workers that it could cause cancer?

24 A I do not know if that was brought up at safety  
25 meetings or not, but I do know that we warned them as to

1 the cautionary measures to be taken to prevent any  
2 problem from benzene, whether that problem was anemia or  
3 whether that problem was leukemia.

4 Q And it's your testimony that issuing a warning  
5 about anemia would safeguard a person from the  
6 consequences of cancer?

7 MR. DAVIDSON: Object. That's not what he  
8 said at all.

9 Q Is it your testimony?

10 A What?

11 Q Is it your testimony that issuing a warning  
12 that benzene can cause anemia is adequate to protect the  
13 worker from the consequences of cancer?

14 A I didn't say that. Are you asking me a  
15 question?

16 Q Yes, I'm asking you a question.

17 A And what is the question?

18 Q Is it your testimony, Dr. Kelly, that warning a  
19 Monsanto worker that benzene can cause anemia is an  
20 adequate and sufficient and full warning to protect him  
21 against the consequences of cancer?

22 MR. DAVIDSON: And I'll object because that's  
23 not what he said. He did not say anything about warning  
24 that it could cause anemia.

25 A You asked me a question was it my testimony.

1                   That was not my testimony.

2                   Q     Is it your testimony?

3                   A     It is not my testimony.

4                   Q     Did you ever issue a warning that you prepared  
5                   and typed informing a worker, a customer, a user, the  
6                   public, the government or anybody that you had a product  
7                   that could cause cancer?

8                   A     Yes.

9                   Q     And what was the product?

10                  A     Para amino biphenyl.

11                  Q     When did you prepare that warning?

12                  A     1951, '52.

13                  Q     What did the warning say?

14                  A     The warning said, "This product can cause  
15                  bladder cancer in humans." And it also said

16                  Q     What other toxic effects

17                                 MR. DAVIDSON: Wait. I don't believe he's  
18                  finished with his sentence.

19                  Q     Go ahead, Dr. Kelly.

20                  A     What other toxic effects?

21                  Q     Did this chemical cause.

22                                 MR. DAVIDSON: Were you finished with your  
23                  answer?

24                  A     We also told     Yes, I was finished.

25                  Q     All right. Dr. Kelly, were there any other

1 chemicals that Monsanto Company manufactured and sold  
2 that you issued warnings could cause cancer?

3 A You mean cancer in humans, cancer in rats?

4 Q No. Cancer in humans.

5 A No, because we didn't have any.

6 Q So the only chemical ever manufactured by  
7 Monsanto Company that could cause cancer in humans was  
8 para amino biphenyl?

9 A That we knew could cause cancer in humans was  
10 para amino biphenyl.

11 Q What if you had reason to believe that it could  
12 cause cancer in humans?

13 A Or had reason to believe that it would cause  
14 cancer in humans was para amino biphenyl.

15 Q What if you had information from a reliable  
16 source that it could be a carcinogen?

17 A No. Because it depends on what the sources is.  
18 It depends on how it was going to what the exposure  
19 is liable to be. We manufacture saccharin. Saccharin  
20 at five percent of the diet could cause cancer in rats.  
21 We certainly didn't tell the people that saccharin  
22 causes cancer because the laboratory findings in rats  
23 was completely irrelevant to the dose of saccharin used  
24 by people.

25 Q Well, Dr. Kelly, why didn't you tell people the

1 truth? Why didn't you tell people that at five percent  
2 of the diet it can cause cancer?

3 A Why?

4 Q Yeah.

5 A Because it had no relationship to the small  
6 fraction of a grain, five grains they were putting in  
7 their coffee in the morning.

8 Q But that's the truth; isn't it?

9 MR. DAVIDSON: Object.

10 A Yes, but there's also sand. The EPA and the  
11 State of California says sand on a Monterey If you  
12 buy a sack of sand in California, it's got a statement  
13 on there, "Can cause cancer."

14 Q But did you find problems with that?

15 A Certainly. Because do you think everybody on  
16 the beach at Monterey in California is exposed to a  
17 cancer product? It's completely wrong.

18 Q Maybe people would like to know that sand can  
19 cause cancer.

20 A When there's no relevance to the exposure?

21 Q Well, what's the toxicological data supporting  
22 that?

23 A You've got to ask the government because I  
24 don't believe it.

25 Q Well

1           A     When I take an x ray, a chest x ray of a man,  
2           do I say, "Look, X rays could cause cancer"? I don't do  
3           that because there's no relevance to the dose. Toxicity  
4           has to depend on the inherent toxicity and the potential  
5           exposure.

6           Q     So you're saying there are safe levels of  
7           carcinogens?

8           A     Well, if you consider sand a carcinogen, as the  
9           California people do,

10          Q     I don't know.

11          A             there's safe levels of that, sure.

12          Q     So your position is, Dr. Kelly, there are safe  
13          levels of carcinogens?

14          A     Well, yes.

15                 MR. DAVIDSON: Object. It's a generalization  
16          from the specific that

17          A     Said peanut butter could cause cancer. And  
18          there's safe levels of peanut butter. There are any  
19          number of organic     of foodstuffs that have material  
20          that could be considered carcinogenic.

21          Q     So sand and peanut butter are examples you  
22          bring up of carcinogens?

23          A     No, I don't believe they're carcinogens. They  
24          are labeled as carcinogens due to animal work and  
25          excessive dosing.

1 Q Would you describe sand as a carcinogen?

2 A No, I certainly would not.

3 Q Would you describe peanut butter as a  
4 carcinogen?

5 A It has a certain carcinogen in it, yes, but I  
6 do not consider peanut butter to be a carcinogen.

7 Q Dr. Kelly, if you

8 A I eat it myself.

9 Q If you yourself thought that a chemical or a  
10 contaminant in a chemical manufactured by Monsanto was a  
11 carcinogen, could be a carcinogen, I'm saying you,  
12 Dr. Kelly, not somebody at Monterey Beach, would you  
13 issue a warning?

14 A If there were any relevance to the particular  
15 use of that compound, I would issue a warning, but there  
16 has to be a relevance between the inherent carcinogenic  
17 properties and what possible conceivable exposure the  
18 user would have.

19 Q Okay. We're talking about what Dr. Kelly  
20 determines now, not what somebody is reported to have  
21 determined about sand or peanut butter.

22 A Is that a question? What is the question?

23 Q It's frame of reference.

24 A I thought you asked me if I knew that something  
25 could cause cancer.

1 Q Right.

2 A If I knew that something could cause cancer in  
3 humans, which is different than cancer in animals, and  
4 there was a particular relevance between the man's  
5 exposure, possible exposure, I would warn him. But if  
6 there was no relevance, if there was no evidence that it  
7 was a human carcinogen, I would not warn him.

8 Q All right. Doctor, without going into a  
9 detailed explanation, what is cancer?

10 A It's an aberrant growth of cells.

11 Q Can cancer begin in a single cell?

12 A Conceivably it could, yes.

13 Q Can cancer be caused by a single molecule of a  
14 carcinogen?

15 A I don't know. I don't believe that.

16 Q Are there initiators of cancer, something

17 A Yes.

18 Q And was para amino biphenyl an initiator?

19 A Presumably it was.

20 Q That means it initially changes the molecular  
21 structure of the cell that begins this uncontrolled  
22 division?

23 A Yes.

24 Q Is that a fair statement? Are there promoters  
25 of cancer?

1           A     Some people say yes; some people say no. I'm  
2           not a cancer expert, so I am neutral on that particular  
3           subject.

4           Q     And there are a wide variety of cancers; is  
5           that a fair statement?

6           A     Both man made and organically grown.

7           Q     Is it a fair statement to say, Dr. Kelly, that  
8           all illness is either caused by genetics or the  
9           environment?

10          A     I don't think so. I think that's a pretty  
11          broad    All illness?

12          Q     Right. Can you think of any other cause of  
13          illness other than genetics and the environment?

14                 MR. DAVIDSON: What are you     You want to  
15          define the terms?

16          Q     Environment would include what you take into  
17          your body through consumption of food, the air you  
18          breathe, the cigarettes you smoke.

19          A     Well, if you mean by the environment if a  
20          person eats too many doughnuts and gets fat and gets  
21          diabetes, is that what you mean by environment?

22          Q     Yes.

23          A     If a person has a hereditary tendency to  
24          diabetes

25          Q     Correct.

1 A that's genetic?

2 Q Yes.

3 A If falling off a building gives you a pretty  
4 bad illness

5 Q That wouldn't be an illness. I'd call that an  
6 injury.

7 A You'd call that what?

8 Q An injury.

9 A So he's got a broken leg. That's not the  
10 illness, or he hits himself in the head with a

11 Q I wouldn't consider that

12 A That's outside your definition?

13 Q Yes, sir.

14 A I don't know if I can answer that question.

15 Q All right.

16 A I'd have to do considerable thinking. I agree  
17 that both of those, environment and the genetics, is  
18 extremely important.

19 Q All right. Dr. Kelly, what is a carcinogen?

20 A Something that causes cancer.

21 Q Either as initiator or a promoter?

22 A No. I don't think you can promote something  
23 that you don't have, that isn't there. I think the  
24 definition of a promoter is you promote something that  
25 may cause a cancer, and the promotion may this is

1           some people's thinking, and again I'm not an expert in  
2           cancer     that it promotes something from a precancerous  
3           condition to a malignancy.  But I don't know enough  
4           about cancer to answer that.

5           Q     Okay.  Dr. Kelly, what is a potent carcinogen?

6           A     Potent carcinogen is a strong cancer producing  
7           compound.

8           Q     How would you distinguish a potent carcinogen  
9           from a carcinogen?

10          A     Well, they're both the same.  I mean, they are  
11          both carcinogens.

12          Q     Dr. Kelly, are you aware of PCB fires where  
13          dioxins have been produced?

14          A     PCBs?  Dioxins could not be produced from PCBs.

15          Q     Are you aware of askarel transformer fires

16          A     Yes.

17          Q             where dioxins have been produced?

18          A     I know that     I'm not sure about the details,  
19          but I understand they have occurred.

20          Q     Have you given a deposition in cases where  
21          Monsanto was sued as a result of askarel transformer  
22          fires and the production of dioxins?

23          A     Frankly, I don't remember.  I may very well  
24          have.

25          Q     You've previously described for us a PCB, a

1 chlorinated furan and a chlorinated dioxin. In 1965,  
2 did you make this statement, quote, "Very conceivably  
3 dioxin can be a potent carcinogen"?

4 A Did I say "can" or "may"?

5 Q Can.

6 A I may have. May I see the memorandum? I  
7 certainly made a statement, but I'm a little confused as  
8 to whether I said can or may.

9 Q Just a second, Dr. Kelly.

10 A No hurry.

11 MR. McCREA: Can we take a break?

12 (Whereupon, there was a brief recess.)

13 (Reporter marked Plaintiff's Exhibit 1.)

14 Q Dr. Kelly, I hand you what is marked  
15 Plaintiff's Exhibit 1. Can you identify the exhibit?

16 A This is a letter a memorandum from me to  
17 Mr. Paul Hoffman. I do not know the date of it, it was  
18 written, but there's something written on it on 6/24/65,  
19 but that was not part of the typed memorandum, and I  
20 don't know what the exact date of that memorandum was.

21 Q Did you author this document?

22 A Yes, I did.

23 Q Who is Paul Hoffman?

24 A I don't know. I don't remember him. I thought  
25 he was in production someplace in Monsanto, but I don't

1 know. I don't remember now.

2 Q On direct examination, you made reference to a  
3 stamp that you would put on documents.

4 A Yes.

5 Q In the upper right hand corner of Exhibit 1 is  
6 a stamp that has initials, most of which cannot be read.  
7 Do you know the initials by memory, or with what's there  
8 can you tell us who received copies of this document?

9 A Well, I see EPW. That was Elmer Wheeler.  
10 Right above it was RAM. That was probably Dr. Mezera,  
11 who was a physician in our department. He didn't get a  
12 copy. The other was REK. I guess that's REK. Maybe it  
13 isn't. I don't know who it is. I sure wouldn't check  
14 myself if I wrote it. The other is M I think that  
15 must be Maurie Johnson, who was '65? who was an  
16 associate medical director. The top one is probably  
17 William Hunt, if that's an H. I don't know. He's a  
18 toxicologist.

19 Q Do any of those gentlemen help you in  
20 identifying the year in which this was written?

21 A No, it doesn't, because Wheeler was at Monsanto  
22 after I was there. Mezera died Well, he didn't get a  
23 copy. He died sometime in I think after '65. No,  
24 they do not.

25 Q Dr. Kelly, in this document reference is made

1 to a Hercules representative who attended a Dow meeting  
2 on the 2,4,5 T problem. What is 2,4,5 T?

3 MR. DAVIDSON: I'm going to object before you  
4 get started to the relevance of this document and this  
5 entire line of questioning to the case of Carolyn  
6 Fisher, and if you I'd appreciate a continuing  
7 objection on that basis if you are going to continue to  
8 ask questions.

9 MR. McCREA: Understood, counsel.

10 A 2,4,5 T is an insecticide. 2,4,5  
11 trichlorophenoxyacetic acid, I believe.

12 Q In the second paragraph, reference is made to  
13 Dr. Frailey is it?

14 A Frawley.

15 Q Frawley. Is that F R O W L E Y?

16 A Uh huh.

17 Q Reference is made to Dr. Frawley stating that  
18 Dow told the various companies in private what the  
19 content of dioxin was in their 2,4,5 T acid. When  
20 reference is made to dioxin, is that chlorinated dioxin?  
21 Is there only one dioxin in industry?

22 A Beg your pardon?

23 Q When reference is made to dioxin, is that the  
24 same chlorinated dioxin that we talked about at the  
25 beginning of this deposition?

1           A     Well, there's 125 different isomers of dioxin,  
2           but that's a commonly used word to include all of them.

3           Q     And that's spelled D I O X A N E; is that  
4           correct?

5           A     Not E. D I O X I N I think. D I O X I N.

6           Q     I N?

7           A     Yes.

8           Q     All right, sir. Reference is made to the  
9           Public Health Service being happy to get into the act.  
10          Do you have any idea what that's about?

11          A     I don't know what it meant. Now I don't know  
12          what I meant about it.

13          Q     Whether or not the chloracne exists in the  
14          ultimate user, can you enlighten us on that?

15          A     Well, I think the Public Health Service wants  
16          to protect the public, and if what I was saying there,  
17          they may start investigating a problem whether or not  
18          ultimate users were getting chloracne or not.

19          Q     On the date this memorandum was issued, did  
20          you, and by "you" I mean Dr. Kelly, know that dioxin was  
21          present in your herbicide 2,4,5 T?

22          A     Whose herbicide? Ours?

23          Q     Monsanto's.

24          A     I did not know it.

25                   MR. DAVIDSON: And are you assuming the date

1 of the memorandum?

2 MR. McCREA: I don't know what the date is.

3 MR. DAVIDSON: You're just saying whatever the  
4 date is?

5 MR. McCREA: Right.

6 Q Were discussions held as to how to minimize  
7 dioxin in 2,4,5 T?

8 A When? By whom and where?

9 Q On the day of this memorandum.

10 A By whom and where?

11 Q You state here, "I must agree with them about  
12 this, and it would seem almost mandatory that we see if  
13 we can first firm up our analytical methods and then  
14 devise ways to minimize the presence of this known  
15 chloracne agent." Were you talking about your own  
16 products?

17 A Yes.

18 Q Then the next paragraph says, "There is also  
19 another very good reason for us to do this. Regardless  
20 of what we think of the rabbit test, this dioxin  
21 compound must be a potent contaminant."

22 A Yes.

23 Q You're stating that dioxin is a potent  
24 contaminant of 2,4,5 T manufactured by Monsanto?

25 A That's correct. Manufactured by a lot of

1 people.

2 Q Then the next statement says, "Very  
3 conceivably, it can be a potent carcinogen." Are those  
4 your words?

5 A Those are my words.

6 Q And, Dr. Kelly, "it" refers to what?

7 A Dioxin.

8 Q Dr. Kelly, will you describe every source of  
9 information that led you to make the statement that,  
10 "Very conceivably, dioxin can be a potent carcinogen"?

11 A 30 years later, I haven't the slightest idea  
12 what caused me to make that statement. I must have  
13 known something at that time that I do not recollect  
14 now. And the statement was I didn't say it was; I  
15 said conceivably it can be.

16 Q Dr. Kelly, you said "very conceivably".

17 A Yes. I said

18 Q "Very conceivably"

19 A I said "very conceivably" still

20 Q "dioxin can be a potent carcinogen."

21 A Yes. I said that, certainly.

22 Q Dr. Kelly, did you have customers who purchased  
23 2,4,5 T?

24 A Certainly.

25 Q Did you inform your customers that purchased

1           2,4,5 T that dioxin was a contaminant and very  
2           conceivably dioxin can be a potent carcinogen?

3           MR. DAVIDSON: Object to the relevance.

4           A     I don't know if I did or not. This is 19     I  
5           don't know. If I did, I don't recall, but I do not know  
6           what our marketing people did.

7           Q     Did you inform any     You issued the warnings;  
8           correct?

9           A     We're not talking about     I didn't make the  
10          broadside letters to our customers. I issued the  
11          cautionary statements in the labels and in the  
12          bulletins.

13          Q     So, Dr. Kelly, you don't recall the source of  
14          information that led you to make the statement?

15          A     Well, it might have been even conjecture on my  
16          part. There might be an awful lot of talk about it at  
17          that time. I don't know why I made that statement.

18          Q     You don't recall the source of information?

19          A     I do not recall it, no.

20          Q     You don't recall if a single customer was given  
21          a warning by Monsanto that dioxin is a contaminant in  
22          your insecticide 2,4,5 T and very conceivably dioxin can  
23          be a potent carcinogen?

24          A     I don't recall whether I did that or not.

25          Q     Do you know if you gave that information to any

1 governmental health agency?

2 A I don't know. I don't even know if we found  
3 dioxin in our compound at that time.

4 Q Listen to the question.

5 A Yes, but Yes.

6 Q Do you know if you gave that information to a  
7 governmental health agency?

8 A No, but can I give you the reason for my yes or  
9 no?

10 Q First, what's your answer?

11 A What was the question again?

12 Q Do you know if you gave the information that  
13 you described in this memorandum that dioxin very  
14 conceivably dioxin can be a potent carcinogen to a  
15 governmental health agency?

16 A I do not know. I do not believe I did.

17 Q All right.

18 A Because we did not I do not know if we had  
19 any information at this time that we had dioxin in our  
20 product. We suspected it, but we didn't have any data  
21 to the best of my recollection.

22 Q Dr. Kelly, the last sentence in paragraph four  
23 states, "We, therefore, will never know how close we are  
24 to having another epidemic at Nitro, and we certainly  
25 don't want to go through that again." What do you mean

1 by that statement?

2 MR. DAVIDSON: Object to the relevance.

3 A Well, what do I mean by it? We had an epidemic  
4 of chloracne at Nitro, and it affected a lot of workers,  
5 and we didn't want to do it again. I can't put any  
6 different words on that. The sentence speaks for itself  
7 it seems to me.

8 Q Dr. Kelly, in the years you worked at Monsanto,  
9 1936 to 1974, did you ever call any chemical  
10 manufactured by Monsanto or any contaminant of a  
11 chemical manufactured by Monsanto a potent carcinogen?

12 A Did I Say that again.

13 Q During all the years you worked at Monsanto,  
14 did you ever make this statement, "Very conceivably, it  
15 can be a potent carcinogen" about any other chemical or  
16 contaminant of a chemical?

17 A I don't know if I did or not. This is  
18 speculation on my part, conceivably, very conceivably,  
19 it might be. I certainly might have I've said some  
20 compounds were carcinogenic.

21 Q Dr. Kelly, on direct examination you stated  
22 that you had a policy at Monsanto of sharing all of the  
23 information which you had with your customers; is that  
24 correct?

25 A If the customer Yes. I think that's If

1           it was relevant to the customer, if the customer asked  
2           about it, we certainly told them everything, yes.

3           Q     Would you consider this the type of information  
4           that should be shared with a customer, that dioxin is a  
5           contaminant of 2,4,5 T and very conceivably can be a  
6           potent carcinogen?

7           A     Well, first of all, we didn't have     As I  
8           recall, when this memorandum was written, we did not  
9           have the data that would show what amounts of dioxin  
10          were present, if at all, in our 2,4,5 T. We didn't tell  
11          the customer, "Well, we've got a hunch this may be a  
12          carcinogen. It might not. May be a potent carcinogen.  
13          Conceivably it might." We didn't do that. No, we  
14          didn't have any definite evidence of it. The answer is  
15          no.

16          Q     But you, Dr. Kelly, made this statement. This  
17          is not a statement that was made to you. This is your  
18          statement; correct?

19          A     Yes. Certainly it is.

20          Q     But you can't remember the information that you  
21          surveyed or researched to come to this conclusion?

22          A     Well, certainly I didn't survey it. I don't  
23          know whether there was material in the literature or  
24          whether there was anecdotal material. We did not have  
25          any evidence in our own workers that we had even thought

1 about carcinogenesis in the manufacture of 2,4,5 T.

2 Q Dr. Kelly, on direct examination, you were  
3 given a number of documents which you identified. The  
4 last document you were given was Kelly Exhibit 39, which  
5 is an article authored by J. G. Vos, and the date is  
6 1970. You testified, and you correct me if I'm wrong,  
7 that this was your first notice that chlorinated furans  
8 could be a contaminant of PCBs; am I correct?

9 A Yes. I believe you are correct.

10 MR. DAVIDSON: I object. I think that  
11 mischaracterizes what he testified to. You said could  
12 be. I don't think that's an accurate characterization  
13 of his testimony.

14 MR. McCREA: How do you recall his testimony?

15 MR. DAVIDSON: That this was the first notice  
16 that they detected in any PCBs produced locally.

17 Q Dr. Kelly, was this your first notice that  
18 chlorinated furans could be a contaminant in PCBs?

19 A I think it was. I'm not certain.

20 Q Would it be fair to say this was your first  
21 suspicion that chlorinated furans could be a contaminant  
22 in PCBs?

23 A Yes, sir.

24 MR. McCREA: Why don't we break here?

25 (Luncheon recess.)

1 (Whereupon, there was a brief recess.)

2 Q Mr. Kelly, before we get into discussing  
3 chlorinated furans, I'd like to read to you an excerpt  
4 from a document, and I'd be happy to show you this  
5 document, but I just have one copy, and I will show it  
6 to you. The document has a date of March 6th, 1969, and  
7 the subject is "Aroclor Wildlife Accusations". It's  
8 authored by W. R. Richard and was sent to E. Wheeler  
9 with copies to ten individuals, including yourself, R.  
10 Kelly. And, first of all, I want to read this quote to  
11 you and ask if you recall the facts or circumstances  
12 surrounding this information. This is on page two,  
13 paragraph B. "We are not prepared to defend ourselves  
14 against the accusations made of enzyme and hormone  
15 activity, the isolation of enzymes or metabolic  
16 products, the indirect accusation of cancer or the  
17 splitting of genes when this accusation is made.  
18 Whether we can defend this route or not needs further  
19 discussion."

20 A I'll read the whole thing.

21 Q All right, sir.

22 A Yes, sir. I've read it.

23 Q Do you recall the facts and circumstances  
24 surrounding that statement in this 1969 Monsanto  
25 document?

1           A     No, but you must realize we're talking about  
2           Risebrough is talking about enzyme and hormone  
3           activities in avian species of birds. He was the first  
4           one that noted thinning of egg shells. That's what he's  
5           talking about here. He's not talking about humans. But  
6           outside of that, I don't know     I have no particular  
7           recollection of what was the genesis of this article or  
8           where it went from there. At that particular time it  
9           was in March of '69. We developed our 12 point program  
10          in the end of '69 when we went to the executive  
11          committee, but I don't recall anymore than that.

12          Q     Do you recall any other memoranda that were  
13          circulated at Monsanto which discussed the potential  
14          carcinogenic effects of PCBs on wildlife and mechanisms  
15          of toxicity that might relate to cancer?

16          A     I don't     Maybe I went over this too fast. I  
17          didn't see where he talked about carcinogenesis in  
18          wildlife.

19          Q     Well, I think you mentioned that.

20          A     He did?

21          Q     You did. He talks about the indirect  
22          accusation of cancer.

23          A     That's what he did. I mean, Richard wrote  
24          that. The indirect     I mean, this is Richard's  
25          statement, not mine.

1 Q All right.

2 A And what was your question?

3 Q Do you recall any other information in  
4 memoranda or in meetings at Monsanto with regard to  
5 toxic mechanisms that were being reported that could  
6 indicate PCBs were a carcinogen?

7 A No, sir, I do not.

8 Q Do you understand what is meant there by  
9 enzymes or metabolic products?

10 A We're jumping around. Isolation of enzymes.  
11 Well, obviously there were some enzymes, enzyme  
12 problems, and, I mean, and hormonal activity because I  
13 ended up with calcium problems in the egg shells. I  
14 don't know what he means by the indirect accusation of  
15 cancer or the splitting of genes. I recall nothing  
16 about those two things.

17 Q All right. And that is That statement is a  
18 statement of Dr. Risebrough, but the last sentence of  
19 that paragraph is a statement of Monsanto, is it not,  
20 "Whether or not we can defend this route or not needs  
21 further discussion"?

22 A I don't know whether Risebrough said any of  
23 these things. Do you have Risebrough's article here?  
24 And let's see if he said it.

25 Q Well, Dr. Kelly, I thought you said this was

1 excerpted from Risebrough's statements.

2 A When did I say that?

3 Q In the deposition?

4 A This deposition this week?

5 Q Yes. Just five minutes ago.

6 A I never saw Oh, five minutes ago. No, I  
7 didn't say this came from I said it came from  
8 Richard.

9 Q Oh, Richard?

10 A Yeah. I didn't mean Risebrough.

11 Q Oh, all right. Dr. Kelly, I would now like to  
12 carry on the discussion with respect to chlorinated  
13 furans. Are you familiar with a statement made by W. B.  
14 Papageorge on July 8, 1970, which is as follows? "The  
15 preferred method for disposal is high temperature  
16 incineration. I suspect there are several commercial  
17 burners on the market which will perform well. I  
18 personally witnessed burning tests at the John Zink  
19 Company's unit in Tulsa, Oklahoma. Temperatures must  
20 exceed 1600 degrees Fahrenheit to assure that complete  
21 destruction is achieved. Lower temperatures would only  
22 vaporize the Aroclors and create atmospheric pollution,  
23 or, worse yet, would form, by partial oxidation,  
24 materials which could be highly toxic; example, furans  
25 and dioxins." Was that information communicated to you

1 as of July 8, 1970?

2 A Well, I knew that there was a certain window at  
3 which PCBs, if they were exposed to this window of  
4 temperatures, dibenzofurans would be found. I also knew  
5 that if you exceeded this window they would be  
6 destroyed. I also knew that incinerators had something  
7 like a 99 point something efficiency in destroying  
8 either dioxin, which could occur from the  
9 trichlorobenzene or the benzofurans. But I don't recall  
10 memoranda about that.

11 Q Did you ever issue a warning to Monsanto's  
12 customers that furans and dioxins could be produced if  
13 PCBs were partially oxidized at temperatures less than  
14 1600 degrees Fahrenheit?

15 A No, sir, I did not.

16 Q What was the reason, Dr. Kelly, that with the  
17 knowledge that furans and dioxins could be produced by  
18 the burning of PCBs at less than 1600 degrees Fahrenheit  
19 no warnings were issued?

20 A Well, first of all, I do not believe that the  
21 PCBs were supposed to be heated up to that particular  
22 temperature. I also believe that at certain  
23 temperatures over this window of 200 degrees centigrade,  
24 whether it was 600 centigrade, 800 centigrade, after  
25 that it would be destroyed. And I believe also it was

1 the marketing department's responsibility, and they may  
2 well have said, "Don't use this at temperatures under  
3 1600 degrees centigrade." I had no knowledge at all  
4 that PCBs were going to be used at that particular  
5 temperature and there would be exposure to the outside  
6 such as I don't know how hot a heat transfer unit  
7 gets, but it doesn't get to be 1600 degrees centigrade.  
8 I also know the hydraulic fluid doesn't get to be 1600  
9 degrees centigrade.

10 Q Did you ever make any inquiries as to what  
11 temperatures were reached in the usage of PCBs or in the  
12 malfunction of PCB transformers or capacitors to  
13 determine if temperatures would be consistent with the  
14 production of furans and dioxins?

15 A I do know that we had examined transformers  
16 that had failed or had arced or been hit by lightning,  
17 and I do not to the best of my knowledge remember the  
18 occurrence of PCB of dibenzofurans in those  
19 particular instances.

20 Q Who undertook that assignment at Monsanto?

21 A Either Benignus or, after January the 1st of  
22 1970, Bill Papageorge.

23 Q So did someone express concern that these  
24 transformers which had failed or had been hit by  
25 lightning could have elevated levels of furans and

1 dioxins?

2 A I think they were really looking for arcing, or  
3 they knew hydrochloric acid was formed, but I do not  
4 believe that they were considering dioxin or  
5 dibenzofurans at that particular time.

6 Q Well, maybe I misunderstood your testimony. I  
7 thought you said that failed transformers were tested  
8 for the presence of furans and dioxins.

9 A I can't be sure of that. If I said that, I'll  
10 have to qualify it. I'm not certain of that. But may  
11 very well have been, but it was not done by the medical  
12 department, and to the best of my recollection, I'm  
13 pretty sure on this, that no time was the medical  
14 department notified that we had found furans in either  
15 used or used PCB or regular production runs of PCB up  
16 till November of 1974. I know they were working on it  
17 from the time of Vos' work in 1970, and they may have  
18 done some before that. I don't know. They may have had  
19 some suspicion, but I don't recall any report from our  
20 analytical group on that. Papageorge I think might be  
21 the one that would be able to tell you that.

22 Q Your testimony is there was no testing that  
23 confirmed the presence of chlorinated dibenzofurans in  
24 PCBs before you left Monsanto?

25 MR. DAVIDSON: Are you talking about

1 Monsanto's PCBs?

2 MR. McCREA: Yeah.

3 A I have no knowledge of any of the presence  
4 of dibenzofurans being found by Monsanto analytical  
5 people before I left.

6 Q You mentioned W. B. Papageorge. I'm going to  
7 read a memorandum that he authored October 26th, 1970 to  
8 J. R. Savage with a copy to R. E. Keller, E. P. Wheeler,  
9 W. R. Richard, H. S. Bergen. It states, "Recent data  
10 from Dr. J. P. Mieure's" that's M I E U R E  
11 apostrophe S "work indicates the presence of  
12 naphthalene in biphenyl and anthracene or benzanthracene  
13 and dibenzofuran in Santo Wax R used in the manufacture  
14 of Aroclors." Are you familiar with that information?

15 A May I see that? I may very well have seen that  
16 in 1970, but I don't recall seeing any levels They  
17 are talking about these things being present in the  
18 benzene used in the diphenyl unit, or it could be  
19 co produced with the biphenyl. I certainly can I  
20 imagine I feel quite sure if it went to Wheeler I saw  
21 it, but I don't recall seeing any data that showed what  
22 they found.

23 Q At any rate, before Until While you  
24 worked at Monsanto, you issued no warnings to your  
25 customers about chlorinated furans, be it a contaminant

1 of PCBs or a byproduct of burning PCBs?

2 A No, sir, I did not.

3 Q When did you first know about chlorinated  
4 furan?

5 A Sometime I knew definitely about it in 1970.  
6 I had anecdotal knowledge about it sometime in the late  
7 '60's. I don't know how late the '60's were.

8 Q You had not heard about chlorinated difuran  
9 before the late 1960's?

10 A To the best of my recollection. In Monsanto  
11 products you're talking about?

12 Q Correct. Yes.

13 A That's the best of my recollection.

14 Q Dr. Kelly, on June 12, 1956 were you put on  
15 notice that impurities, chlorinated furans and dioxins,  
16 probably were responsible for cases of chloracne in  
17 workers exposed to PCBs?

18 MR. DAVIDSON: Objection.

19 A Was I put on notice?

20 Q Yes (nodded).

21 A No, I was not put on notice.

22 Q What was the job of Elmer P. Wheeler on June  
23 12, 1956?

24 A He was a member of the medical department.

25 Q And I believe on direct you said you had seen

1 his signature hundreds of times?

2 A Yes.

3 (Reporter marked Plaintiff's Exhibit 2.)

4 Q Dr. Kelly, I hand you what the court reporter  
5 has marked as Exhibit 2.

6 MR. DAVIDSON: May I look at that?

7 A Yes, sir.

8 Q What is the date of the document?

9 A June 12th, 1956.

10 Q Who is the author of the document?

11 A Elmer P. Wheeler.

12 Q Do you recognize his signature?

13 A Yes.

14 Q Is that his signature?

15 A That's his initials, yes.

16 Q To whom was the document sent?

17 A To me.

18 Q Dr. Kelly, did you receive this document?

19 A Yes, I did.

20 Q On direct examination, you described names that  
21 were used for polychlorinated biphenyls or PCBs. One of  
22 those names was chlorinated diphenyl; is that correct?

23 A That's correct.

24 Q Another name was chlorinated biphenyl; is that  
25 correct?

1 A Yes.

2 Q On page two at the bottom of the first  
3 paragraph, do you see chlorinated biphenyl in the text?

4 A In the text? In the bottom on page two?

5 Q No. At the bottom of paragraph one on page  
6 two, Dr. Kelly.

7 A Yes.

8 Q Is that one and the same as polychlorinated  
9 biphenyls?

10 A That's correct.

11 Q Do you recall this memorandum, Dr. Kelly?

12 A Yes, I do.

13 Q When is the last time that you reviewed this  
14 memorandum?

15 A Probably in the last before my last  
16 deposition, before the discovery deposition.

17 Q This memorandum discusses two events, does it  
18 not, an event that took place in Germany in 1953 and an  
19 event that took place at Monsanto's plant in Nitro, West  
20 Virginia in 1949; is that correct?

21 A That's correct. Let me say

22 MR. DAVIDSON: Mr. McCrea, I'm going to object  
23 to this entire line of questioning again as to the  
24 relevance to the claims asserted by the Plaintiff,  
25 Mrs. Fisher, in this case and to the relevance of any of

1 this line of questioning. If you give me a continuing  
2 objection.

3 MR. McCREA: Yes, I will.

4 A Yes. This refers to these two instances. Both  
5 of these instances were with agricultural chemicals.  
6 Trichlorophenol was a raw material of 2,4,5 T, had  
7 nothing at all to do with dielectrics.

8 Q All right. And, Dr. Kelly, the chemical  
9 involved which had nothing to do with dielectrics had  
10 impurities in it; didn't it?

11 MR. DAVIDSON: Objection. What are you  
12 talking about? What chemical?

13 MR. McCREA: The 2,4,5 T.

14 MR. DAVIDSON: In Germany or in the United  
15 States?

16 MR. McCREA: In Nitro, West Virginia.

17 A Say your question over again.

18 Q The chemical that was being used at Nitro, West  
19 Virginia had impurities.

20 A Yes.

21 Q Those impurities are identified as best these  
22 individuals can do as chlorinated furans and chlorinated  
23 dioxins; is that not correct?

24 A No, it isn't correct, because they were not in  
25 a position to identify chlorinated dioxins or

1 chlorinated benzofurans in our agricultural chemical.  
2 They did not They did not I don't know how good  
3 their analytical expertise was, but they did not find  
4 I don't know whether they looked or not, but there was  
5 no reports of the presence of chlorinated dibenzofurans  
6 or chlorinated diphenyl or chlorinated or dioxin in  
7 the product.

8 Q Dr. Kelly, would you look at the last paragraph  
9 on page one?

10 A Yes, sir.

11 Q That makes reference to isolated impurities; is  
12 that correct?

13 A Yes, sir.

14 Q And the focus at this point in time was on the  
15 impurities and which impurities caused the chloracne and  
16 systemic health effects; is that correct?

17 MR. DAVIDSON: I'll object unless you clarify  
18 what whether this is talking about the incident in  
19 Germany and the product being manufactured there or the  
20 product or a Monsanto product.

21 Q The thrust of the investigation was to  
22 determine, A, the similarity of the events at Nitro and  
23 in Germany.

24 A Whose investigation?

25 Q The investigation by Mr. H. K. Nason. Do you

1 know him?

2 A Yes, I do know him.

3 Q Mr. R. E. S O D E N, do you know him?

4 A Yes, I know him.

5 Q Mr. L. C. Weger?

6 A Yes.

7 Q Dr. R. Emmet Kelly, M.D.?

8 A I know him.

9 Q Dr. H. Oettel, O E T T E L, M.D.?

10 A I met him once.

11 Q BASF in Germany. Where did you meet him?

12 A I met him in St. Louis once.

13 Q When?

14 A I don't know. I met him once. He came over to  
15 the United States twice. He was here in '56 and he was  
16 here in '60. I could have met him either time, but I  
17 believe I probably met him in 1956.

18 Q Dr. H. T. Hofmann, H O F M A N N?

19 A I did not know him.

20 Q A. Palm, P A L M, Ph.D.?

21 A I did not know him.

22 Q W. S O E N K S E N?

23 A I did not know him.

24 Q Elmer P. Wheeler?

25 A I knew him.

1 Q Don Irish, Dow Chemical?

2 A Yes, I knew him.

3 Q J. P. Purnell?

4 A Where are you getting these names? I mean, it  
5 seems like Irish was not present at the meeting. There  
6 were only these four people from Germany, and I don't  
7 know who else.

8 Q Dr. R. R. Suskind, Kettering Laboratory,  
9 Cincinnati?

10 A Yes. He was I don't know whether he was at  
11 this '56 meeting or was he at the '60 meeting.

12 Q Now, Dr. Kelly, did Monsanto Company  
13 investigate its Nitro, West Virginia incident?

14 A Yes.

15 Q Did that incident cause chloracne?

16 A Yes.

17 Q Did that incident cause systemic health  
18 effects?

19 A Yes.

20 Q Did those systemic health effects include  
21 fatigue, vertigo, painful joints, loss of libido?

22 A I do not at this time know whether they did or  
23 not.

24 Q Would you read the last sentence of paragraph  
25 two on the first page of Exhibit 2?

1 A Yes.

2 Q States, "In addition to the skin  
3 manifestations, their men," meaning BASF; correct?

4 A Yes.

5 Q " reported all the additional symptoms as  
6 experienced in our workers; i.e., fatigue, vertigo, loss  
7 of libido, painful joints," et cetera.

8 A I do I read that here. I'm not certain  
9 whether Mr. Wheeler, who was in our department, was not  
10 a medical person, was correct in that last sentence. I  
11 just do not know that. These men were They were  
12 sick. I'm not denying that. We sent four of them up to  
13 the Kettering Laboratory hospital to be investigated by  
14 the people up there. They had problems. They had  
15 peripheral neuritis as well as the chloracne.

16 Q Mr. Wheeler reports loss of libido and fatigue,  
17 which are symptoms described by the Anniston worker in  
18 1955 except his were loss of libido, loss of appetite  
19 and lassitude.

20 A Yes, sir.

21 Q So those two Those symptoms are somewhat  
22 similar; are they not?

23 A Yes, they are.

24 Q And did you conclude, Dr. Kelly, that in  
25 addition to the chloracne there were systemic health

1 effects suffered by these workers in Nitro who were  
2 exposed to impurities in the chemical at Nitro?

3 A First of all, we have to define some things.  
4 These people were exposed to the residue by what  
5 occurred during explosion. The residue that we scraped  
6 off the ceilings and the walls was not amenable to  
7 definition by analytical or qualitative chemistry. It  
8 was a gunk, a charred gunk, and they could not determine  
9 what was in the material. We never found any dioxin in  
10 the material. We never found any chlorinated  
11 dibenzofurans in the material. I do not know whether  
12 our analytical expertise at that time was sufficient to  
13 find it if it did, if it were there. So does that  
14 answer your question?

15 MR. McCREA: Would you read the question back,  
16 please?

17 (Reporter read back as requested.)

18 A Except that I do not know whether the  
19 impurities were in the chemicals or were formed in the  
20 explosion. I do not know.

21 Q All right. But my question is did you  
22 conclude, Dr. Kelly, that these workers in addition to  
23 chloracne suffered systemic health effects?

24 A Yes. I believe chloracne is a systemic effect.

25 Q But in addition to chloracne?

1 A Yes.

2 Q And did you conclude, Dr. Kelly, that they  
3 suffered fatigue?

4 A To the best of my recollection, they may very  
5 well have had.

6 Q Did you conclude that they suffered vertigo?

7 A No, I do not think that was a prominent  
8 symptom. I do not believe that. I do not recollect  
9 that being prominent.

10 Q So you disagree with what Elmer Wheeler writes  
11 in the memorandum that you received?

12 A I say that at the present time I do not know if  
13 some of the things that Elmer Wheeler, a nonmedical  
14 person wrote Some of them I know. They had painful  
15 joints. I knew that. I do not know if the symptom of  
16 vertigo or loss of libido was prominent or not. I don't  
17 recall that at this time.

18 Q So you're not able to say if this information  
19 communicated to you in this memoranda is accurate?

20 A Those That particular sentence, there may be  
21 some errors in it, yes.

22 Q Dr. Kelly, how much time did you devote to  
23 investigating these health problems described by Elmer  
24 Wheeler to you?

25 A Weeks.

1 Q Do you have a file on it?

2 A I did. I told you we sent the foremost the  
3 people that we thought were the most seriously affected,  
4 we sent them up to the Kettering Laboratory hospital.

5 Q Dr. Kelly, really Excuse me, but that's not  
6 my question.

7 A What is your question?

8 Q My question is do you have a file?

9 A I myself do not have a file, no.

10 Q All right. I'm not If you could just try to  
11 listen to the question.

12 A All right. Fine.

13 Q Did you have a file at one time?

14 A It depends what you mean by a file. Yes, we  
15 had a file that said "Nitro explosion".

16 Q All right.

17 A And there was a file in the Central Medical  
18 Department that had that.

19 Q Okay. Now, Dr. Kelly, on page two in the first  
20 paragraph, it states, "Dr. Oettel believes that the most  
21 potent chloracnogen is a compound somewhat similar to  
22 chlorinated diphenyl oxide," and then there's a diagram.

23 A Yes.

24 Q Can you tell us what chemical is diagrammed in  
25 this document authored by Elmer P. Wheeler from your

1 medical department?

2 A Yes.

3 Q What chemical is that?

4 A That's dibenzofuran, chlorinated dibenzofuran.

5 Q Dr. Kelly, then it goes on to say, "but  
6 probably with additional oxygen atoms in the molecules".  
7 Do you know what that references?

8 A That is the statement of Dr. Oettel's, and I  
9 don't know what he means by that.

10 Q Did you do any investigation to determine  
11 whether or not chlorinated furans were the culprit in  
12 causing these systemic health problems in the workers in  
13 1949?

14 A You want When I say "investigation" When  
15 you say "investigation," did I do it, I had analytical  
16 people look at the material that was the causative agent  
17 of the chloracne. We had people develop chloracne from  
18 sitting down on a galvanized roof. They took this gunk  
19 up. I didn't do it myself. The analytical people took  
20 this charred gunk and could not analyze it for anything.  
21 It was just not amenable to qualitative or quantitative  
22 analysis.

23 Q All right. So the answer is you did do an  
24 investigation; correct?

25 A You mean me or Monsanto? I mean, you catch me

1 up when you say, well, I don't mean you, but did  
2 Monsanto.

3 Q Did you yourself do an investigation?

4 A I did not do the analytical work. Certainly I  
5 did an examination investigation.

6 Q And others investigated this at Monsanto?

7 A Yes.

8 Q So you knew as a result of this memoranda on  
9 June 12, 1956 that Elmer Wheeler had diagrammed a  
10 chlorinated furan as an impurity that caused  
11 potentially caused the health problems in the workers in  
12 Germany and potentially caused the health problems in  
13 the workers in Nitro?

14 A First of all, he the diagram is chlorinated  
15 dibenzofuran. Oettel's statement was similar to  
16 chlorinated diphenyl oxide. Well, it's a diphenylene.  
17 It's a different compound. The diagram and the English  
18 wording are different. So what was your question?

19 Q The question is that you knew Elmer Wheeler had  
20 diagrammed a chlorinated furan

21 A Yes, he had.

22 Q as a potential impurity causing the health  
23 problems in both the Germany workers and the Nitro  
24 workers?

25 A He said it was possible, yes.

1 Q So you knew about a chlorinated furan with  
2 respect to chloracne and systemic health problems in  
3 1956?

4 A No, I didn't. Because it was Here is Oettel  
5 diagramming something. He refers to it by a different  
6 chemical term. He is talking about what he had at his  
7 explosion in Germany. I've got to explain. You said I  
8 knew about it. I didn't know about it. This fellow has  
9 a suspicion that it may be a dibenzofuran, but I didn't  
10 know that.

11 Q Did you know that was a chlorinated furan when  
12 you saw the diagram?

13 A I don't know. I don't know whether I did or  
14 not. I certainly found out later it was a chlorinated  
15 difuran.

16 Q Then Mr. Wheeler goes on to state that there's  
17 been correspondence with Don Irish at Dow, who either  
18 reached the same conclusion independently or, in  
19 mentioning the potential of chlorinated diphenyl oxide,  
20 influenced Oettel's reasoning. Oettel believes further  
21 that this impurity And what do you To what is he  
22 referring when he says "impurity"?

23 A I don't know. He's got two different ones up  
24 there. He's got a picture of a diagram of a  
25 chlorinated dibenzofuran, and he refers to that as a

1 chlorinated diphenyl oxide, and I don't know which one  
2 of the two he's referring to. They do not jibe. As I  
3 said, those three words, chlorinated diphenyl oxide,  
4 does not correspond to the diagram.

5 Q Well, a chlorinated diphenyl oxide is not  
6 diagrammed; chlorinated furan is diagrammed.

7 A That's correct. But you asked me which one was  
8 Oettel referring to, and I don't know which one he's  
9 referring to.

10 Q Well, did you pursue this as to what he was  
11 talking about?

12 A Yes, we did pursue it. We had work done at  
13 Kettering on we had work done by Suskind, and this is  
14 just a supposition of his. This was This whole  
15 meeting, all you're talking about is what has occurred  
16 between at the meeting between Monsanto, Kettering  
17 Laboratory and Badische, and presumably Irish, if he was  
18 there, on insecticides with trichlorophenol. Absolutely  
19 nothing to do with the dielectrics.

20 Q All right. Then, Dr. Kelly, this last sentence  
21 in paragraph one states, "Oettel believes, further, that  
22 this impurity can show up in the production of any  
23 chlorinated phenol and is probably responsible for any  
24 chloracne which has been due allegedly to  
25 chlornaphthalenes, pentachlorophenol and chlorinated

1 biphenyl" or PCBs; correct?

2 A That is a statement. Whether I don't say  
3 that Oettel's supposition is correct. This is just an  
4 opinion that Wheeler Wheeler is quoting what he  
5 believes Oettel said, and I don't know if Oettel ever  
6 had any experience with chlorinated biphenyls.

7 Q But, Dr. Kelly, you don't deny that after all  
8 of this investigation with respect to Nitro in '49, BASF  
9 in 1953, that in 1956 this information was being  
10 communicated to you that the impurity is probably  
11 responsible for any chloracne which has been due to  
12 PCBs? That was communicated clearly to you?

13 A I don't know what you mean by information.  
14 This man said maybe this is this is probably  
15 responsible. We did not accept that as gospel. There  
16 was no evidence at that time that there was any of these  
17 impurities which he's talking about, either of the two  
18 he's talking about here. He's talking about two  
19 different ones. Whether those were present in our  
20 chlorinated biphenyl.

21 Q Dr. Kelly, I'm not asking whether or not you  
22 accepted it as gospel, but I'm saying this information  
23 was communicated to you. You were on notice that the  
24 impurities as diagrammed here and as described here,  
25 according to Dr. Oettel, were probably responsible for

1 the chloracne caused by exposure to PCBs. That's all  
2 I'm saying; you were just on notice of that. Correct?

3 MR. DAVIDSON: I object to the question as  
4 including the legal terminology, words of art that are  
5 improperly addressed to a witness.

6 A You'll have to repeat the question, please.

7 (Reporter read back as requested.)

8 A If by on notice you mean that Oettel says,  
9 "I've got a suspicion this may be"

10 Q Yeah.

11 A Well, I don't accept that this is putting me on  
12 notice as saying that there's either one of these two  
13 compounds that he's talking about in our chlorinated  
14 biphenyl. That isn't what he's saying. He doesn't have  
15 any definite data on that. He didn't find any in our  
16 chlorinated diphenyl. I don't know if he ever looked at  
17 it.

18 Q You're saying this is a suspicion?

19 A Yes.

20 Q He uses the words "probably responsible".

21 A Well, he also says "may show up," or did he say  
22 can?

23 Q Can.

24 A Says "can show up". But he says it's  
25 responsible. That's certainly a suspicion, and I didn't

1 I do not know about whether Oettel was an expert in  
2 the formation of these compounds and these contaminants  
3 and various chlorinated compounds.

4 Q Dr. Kelly, you stated you had no suspicion that  
5 chlorinated furans were in PCBs until 1969 or 1970. Is  
6 that what you testified?

7 A That's correct.

8 Q This document diagrams what you acknowledge is  
9 a chlorinated furan; is that fair?

10 A Yes.

11 Q It also describes that same molecule with  
12 additional oxygen atoms, which would sound like a  
13 chlorinated dioxin; is that fair?

14 MR. DAVIDSON: I object and move to strike.

15 A No. I don't know Additional oxygen atoms, I  
16 don't know where they would be positioned. And he's  
17 also stating there's a compound somewhere this  
18 carcinogen or chloracnogen is a compound somewhat  
19 similar to these two things, these two compounds.  
20 Something similar is not the same as the same as  
21 being the same compound.

22 Q There's no question, Dr. Kelly, that the  
23 impurity was extraordinarily toxic; correct?

24 A Yes.

25 Q No question about that?

1 A Yes.

2 Q And that's reflected in paragraph three on the  
3 first page where these animals died in what they thought  
4 were decontaminated autoclaves?

5 MR. DAVIDSON: Once again, I object. This is  
6 describing the BASF experiment by Dr. Oettel.

7 Q There's no question these impurities were  
8 toxic?

9 A According to Dr. Oettel, they were extremely  
10 toxic, yes, sir.

11 Q And you have no disagreement with the  
12 conclusion of Dr. Oettel that these were extraordinarily  
13 toxic impurities?

14 A I don't know if how you'd qualify  
15 extraordinary. I do know that according to what Oettel  
16 says he exposed animals in the decontaminated autoclave.  
17 I don't know how clean it was. I don't know what the  
18 temperature was. I don't know what the air changes  
19 were. I don't know what the concentration of whatever  
20 was there was. So they died, certainly. But without  
21 knowing the perimeters of his testing, I can't use the  
22 word "extraordinarily toxic" as you can.

23 Q Dr. Kelly, there were two factors involved in  
24 Nitro, West Virginia, as I understand this, you correct  
25 me if I'm wrong, which led to the upset condition, and

1           those were temperatures and pressures. Is that a fair  
2           summary? You had elevated temperatures and

3           A     It was an

4           Q     extreme pressures?

5           A     It was an uncontrolled reaction, and I do not  
6           know the details of the temperatures and pressures  
7           involved. Certainly was increased pressure because it  
8           blew out the safety gaskets.

9           Q     But those were factors that tie into the  
10          presence of these impurities, temperatures and pressure?

11          A     Presence when and where? In what? At Nitro?

12          Q     Yes.

13          A     They were factors certainly. There was an  
14          explosion, something happened. There was some sort of  
15          reaction that produced something which they were unable  
16          to identify.

17          Q     Okay. Now, you attempted to analyze the  
18          residue to determine what the impurities were?

19          A     I myself did not.

20          Q     Monsanto did.

21          A     Monsanto did, yes.

22          Q     And I think you even sent those to BASF?

23          A     I do not know whether we did or not. I don't  
24          know why. BASF was what? Six years later?

25          Q     Nitro was '49. BASF was '53. Your memorandum

1 was '56.

2 A '53, I don't know if we sent them to BASF.

3 Q With this information

4 A What information, by the way?

5 Q That the impurity, according to Dr. Oettel, is  
6 probably responsible for any chloracne which has been  
7 due allegedly to PCBs as reported to you directly by  
8 Elmer Wheeler. Did you conduct any analysis of your  
9 PCBs to determine if impurities as diagrammed on page  
10 two were present from 1956 until 1974?

11 A You mean me personally?

12 Q Monsanto.

13 A Well, that different. They may very well have,  
14 but I do not believe that in 1956 and for some years  
15 afterwards they would be unable to find either of these  
16 two to analyze whether their expertise would go down far  
17 enough to find either of these two compounds which was  
18 present in our PCBs.

19 Q So they may have done the analytical work; they  
20 may not. You don't know?

21 A I don't know.

22 Q Did you issue any warnings to your customers  
23 that PCBs could have an impurity that is extraordinarily  
24 toxic?

25 A No, sir, I did not because the PCBs themselves

1 we did tests of the entire PCBs, and they were not  
2 extraordinarily toxic. They were mildly to moderately  
3 toxic as an industrial chemical, and the presence of  
4 dibenzofurans, if they were present at that time, were  
5 not at all in sufficient quantity to cause any problem  
6 with electrical workers if they had adhered to the  
7 simple cautionary information we gave them.

8 Q So you made a decision that the information  
9 indicating that impurities were in PCBs need not be  
10 communicated to your customers?

11 MR. DAVIDSON: I object. He didn't testify to  
12 that at all. He didn't testify to any decision. He  
13 told you he was not of the opinion that this put him on  
14 notice. So he didn't testify to any decision that he  
15 made.

16 A Would you repeat? That because I don't agree  
17 with your statement either.

18 Q You don't deny that Wheeler is telling you that  
19 the impurity could be the cause of the chloracne? You  
20 don't deny that?

21 A Wheeler is quoting Oettel.

22 Q Right.

23 A And that is written in a memorandum that I saw.  
24 Yes, I do not deny that.

25 Q And you knew this impurity is extraordinarily

1 toxic?

2 A Well, the fact that I didn't know what impurity  
3 it was, I really couldn't say how Whatever it was, it  
4 was certainly toxic at the Nitro explosion from when  
5 But that had nothing to do with the trace amounts or  
6 small amounts of either of these impurities they're  
7 talking about in our manufacturing PCBs because we had  
8 run toxicity information on these compounds, we had our  
9 clinical experience with the lack of chloracne in our  
10 people, and that's why I didn't think it at all  
11 important to tell the customers. If they No matter  
12 what was in our PCB that we manufactured, if they  
13 followed the cautionary instructions, they wouldn't get  
14 in any trouble. And the fact that nobody got in any  
15 trouble in the electrical business, in the transformer  
16 business, there were no reports of these troubles  
17 certainly until I left the company.

18 Q After this date you undertook very extensive  
19 toxicological testing at IBT; correct?

20 A Which date?

21 Q 1956.

22 A Oh, afterwards, yes.

23 Q And you undertook that testing at IBT because  
24 you didn't know certain aspects of the toxicity of PCBs,  
25 particularly with respect to systemic health effects?

1           Isn't that a fair statement?

2           A     No, it isn't.

3           Q     Dr. Kelly, did you see the protocol developed  
4 by IBT for your testing?

5           A     Yes.

6           Q     Would you please look at Exhibit 31?

7           A     Yes, sir.

8           Q     And will you turn to page     Bates page 072693.

9           A     Page which?

10          Q     Bates number MONS 072693.

11          A     Yes, sir.

12          Q     Had you ever undertaken a protocol to determine  
13 if Monsanto's PCBs or its impurities could affect the  
14 tissues and organs described on page four?

15          A     Have I ever when?

16          Q     Before this date of the IBT proposal.

17          A     I do not know how extensive the pathology was  
18 in the Treon experiments in 1954.

19          Q     I thought you said the reason you used IBT is  
20 because Treon didn't have the pathologists and the  
21 toxicologists to do those work

22          A     They had some, yes, but they were not     They  
23 were an academic institution, and they were not on speed  
24 all the time, and we were in a rush, and you don't know  
25 how long it takes an academic institution to do the work

1 as well as an industrial laboratory. So I said I do not  
2 know. If you show me the Treon report, I can answer  
3 that question.

4 Q But you would agree that they're proposing to  
5 do the following pathologic examinations of all these  
6 tissues and organs; correct?

7 A Yes.

8 Q And you had no knowledge as of this date that  
9 PCBs were not systemically toxic to any of these tissues  
10 or organs; did you?

11 A Yes. I did not have any knowledge that they  
12 were toxic to any of these organs because we had checked  
13 the workers and the exposure of the workers, did not  
14 have any problems with the liver, kidneys, spleen. You  
15 don't have any problems. Gonads we

16 Q What organ in this list could be responsible  
17 for the workers' complaint of loss of libido in 1935?

18 A Well, there's the gonads and there's also the  
19 brain.

20 Q All right. And those both could have been  
21 affected in 1935 to explain his reports of systemic  
22 toxic health effects; correct?

23 A It's possible.

24 Q And you knew that he had those complaints?

25 A They were listed by Dr. Jones. It appeared

1           that Dr. Jones did not agree a hundred percent that  
2           there was a physical component as a basis for the  
3           complaints, yes, sir.

4           Q     And what could explain that, as you've just  
5           said, would be his gonads and his brain?

6           A     The brain, but I do believe the psychological  
7           problems show up in pathological.

8           Q     In IBT were they testing for psychological  
9           problems when they list brain under tissues and  
10          organs

11          A     No. They are looking

12          Q           to be examined?

13          A     They are looking for anatomical pathology.

14          Q     That's correct. Then in 1956, you get a  
15          follow up report that the workers in Nitro exposed to  
16          impurities in their chemical, just as the worker in  
17          Nitro was exposed to impurities in his chemical, have  
18          two of the same symptoms, loss of libido and fatigue or  
19          lassitude; correct?

20                 MR. DAVIDSON: I'll object.

21          A     Say the statement over.

22          Q     In 1956, Dr. Kelly

23          A     Well, you were a little before '56. Read the  
24          question back.

25          Q     Well, I'll repeat it.

1 A Okay.

2 Q In 1935, you knew the worker complained of  
3 lassitude, loss of appetite, loss of libido.

4 A I knew what I read in Jones' report, yes, sir.

5 Q And the organs that could affect that were his  
6 gonads and his brain?

7 A Yes, sir.

8 Q And could be systemically induced? Could be.

9 A Could be possibly, yes.

10 Q And then in 1956 you get a report of your  
11 workers which says they also have experienced loss of  
12 libido and fatigue.

13 A Yes, sir.

14 Q Now, this is the second report that you have,  
15 and you would acknowledge those could also be  
16 systemically induced?

17 MR. DAVIDSON: Objection.

18 A Yes, sir.

19 Q But yet there was no testing undertaken by  
20 Monsanto to determine if these effects could be the  
21 result of PCBs or your impurities?

22 MR. DAVIDSON: Object.

23 A There was no testing because you were picking  
24 two different occurrences that had no relationship at  
25 all to our regular manufacturing of 2,4,5 of PCBs.

1 One was not a Monsanto situation. It was a contaminated  
2 benzene from which PCBs was manufactured by Swann. The  
3 second case was an insecticide entirely removed from  
4 PCB, had no connection at all to it, and you are joining  
5 those two isolated situations against '35 to '56, if  
6 you talk about this is '68 33 years of absence of  
7 any clinical problems on

8 Q Dr. Kelly, we disagree on that.

9 A Let me finish. on an examination of our  
10 workers.

11 Q But yet absence of any problems, Dr. Kelly, but  
12 not a single piece of paper to ever show that there was  
13 a sophisticated medical protocol carried out to  
14 determine if there were problems?

15 MR. DAVIDSON: Object. Move to strike.

16 A That isn't true. I don't know what you mean by  
17 a sophisticated medical protocol.

18 Q I mean a protocol in which you look for  
19 systemic health effects pursuant to a protocol designed  
20 by a person qualified to develop that protocol.

21 MR. DAVIDSON: Object. Move to strike.

22 A I can say that either I or Dr. Martin was  
23 certainly sophisticated enough to decide a protocol, a  
24 clinical investigation.

25 Q Where's the data?

1           A     The data is in the examination reports and the  
2           laboratory reports of the workers at the Anniston plant.

3           Q     Where is that compiled?

4           A     I don't know where it's compiled.

5           Q     You don't have it.

6                     MR. DAVIDSON:  Objection.  Stop arguing with  
7           the witness.

8           A     What do you mean?  I do have it.  I said I had  
9           it.

10          Q     Where is the compiled data?

11          A     I don't

12          Q     Where is it now?

13          A     Well, we're talking about     We examined the  
14          people, got the negative

15          Q     Dr. Kelly, I understand that you examined these  
16          workers.  I understand you examine all of your workers.

17          A     Yes.

18          Q     I want to know where's the data showing that  
19          you conducted a protocol to determine if they had  
20          systemic health effects.  I want to know where the data  
21          is.

22          A     You don't need a protocol for a physical  
23          examination.  There is no protocol, if that's what  
24          you're talking about.  But what you're talking about as  
25          protocol is different than I believe a protocol is.

1 Q Where's the data?

2 A You mean the compilation of the data? Is that  
3 what you're saying?

4 Q Right. Where are the reports?

5 A Well, the reports are Joe Blow, normal physical  
6 examination, normal clinical laboratory testing. That's  
7 in his file at Anniston. Now, that's one. But I don't  
8 know what you mean by compilation. Did we take all  
9 these together and say, "Well, we examined 30 people in  
10 the PCB department and got no illness"?

11 Q Okay, Dr. Kelly, would you please turn to the  
12 last page of Exhibit 2, please?

13 A Of who? Exhibit 21?

14 Q Exhibit 2.

15 A 32.

16 Q Two. It's the 1956 memo.

17 A Yes, sir. Page where?

18 Q The last page.

19 A Yes, sir.

20 Q Dr. Kelly, reference is made to human  
21 volunteers at Kettering at the bottom of the first  
22 paragraph.

23 A Yes.

24 Q Did Kettering use human volunteers to  
25 determine

1 A Did they what?

2 Q Did they use human volunteers to determine the  
3 toxicity of PCBs?

4 A No, sir. It was not the toxicity. I think it  
5 was to see if the material could cause chloracne.

6 Q All right. And tell us what you know about the  
7 use of human volunteers.

8 A Where? At Kettering?

9 Q Yes.

10 A Or Nazi Germany or anyplace?

11 Q Would you like to take a break?

12 A Well, no. But tell me

13 Q At Kettering, Dr. Kelly.

14 A At Kettering. Is that what you want? Suskind  
15 used small amounts of I don't know what he used,  
16 whether he used PCBs or whether he I think it must be  
17 PCBs he used to see if chloracne could be caused by  
18 repeated skin applications. I don't recall any more  
19 details than that.

20 Q Did he tell those people that PCBs could  
21 penetrate the skin and cause systemic health effects?

22 MR. DAVIDSON: Objection.

23 A You'd have to ask Dr. Suskind.

24 MR. DAVIDSON: There's no way he could answer  
25 that.

1 Q Do you know?

2 THE WITNESS: Don't answer it?

3 MR. DAVIDSON: No. I objected on the basis  
4 that you had no way of knowing what Dr. Suskind may have  
5 done.

6 Q Was that an experiment paid for by Monsanto?

7 A That was part of the investigation that  
8 Dr. Suskind carried out. Monsanto did not ask him to  
9 use any human volunteers. In 1956, the informed consent  
10 was not as descriptive or as expansive as it was at  
11 later years, but Suskind was a very reputable and  
12 honorable individual, and I'm sure that he told these  
13 people, "You are not going to be harmed by this."

14 Q Did he tell them that the PCBs could go through  
15 their skin and cause systemic injury?

16 A I do not know what he told them.

17 Q Dr. Kelly, do you have the copies of the  
18 reports referenced in paragraphs one, two and three?

19 A Paragraphs one, two, and three where?

20 Q On the last page. Paragraph two.

21 A Do I have them?

22 Q Right.

23 A With me?

24 Q No. Does Monsanto have those?

25 A Well, presumably they do.

1 Q All right. And, Dr. Kelly, tell us about  
2 Mr. Weger's excellent history of chloracne. Did you  
3 read that?

4 A Yes, I read it.

5 Q And do you have a copy of that personally?

6 A No, sir, I do not.

7 Q Does Monsanto have a copy of that?

8 A I do not know.

9 Q Do you

10 A Certainly if Weger wrote it, Monsanto had it.

11 Q So you would assume that's still on file with  
12 Monsanto?

13 A I'd have to make an assumption. I don't know  
14 whether it is or not.

15 Q All right. Dr. Kelly, would you like to take a  
16 short break?

17 MR. DAVIDSON: I would.

18 (Whereupon, there was a brief recess.)

19 (Reporter marked Plaintiff's Exhibit 3.)

20 Q Dr. Kelly.

21 A Yes, sir.

22 Q I hand you what is marked as Exhibit 3.

23 A Yes, sir.

24 Q Can you identify the exhibit?

25 A It is a memorandum by somebody describing a

1 conference at the Kettering Laboratory.

2 Q Did you get a copy of this memoranda?

3 A I don't recall whether I did or not.

4 Q Do you know Dr. R. R. Suskind, M.D.

5 A Do I know him?

6 Q Yes.

7 A Yes.

8 Q H. Oettel? Oettel?

9 A Yes. That's man we've been talking about for  
10 the last half an hour.

11 MR. DAVIDSON: Mr. McCrea, I will again  
12 interpose an objection as to the relevance of this  
13 entire line of questioning and ask for a continuing  
14 objection.

15 MR. MCCREA: I understand, counsel.

16 Q E. P. Wheeler?

17 A Yes.

18 Q L. C. Weger?

19 A Yes.

20 Q This again refers to the incident where  
21 impurities caused injury at BASF and Nitro; correct?

22 A What caused injury?

23 Q Impurities.

24 A Yes, sir. Or something at Monsanto. I don't  
25 know what it was.

1 Q Well, can we all agree it's an impurity?

2 A Well, I don't know whether it was an impurity  
3 or something that formed in the explosion.

4 Q All right. Either an impurity or a byproduct  
5 of the explosion?

6 A Right.

7 Q All right, sir. It makes reference to pictures  
8 of the severe cases of individuals with acne and similar  
9 photographs from German cases. Did you ever see those  
10 photographs?

11 A I never saw the German cases. I may have  
12 I'm sure I saw some of the Monsanto. We're talking now  
13 about biopsies. Is that pictures and biopsies? I  
14 didn't see the skin biopsies, but I believe I've seen  
15 some of the pictures of the Monsanto cases. But I did  
16 see the Monsanto cases themselves without the picture.

17 Q All right, sir. Would you turn to page two.

18 A Yes, sir.

19 Q Reference is made in the first full sentence,  
20 second line, "While in many of the experimental animals,  
21 evidence of toxicity was manifest, there was no  
22 chloracne developed." Do you know the tests that are  
23 being described in that statement?

24 A Well, it says The sentence before that,  
25 Suskind described in some detail animals tests continued

1 by skin application and by inhalation using TCB and  
2 2,4,5 T, so that's what the tests were, both skin and  
3 inhalation.

4 Q Was that information Do you recall that  
5 information being communicated to you at the time this  
6 was done?

7 A I'm sure I feel it was. If Wheeler was  
8 there and Wheeler got a copy of it, I'm sure it was  
9 communicated to me.

10 Q Is that significant, that information?

11 A Is what? That what?

12 Q That there could be evidence of toxicity  
13 without chloracne.

14 A Well, I knew there could be because in our  
15 exposure in heat transfer occasions where there was  
16 leakage, where hydraulic fluid rather no heat  
17 transfer where there had been excessive inhalation  
18 that occurred too fast for chloracne to develop.

19 Q Did you ever issue a warning that people could  
20 suffer toxic health effects without chloracne in  
21 exposure to PCBs?

22 A No, sir, I did not because they were not I  
23 did not believe they would get any, and they didn't get  
24 any toxic effects. They didn't get chloracne. They  
25 didn't get toxic effects in our workers or in our

1 customers' workers.

2 Q I thought you said there was an example where  
3 people exposed to heat transfer fluid suffered toxic  
4 effects without chloracne.

5 A Yes. They suffered in it in three days. You  
6 don't develop chloracne in three days.

7 Q My point is did you ever issue warnings that  
8 people could suffer toxic health effects without  
9 chloracne?

10 A Do you mean to say that I would write them and  
11 say, "If you have a leaking apparatus"

12 Q No.

13 A "and you're breathing this at elevated  
14 temperatures you are liable to get sick without  
15 chloracne showing up"?

16 Q Yeah. Words to that effect.

17 A No, I didn't do that. I told them not to do  
18 it.

19 Q Well, you told them not to do it.

20 A Right.

21 Q But you didn't tell them what the consequences  
22 could be.

23 A No, sir. In bulletins I did, but

24 Q Not on these labels.

25 A Not on the labels, no.

1 Q These labels don't talk about the consequence.

2 A We're talking about Labels are not supposed  
3 to, my point of view. You tell them how to avoid any  
4 trouble with the material.

5 Q All right. Okay, Dr. Kelly. Now, again,  
6 there's reference down here to human volunteers. Do you  
7 know what that reference is?

8 A Wait till I get down to it.

9 Q That's, Dr. Kelly, the end of the first  
10 paragraph on page two.

11 A "Decision was made to employ human volunteers  
12 in an attempt to find a means of evaluating the  
13 acnegenic potential of various process materials." What  
14 was the question?

15 Q Are you familiar with that study where human  
16 volunteers were used?

17 A Yes. Well, I'm not familiar with it; I recall  
18 something about it. It looks like it goes on to say  
19 what happened. If that means I'm familiar, yes.

20 Q And they were It says, "The qualified  
21 physician was particularly mindful of possible liver  
22 changes." Is that correct?

23 A That's correct.

24 Q Do you know if the qualified physician was  
25 particularly mindful of any other systemic toxic

1 effects?

2 A I'm sure a qualified physician at the Kettering  
3 Laboratory when they were running human volunteers was  
4 looking for any problems.

5 Q All right. Doesn't say that, though; does it?

6 A No. But we're talking about a qualified  
7 physician. He just didn't go in and say, "How's your  
8 liver?" and run the liver tests on them.

9 Q Again, you don't know what those people were  
10 told about systemic effects from

11 A Well, I feel morally certain what Suskind told  
12 them, but I do not know what he told them. I think he  
13 would be the man to ask that.

14 Q Go down to the bottom of page three

15 A Yes.

16 Q This memorandum states, "Dr. Suskind stated  
17 that in the Monsanto cases, the skin"

18 A Are we on three? Did you say three?

19 Q Yes.

20 Q The bottom of page three, the last two lines.

21 A Yeah.

22 Q Are you there?

23 A Yes.

24 Q It states, "Dr. Suskind stated that in the  
25 Monsanto cases the skin problem was not disabling, but

1 the many other symptoms"

2 A Yes.

3 Q "such as vertigo, aching muscles, dyspnea  
4 and headaches were."

5 A Yes, sir.

6 Q Do you agree with Dr. Suskind that there were  
7 other disabling symptoms as he describes in this  
8 memoranda?

9 A Yes, he does. I agree because some of the  
10 people did have disabling symptoms.

11 Q Did you ever issue any warnings about the  
12 potential disabling symptoms from exposure to 2,4,5 T  
13 and its impurities or polychlorinated biphenyls and its  
14 impurities?

15 MR. DAVIDSON: Object. Move to strike.

16 A The answer is no, but that is not relevant to  
17 what he's saying. Here he is Here he is This is a  
18 meeting where they're discussing the problem with  
19 Badische and Monsanto, the problem that resulted from  
20 explosions, and are you asking me then did I say "If you  
21 have an explosion making 2,4,5 T"? We didn't have these  
22 symptoms of vertigo, aching muscles, et cetera, in the  
23 customers of 2,4,5 T, so, no, the answer is no.

24 Q Have you had exploding transformers to your  
25 knowledge?

1 A Yes.

2 Q And have you had reported systemic health  
3 problems from exploding transformers?

4 A No, sir, I did not.

5 Q Monsanto hasn't received any notice of systemic  
6 health problems from individuals exposed to exploding  
7 transformers?

8 A Up until 1974, I did not have, and I could  
9 speak for Monsanto because I would have gotten those  
10 reports. I did not receive any reports of ill health  
11 from exploding transformers.

12 Q Doesn't mean there weren't any; does it?

13 A Well

14 MR. DAVIDSON: Objection.

15 A Doesn't mean there weren't, but it doesn't mean  
16 that I didn't get any.

17 Q Then the next sentence says, "In close checking  
18 the varying secondary symptoms (once termed bizarre)"  
19 Do you see that?

20 A Yes.

21 Q "it developed that all the typical symptoms  
22 were common to both the German and Monsanto cases with  
23 the exception of dyspnea and intolerance to cold." Now,  
24 Dr. Kelly, as I read these two documents, both of which  
25 reference exposure to impurities in products

1 manufactured by Monsanto, Nitro and BASF, the following  
2 health symptoms are referenced other than chloracne.

3 Give me a second here and let me track this down. And  
4 those symptoms are, on Exhibit 2, fatigue

5 A Wait a minute. Let me read it. Oh, Exhibit 2.  
6 We're back on that one.

7 Q Yeah. The symptoms other than chloracne  
8 exhibited by these workers are fatigue, vertigo, loss of  
9 libido, painful joints, aching muscles, dyspnea,  
10 headaches, and intolerance to cold.

11 A Wait a minute. Is this on Exhibit 2?

12 Q Two and three.

13 A Oh, you're using both of them.

14 MR. DAVIDSON: Are you just quoting a  
15 compilation of all the symptoms that you read there?

16 MR. McCREA: I'm quoting what these workers  
17 suffered in addition to chloracne as a result of  
18 exposure to impurities, which look very much like  
19 chlorinated furans and chlorinated dioxin.

20 MR. DAVIDSON: Well, something you read into  
21 the record just a minute ago said they were not the same  
22 with respect to reaction to cold or There were two of  
23 them that weren't the same.

24 MR. McCREA: Right. But they were suffered by  
25 workers.

1 MR. DAVIDSON: So you're just compiling them  
2 all?

3 MR. McCREA: I'm putting them all together.  
4 These are symptoms suffered by workers.

5 MR. DAVIDSON: Whether they worked at BASF or  
6 whether they worked for Monsanto?

7 MR. McCREA: With the exception of dyspnea or  
8 intolerance to cold. Those were the only two that were  
9 not common to both.

10 MR. DAVIDSON: But you didn't make the  
11 exception. You just read those in there when you read  
12 your list.

13 MR. McCREA: Well, I stand corrected.

14 Q (By Mr. McCrea) The list is eight symptoms,  
15 two of which, dyspnea and intolerance to cold,

16 MR. DAVIDSON: Were not common.

17 Q were not common to both.

18 A Did you say eight symptoms?

19 Q Yes.

20 A Well, I get together, if I add all these  
21 together, these two different explosions in an  
22 agricultural chemical operation, we have vertigo, aching  
23 muscles, dyspnea in one case, headaches, and they don't  
24 seem to bring out loss of libido by Oettel.

25 Q They said, "They're common to all except." It

1           said, "It developed that all the typical symptoms were  
2           common to both the German and Monsanto cases with the  
3           exception of dyspnea," which is labored breathing, "and  
4           intolerance to cold."

5           A     Well, yes, but what Suskind said     Let's read  
6           what he said. He said, "In the Monsanto cases the skin  
7           problem was not disabling, but that many other symptoms,  
8           such as vertigo, aching muscles, dyspnea and headaches,  
9           were." Then he said, "In close checking the various  
10          secondary symptoms it developed that all"

11          Q     Once termed bizarre?

12          A     Yes. Well, that was     It developed that all  
13          of the typical symptoms were common to both German and  
14          Monsanto cases with the exception of dyspnea and  
15          intolerance to cold. But in the Wheeler memorandum, it  
16          says     Oh, their people had     They were talking about  
17          the Badische people. They had the fatigue, vertigo,  
18          loss of libido and painful joints. Now, what was your  
19          question?

20          Q     It said their people had the same problems as  
21          our people: Fatigue, vertigo, loss of libido, painful  
22          joints, et cetera. He doesn't stop listing the  
23          problems. He just gives a number.

24          A     You're going back to the Jones article in 19

25          Q     No. I'm stating that these symptoms were

1 described as being caused by the impurities, and these  
2 are in addition to the chloracne?

3 A These symptoms in Monsanto were caused by  
4 either impurities or byproducts

5 Q Byproducts.

6 A that developed or during explosion. We had  
7 chloracne at Nitro from the product itself. The people  
8 were not involved in the explosion. They did not  
9 exhibit these symptoms. They exhibit chloracne, but  
10 they did not have symptoms.

11 Q That's not what Elmer Wheeler says.

12 A What does Elmer Wheeler say, and what is he  
13 talking about?

14 Q Elmer Wheeler says in a letter to you dated  
15 June 12, 1956, "In addition to the skin manifestations,  
16 their men," meaning BASF, "reported all the additional  
17 symptoms as experienced in our workers," meaning  
18 Monsanto; "i.e., fatigue, vertigo, loss of libido,  
19 painful joints," et cetera.

20 A What Wheeler is referring to are the symptoms  
21 that developed in the Monsanto workers following the  
22 explosion. What I said was that we had chloracne in our  
23 regular run of making 2,4,5 T where our workers only had  
24 chloracne without any of the disabling symptoms of  
25 vertigo, fatigue, loss of libido, painful joints, et

1           cetera. That's what I said.

2           Q     All right. And Dr. Suskind makes the note that  
3           in his examination the chloracne was not disabling, but  
4           these other symptoms were disabling.

5           A     Well, let's see what he's saying.

6           Q     The bottom of page three. He makes reference  
7           to

8           A     I haven't gotten that far yet. He's still  
9           talking about the explosion cases. That's what he got  
10          That's what he saw. That's what we sent him. The  
11          people we sent to him were workers that had suffered in  
12          the explosion.

13          Q     So the toxic     the systemic toxic effects were  
14          disabling according to him?

15          A     Well, Suskind saw     I don't know when this  
16          date is. There doesn't seem to be any date on it.  
17          Suskind saw at one time four people we sent him. At a  
18          later time he saw considerably more, and I don't know  
19          what particular date that was. I don't know if I was  
20          still there or it was after me or not. I don't know  
21          that.

22          Q     All right.

23          A     So I don't know whether he's talking about the  
24          disabling symptoms that occurred at the explosion or  
25          not. I know we had disabling problems at the explosion

1           because we had peripheral neuritis in some of our  
2           workers.

3           Q     Dr. Kelly, do you know the toxic mechanisms  
4           that cause these systemic toxic effects?

5           A     The mechanisms     No, I do not know what caused  
6           loss of libido, if that is supposed to be a result of a  
7           systemic toxic effect.  Whatever caused it, it was  
8           spontaneously cured later on.

9           Q     Where is that information?

10          A     Where is what?

11          Q     Where is that information that it was  
12          spontaneously cured later on?

13          A     By spontaneously cured, the problem resolved  
14          and the libido came back.

15          Q     How do you know that?

16          A     Because our doctors were examining these  
17          people.

18          Q     I understand that.  But how do you know that  
19          their libido came back?  Who reported that to you?

20          A     There were no complaints to our doctor of loss  
21          of libido.

22          Q     That's not my question.

23          A     And I feel quite sure that if there were loss  
24          of libido the worker would only be too enthusiastic  
25          about mentioning it to the doctor.

1 Q So you're speculating?

2 A Well, I'm speculating. I'm not scientifically  
3 certain, but I feel quite certain that

4 Q You didn't get any reports stating that the  
5 loss of libido is no longer a problem?

6 A No, sir, I did not.

7 Q Dr. Kelly, on page four reference is made to a  
8 series of oxygen bearing chlorine bearing ring  
9 hydrocarbons were synthesized and checked for animal  
10 toxicity using rabbits.

11 A Wait till I follow you. Where are you now?

12 Q Page four.

13 A Yes. Where are you starting?

14 Q I'm starting with the last two sentences of the  
15 first full paragraph, approximately in the middle.

16 A All right. I see it now. Okay.

17 Q Now let's go up above that.

18 A What?

19 Q Let's go up the sentence above that. I'm  
20 trying to save a little time here. It's not working  
21 out. "Residues from the Badische decomposition have  
22 been extracted and elemental analyses made of the  
23 extracts (carbon, hydrogen, chlorine, oxygen)." Were  
24 you aware of that?

25 A Yes, I think they I don't think I ever saw a

1 report.

2 Q "Following this, a series of oxygen bearing  
3 chlorine bearing ring hydrocarbons were synthesized and  
4 checked for animal toxicity, using rabbits. Comparative  
5 acute toxicity of four of the compound are as follows:  
6 One, trichlorophenol greater than one gram per  
7 kilogram." What does that mean?

8 A If it is an LD 50 it means that giving a rat  
9 trichlorophenol by some method, injection, orally, is  
10 greater than one gram per kilogram of the weight of the  
11 rat.

12 Q And that causes death in 50 percent of the  
13 animals?

14 A That's correct.

15 Q Two, tetrachloronaphthalene 50 mg per  
16 kilogram.

17 MR. DAVIDSON: Would you repeat that, please?

18 MR. McCREA: Two.

19 MR. DAVIDSON: The name.

20 Q Tetrachloro, T E T R A C H L O R O, naphthalene  
21 50 mg's per kilogram. Dr. Kelly, does that mean that  
22 these rats died with the administration of 50 milligrams  
23 per kilogram of weight?

24 A Yes, sir, if that's Yes.

25 Q The next one is number three. Tetrachloro

1 diphenylene oxide.

2 A Yes.

3 Q 0.1 milligram per kilogram.

4 A Yes.

5 Q Dr. Kelly, tetrachloro diphenylene oxide is  
6 chlorinated furan; isn't it?

7 A That's correct.

8 Q So these people were testing chlorinated furan  
9 on the date that this was authored or before this date,  
10 and they found that it was lethally toxic at 0.1  
11 milligrams per kilogram; correct?

12 A Yes, sir.

13 Q Now, again, we have confusion, milligram and  
14 kilograms, but isn't it a fact that that calculates out  
15 to 100 parts per billion?

16 A Well, there are a thousand grams in a kilogram,  
17 and there are a thousand milligrams in a gram, so you  
18 multiply one tenth by 1,000 by 1,000. I don't know what  
19 you end up with.

20 Q Can you calculate that out for us on a parts  
21 per million basis?

22 A On a part per what?

23 Q Parts per million or parts per billion basis.

24 A I don't think it's as easily transposed as what  
25 you're trying to imply. Let's stick with what we've got

1 here. We've got trichlorophenol, which is 10,000 times  
2 less toxic than tetrachloro diphenylene oxide.

3 Q Agreed.

4 A And what do you want to know now?

5 Q I want to know in a parts per billion on a  
6 parts per billion or parts per million basis what the  
7 lethal toxicity was of this chlorinated furan in this  
8 test. And I calculate it as 100 parts per billion.

9 A Well, let's see.

10 MR. DAVIDSON: Doc, don't write on the  
11 exhibit.

12 A It would appear to me that one tenth of a  
13 milligram per kilogram is a tenth There are a million  
14 milligrams in a kilogram. So that would be one tenth of  
15 a milligram per kilogram one tenth of a There  
16 would be one tenth of a milligram as a toxic dose for a  
17 thousand milligram a million milligram rat.

18 Q Does that indicate to you it's extraordinarily  
19 toxic, Dr. Kelly?

20 A Yes. As I said, it was Trichlorophenol is  
21 one million milligrams I mean, a thousand. It's  
22 10,000 times as toxic as trichlorophenol.

23 Q And there's no dispute that in this document,  
24 which is a Monsanto document, date unknown, they

25 A First of all, are we sure it's a Monsanto

1 document?

2 Q Well, it says It doesn't have an author on  
3 it; does it?

4 A No, it doesn't have an author. It doesn't have  
5 a date.

6 Q But in this document, Dr. Kelly, which  
7 references Monsanto people at least, they're testing  
8 most definitely the toxicity of chlorinated furans and  
9 chlorinated dioxin. There's no question about that; is  
10 there?

11 A Well, there's a question Dr. Oettel  
12 synthesized these compounds. He did not extract them  
13 from any of the Badische compounds, any of the Monsanto  
14 compounds, any of the Monsanto residue of the explosion.  
15 He says, "Following this, a series of oxygen bearing,  
16 chlorine bearing ring hydrocarbons were synthesized."  
17 You get into a very confused toxicological situation  
18 unless you're sure of the isomers you're talking about.  
19 If he ended up with 2,3,7,8 chlorinated dibenzofuran,  
20 that's one thing. If he ended up with 2,6,2,4, he's got  
21 another one.

22 Q There are some chemical structures of a PCB and  
23 furan and a dioxin that are more toxic than other  
24 chemical structures; correct?

25 A Wait, let's not put PCB and dioxin in the same

1 category.

2 Q Well, isomers of these chemicals can be more  
3 toxic than other isomers. The jury is not going  
4 to understand

5 A But I think the jury should know that there are  
6 no dioxins in PCBs and the dioxins cannot be formed in  
7 PCBs.

8 Q But they can be formed in askarel transformers  
9 with chlorobenzene?

10 A Yes.

11 Q And you've known that?

12 A What?

13 Q You know that?

14 A Yeah. Sure, I know it.

15 Q Now, Dr. Kelly, just so we're sure, number  
16 three, tetrachloro diphenylene oxide refers to  
17 chlorinated furan?

18 A Yes.

19 Q So it's This knowledge was known on the date  
20 of the authorship of this document?

21 A Whatever date that was, yes.

22 Q All right. And when did you first know that  
23 chlorinated furans were toxic at this 0.1 milligrams per  
24 kilogram?

25 A I'm not sure. I don't recall when that was.

1 Q The next one is tetrachloro diphenylene  
2 dioxide.

3 A Yes. Yes, sir.

4 Q And can we agree that that is chlorinated  
5 furans?

6 A Chlorinated furans?

7 Q Chlorinated dioxin I mean.

8 A Yes.

9 Q And that's toxic at 0.005 milligrams per  
10 kilogram?

11 A Yes.

12 Q Is this the first time you've seen this  
13 information, Dr. Kelly?

14 A I don't recall when I've seen it. I may have  
15 seen it before. I certainly had not seen it since I  
16 left Monsanto to the best of my knowledge.

17 Q Before you saw this information today, did you  
18 know that there were tests to determine the acutely  
19 lethal toxicity of chlorinated furans and chlorinated  
20 dioxins back on the date of authorship of this document,  
21 which is not indicated?

22 A You're asking me did I know that there were  
23 tests carried out on dioxin and chlorinated benzofurans  
24 at some date in time?

25 Q Yeah.

1           A     Yes. At some date in time, but I don't know if  
2           I can delineate that time by an undated memorandum, if  
3           that's what you asked me about.

4           Q     And this doesn't do anything to refresh your  
5           memory?

6           A     As to when it was done?

7           Q     Right.

8           A     No, it doesn't.

9           Q     Did you ever issue a warning to a customer of  
10          Monsanto that testing indicated chlorinated furans had  
11          an acutely lethal toxicity of 0.1 milligrams per  
12          kilogram?

13          A     No, sir, I did not, because I told the  
14          customers what the toxicity of the PCBs was, and  
15          obviously they're using the PCBs, they are not using a  
16          concentrated solution of chlorinated dibenzofurans.

17          Q     Did you ever communicate to a customer that the  
18          partial oxidation of PCBs could result in chlorinated  
19          furans, which have an acutely lethal toxicity of 0.1  
20          milligrams per kilogram?

21          A     No, sir, I did not. I saw no reason to.

22                   MR. DAVIDSON: I'll object and move to strike  
23          that question.

24          Q     Dr. Kelly, to your knowledge, no one at  
25          Monsanto ever tested PCBs for impurities before 1970?

1 A They may have. I do not know.

2 Q But to your knowledge they didn't?

3 A Beg your pardon?

4 Q To your knowledge they didn't, but if they did,  
5 you don't know?

6 A I don't recollect any. They may have. There  
7 was certainly some talk about it in the late '60's.  
8 Whether there was actual testing going on or whether  
9 they were trying to gear up their analytical expertise,  
10 I don't know.

11 Q But to your knowledge, no one at Monsanto ever  
12 warned customers about impurities in PCBs and their  
13 toxicity ever?

14 A Say that over.

15 Q No one at Monsanto ever warned customers about  
16 the impurities in PCBs?

17 MR. DAVIDSON: Object. That assumes that  
18 there are impurities or were impurities.

19 A I don't know. The medical department did not,  
20 but the medical department did tell the people what the  
21 toxicity of the whole product was. It did not single  
22 out individual items because they were there in such a  
23 small amount that it was not of any great consequence.

24 Q To your knowledge, no one at Monsanto ever  
25 notified its customers that there were eight systemic

1 health problems attributable to impurities that could be  
2 in PCBs or could be produced as byproducts of PCBs?

3 A First of all, there weren't any eight specific  
4 eight different health problems. Is that what you  
5 said?

6 Q Well, the workers exposed in Germany and the  
7 United States identified eight specific health problems  
8 as we counted.

9 A We didn't get up to eight, but it doesn't make  
10 any difference if it's six or eight. We certainly told  
11 people and put in our bulletins that you could get  
12 systemic effects if you disregarded the problem the  
13 warnings that we had on our labels and on our bulletins.  
14 We did not say if you don't if you breathe this stuff  
15 at elevated temperatures, if you have repeated skin  
16 absorption, you will get systemic eight different  
17 you're liable to get fatigue, loss of libido, et cetera.  
18 We did not. We told them how to protect them from any  
19 illness.

20 Q What systemic effects did you have in your mind  
21 that they could get but were not communicated?

22 A They wouldn't get any systemic effects if they  
23 followed our

24 Q I understand that. But if they were  
25 overexposed to PCBs, what systemic effects did you in

1 your mind foresee that they could suffer?

2 A I foresaw that if they were overexposed enough  
3 they could develop chloracne, they could develop liver  
4 trouble, and whether or not I think those are the  
5 major things. Whether these other symptoms were the  
6 result of their liver problems or not, the liver problem  
7 and the skin problem was a serious, possibly disabling  
8 problems if you were overexposed, which we never had any  
9 customers tell us that.

10 Q Dr. Kelly, have you ever taken an occupational  
11 history of a worker exposed to PCBs?

12 A Yes.

13 Q And in that occupational history, did you  
14 describe did he describe to you in detail what it was  
15 like to work with PCBs?

16 A Yes.

17 Q What's the purpose of an occupational history?

18 A To see if you can quantify the exposure.

19 Q Do you know of a single customer of Monsanto  
20 that ever took an occupational history of a worker  
21 exposed to PCBs? Just yes or no. Do you know?

22 A I don't know if I'd be in a position to know  
23 whether they did or not. I do not recall them telling  
24 me, but. . .

25 Q Do you have any occupational histories recorded

1 in writing?

2 A No, sir, I do not.

3 Q Did you test Monsanto workers for PCB blood  
4 levels in 1971 and find very elevated levels?

5 A Say that over.

6 Q Did you test Monsanto's PCB workers in 1971 and  
7 find elevated levels much above the two to eight that  
8 would be background?

9 A We tested all the workers. I tested all the  
10 workers at the Krummerich Plant sometime in '71, '72,  
11 '73, I don't know when. We ran blood levels on them.  
12 There was only one that was above the basal level at  
13 that particular time. He had no symptoms. He had no  
14 illness.

15 Q Dr. Kelly, I wish you could just answer the  
16 question. All right? Did you test workers and find  
17 elevated levels?

18 MR. DAVIDSON: Well, I think he's explaining  
19 to you. He said one

20 Q There was one worker that had elevated levels?

21 A Yes. And there were 22 or something that  
22 didn't.

23 Q All right. And you issued a paper on that and  
24 submitted it to the government; correct?

25 A I don't know if I submitted it to the

1 government or not. I believe I did.

2 Q You don't recall that there were several  
3 workers that had PCB levels in the hundreds of parts per  
4 billion?

5 A I don't think so. I don't think there were  
6 several.

7 Q Dr. Kelly, are PCBs Do they synergistically  
8 potentiate carbon tetrachloride and ethyl alcohol?

9 A I don't know. Drinker believed that they  
10 potentiated Whether they potentiated it or whether it  
11 was an additive effect or not.

12 Q Isn't it true you never issued a single,  
13 solitary warning that PCBs could synergistically  
14 potentiate carbon tetrachloride in ethyl alcohol?

15 A No, I certainly didn't, but I have to explain  
16 that answer, too. If we

17 Q Your counsel can get the explanation.

18 MR. DAVIDSON: He's entitled to explain your  
19 question the response to your question right now. Go  
20 ahead.

21 Q Well, we're not going to end this deposition  
22 today then?

23 A It's all right with me. I just want the truth  
24 to come out.

25 Q All right. Go ahead and explain your answer on

1 the synergistic potentiation of carbon tetrachloride in  
2 ethyl alcohol by PCBs.

3 A As far as the synergistic effect of carbon  
4 tetrachloride, whether that was an additive effect or a  
5 synergistic effect was not explained by Drinker.  
6 Drinker gave carbon tetrachloride to workers that had  
7 previously to animals that had previously been tested  
8 with PCBs. He found that they were more susceptible to  
9 carbon tetrachloride than the workers were who were not  
10 not the workers than the animals who had not been  
11 subjected to any PCB. I believe that was additive  
12 rather than synergistic.

13 Q Well, they died of yellow atrophy of the liver;  
14 correct?

15 A Beg your pardon?

16 Q Didn't they die of yellow atrophy of the liver?

17 A Not people who worked with PCBs.

18 Q The animals.

19 A I don't recall whether They died, yes. I  
20 don't know how they died.

21 Q And were you aware of Cranch's warning in 1944  
22 that workers exposed to PCBs should be advised against  
23 consumption of alcohol?

24 A I don't exactly now what Cranch had to do with  
25 PCBs. They didn't make

1 Q Did you read his article?

2 A I may have, yes, but he was with Carbon and  
3 Carbide, had nothing to do with PCBs.

4 Q Would that be consistent with the study by  
5 Drinker?

6 A No. Because I think the workers were not  
7 exposed as much to the PCBs as the animals were. We  
8 certainly had workers at our plant that drank  
9 considerably.

10 Q You didn't warn them against that?

11 A Well, we said it's not a good idea to drink too  
12 much if you're working with PCB or with aspirin.

13 Q Well Dr. Kelly, we're not focusing on aspirin.  
14 Is aspirin synergistic with alcohol?

15 A No. But I don't know if PCBs are synergistic.

16 Q Well, you just testified

17 A What?

18 Q You just testified that Drinker

19 A I said that it may be additive. I did not say  
20 they were synergistic.

21 Q So you didn't warn your workers?

22 A No, I did not. And we had no trouble in our  
23 workers, whether they drank or not.

24 Q You had no trouble. The mortality study done  
25 by Zack and Musch indicated you had 30 deaths, and you

1 expected approximately 22. Those were workers exposed  
2 to PCBs; is that correct?

3 MR. DAVIDSON: I object.

4 A Say this over.

5 Q Zack and Musch did a mortality study of your  
6 PCB workers who had no trouble; correct?

7 A Yes.

8 MR. DAVIDSON: I'll object. That study  
9 occurred in 1979, five years after Dr. Kelly retired.

10 MR. McCREA: These people are dead. Now

11 MR. DAVIDSON: The study was done that you're  
12 referring to and drawing a conclusion about was done  
13 five years after Dr. Kelly retired.

14 Q Okay. And, Dr. Kelly, your counsel objects to  
15 this study because it occurred after you retired. Did  
16 that study show that there was an excessive number of  
17 deaths over what was expected?

18 A I do not know. Would you show me the study?  
19 You probably have it here. I'll be happy to give you my  
20 interpretation of it.

21 Q So you're not aware of a mortality study done  
22 on PCB workers at Monsanto showing an excessive number  
23 of deaths? Not aware of it.

24 MR. DAVIDSON: I object to the  
25 characterization of what the study shows. It's not

1 right.

2 A I am not aware of the details of this  
3 particular study that you report saying they have  
4 excessive deaths.

5 Q Well, if you expect 22 and you find 30, would  
6 that indicate there are excessive deaths?

7 MR. DAVIDSON: I object.

8 A I do not know if that is scientifically  
9 statistically sound or not.

10 Q All right. Dr. Kelly, you had a toxicologist  
11 who worked for IBT who was prosecuted for falsifying  
12 laboratory data and served time in prison; correct?

13 MR. DAVIDSON: I'll object.

14 A I do not know what he was prosecuted for. I do  
15 not know of my own knowledge that he served time in  
16 prison. All I know about him is what I read in the  
17 papers. This occurred after I left.

18 Q And, Dr. Kelly, the toxicologist who went from  
19 Monsanto to IBT did work on the PCB studies at IBT?

20 A I do not know that either. He was not a  
21 toxicologist for Monsanto when he worked to work for  
22 IBT.

23 Q Did he come back to Monsanto?

24 A He was a research chemist in the agricultural  
25 department. We hired him as a toxicologist when he came

back to Monsanto.

Q Did he come back to Monsanto and get an award for forestalling unreasonable government regulations?

MR. DAVIDSON: Object. Move to strike.

A I don't know anything about that.

(Deposition was recessed to 10:00 a.m. on April 8, 1994.)

ROBERT EMMET KELLY, M.D.

Subscribed and sworn before me this \_\_\_\_ day of \_\_\_\_\_, 1994.

My commission expires: \_\_\_\_\_

Notary Public

FAO/Fisher vs. Monsanto

NOTARIAL CERTIFICATE

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

I, FAITH A. OLLIGES, a Registered Professional Reporter and a duly commissioned Notary Public within and for the State of Missouri, do hereby certify that there came before me at the offices of Husch & Eppenberger, 100 North Broadway, St. Louis, Missouri,

ROBERT EMMET KELLY, M.D., who was by me first duly sworn to testify to the truth and nothing but the truth of all knowledge touching and concerning the matters in controversy in this cause; that the witness was thereupon examined under oath and said examination was reduced to writing by me; that the signature of the witness was not waived by agreement of all parties; and that this deposition is a true and correct record of the testimony given by the witness.

I further certify that I am neither attorney nor counsel for nor related nor employed by any of the parties to the action in which this deposition is taken; further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto or financially interested in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on April 11, 1994.

My commission expires March 21, 1997.

[NOTARY PUBLIC]

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