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IN THE UNITED STATES DISTRICT COURT  
FOR THE MIDDLE DISTRICT OF TENNESSEE  
COLUMBIA DIVISION

|                         |   |                   |
|-------------------------|---|-------------------|
| KATHERINE JOYCE BREWER, | ) |                   |
| et al.,                 | ) |                   |
|                         | ) |                   |
| Plaintiffs,             | ) | Nos. 1-88-008 and |
|                         | ) | 1-88-0014 through |
| -vs-                    | ) | 1-88-0368         |
|                         | ) | Judge Wiseman     |
| MONSANTO CORPORATION,   | ) |                   |
| et al.,                 | ) |                   |
|                         | ) |                   |
| Defendants.             | ) |                   |

DEPOSITION OF GEORGE ROUSH, M.D.  
Taken on behalf of the Plaintiffs  
December 20, 1988

ORIGINAL

KARPOWICZ REPORTING COMPANY  
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Parties stipulated to attachment of first and last pages only  
of lengthy exhibits.

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KATHERINE JOYCE BREWER, )  
et al., )  
Plaintiffs, ) Nos. 1-88-008 and  
-vs- ) 1-88-0014 through  
MONSANTO CORPORATION, ) 1-88-0368  
et al., ) Judge Wiseman  
Defendants. )

DEPOSITION OF GEORGE ROUSH, M.D. produced,  
sworn and examined on the 20th day of December, 1988,  
between the hours of eight o'clock in the forenoon  
and six o'clock in the afternoon of that day, at the  
Karpowicz Reporting Company Conference Room, 314  
North Broadway, 11th Floor, in the City of St. Louis,  
State of Missouri, before Gwen A. Huffman, a  
Registered Professional Reporter, and Notary Public  
within and for the County of St. Louis, State of  
Missouri, in a certain cause now pending in the  
United States District Court, for the Middle District  
of Tennessee, Columbia Division, between Katherine  
Joyce Brewer, et al., Plaintiffs, and Monsanto  
Corporation, et al., Defendants, taken on behalf of  
the Plaintiffs.

A P P E A R A N C E S

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12 Emhart Industries,  
13 Inc.

14 IT IS HEREBY STIPULATED AND AGREED by and  
15 between Counsel for the Plaintiffs and Counsel for  
16 the Defendants, that this deposition may be taken in  
17 shorthand by GWEN A. HUFFMAN, a Registered  
18 Professional Reporter and Notary Public, and  
19 afterwards transcribed into typewriting, and that the  
20 signature of the witness is not waived.

21 - - - - -

22 GEORGE ROUSH, M.D.,  
23 of lawful age, being produced, sworn and examined on  
24 behalf of the Plaintiffs, deposes and says:

25 DIRECT EXAMINATION

BY MR. CUKER:

22 Q. Dr. Roush, can you just state your full  
23 name and address for the record, please?

24 A. George Roush, Junior, R-o-u-s-h, and I  
25 live at 10 Babler Lane, B-a-b-l-e-r, Lane. That's

1 St. Louis, 63124.

2 Q. How old are you, sir?

3 A. Sixty-seven.

4 Q. Are you retired?

5 A. Yes.

6 Q. Okay. How long have you been retired?

7 A. April 30th.

8 Q. Of this year?

9 A. Yes.

10 Q. Did you work for Monsanto up until April  
11 30th of this year?

12 A. That's right.

13 Q. And my understanding is you began at  
14 Monsanto around 1975?

15 A. '73.

16 Q. '73, okay. What year in '73? What  
17 month in '73?

18 A. March. I think it was March 15th.

19 Q. Dr. Roush, as I think you know, my name  
20 is Mark Cuker and I represent a number of workers at  
21 the P. R. Mallory Plant in Waynesboro, Tennessee.

22 I'm going to ask you a number of  
23 questions about the relationship between Monsanto and  
24 the Mallory Company during the time you were the  
25 corporate medical director. If at anytime you don't

1 understand any of my questions, will you just let me  
2 know and I will rephrase the question?

3 A. Yes.

4 Q. Okay. What was your educational  
5 background and experience before you began work for  
6 Monsanto?

7 A. I had an MD from Washington University.

8 Q. In St. Louis here?

9 A. 1951. And I had an internship at  
10 Milwaukee County Hospital. That's the Marquette  
11 University teaching hospital.

12 In 1952, I went to the University of  
13 Pittsburgh where I had an MPH in occupational  
14 medicine, and from '53 to '54 -- maybe missed a year  
15 someplace in there.

16 Q. That's okay.

17 A. '53-'54, I had a fellowship in  
18 cardiology with the National Heart Institute.

19 And in '54, I went to the National  
20 Cancer Institute at NIH and I was in the chemotherapy  
21 section of the cancer section.

22 And '54 to '55, I was at Staten Island  
23 Marine Hospital in the residency and internal  
24 medicine.

25 And the next year, '55 -- '56 to '57, I

1 was a resident, internal medicine, at the University  
2 of Pittsburgh.

3 Q. Okay.

4 A. Then I became assistant professor of  
5 occupational medicine in the School of Public Health  
6 at the University of Pittsburgh.

7 Q. Was that around 1958?

8 A. '57.

9 Q. '57?

10 A. On until 1962.

11 Q. If I could stop you there. And in  
12 addition to your teaching responsibility, did you  
13 have treating responsibilities as an assistant  
14 professor at the medical school?

15 A. I was instructor in medicine and I was  
16 also the acting toxicologist for the medical school.

17 Q. What were -- what did your work involve?

18 A. Seeing all patients that someone thought  
19 might be -- the disease might be related to  
20 occupational exposure or something else that would be  
21 a toxic effect.

22 Q. Okay.

23 A. During that time, I was also medical  
24 director of the Callery Chemical Company,  
25 C-a-l-l-e-r-y, located north of Pittsburgh in the

1 Evans City area.

2 Q. What kind of chemicals did they make?

3 A. They made boron hydrides for the navy,  
4 and they were to be a high energy fuel for rockets  
5 and for the B-1 airplane. And the idea was that the  
6 boron hydride fuel carry more energy than the what we  
7 call petroleum derivative things, carbon hydrogen.

8 Q. During that five years --

9 MR. CUKER: Off the record.

10 (A discussion was held off the record.)

11 (A break was taken.)

12 Q. (BY MR. CUKER) Dr. Roush, during this  
13 five years you were assistant professor of  
14 occupational medicine at the University of  
15 Pittsburgh, did you have any occasion to deal with  
16 people exposed to PCBs?

17 A. No.

18 Q. Okay. What was your next position after  
19 that?

20 A. I went to the University of Louisville  
21 and had a fellowship in cardiology, which consisted  
22 of doing cardiac catheterizations and similar  
23 procedures.

24 Q. They were doing those in the early '60s?

25 A. Yes. As a matter of fact, in the '50s,

1 when I was at the University of Pittsburgh, in that  
2 cardiac fellowship, I was doing a lot of them on dogs  
3 and had done something on the order of two hundred of  
4 them.

5 And following that year, I then went to  
6 the University of Cincinnati in the department of  
7 preventive medicine, and my title there was associate  
8 professor of occupational medicine.

9 Q. Did these interests in cardiology and  
10 occupational medicine intersect in any way or were  
11 they just separate, independent interests that you  
12 pursued?

13 A. One of the concerns in occupational  
14 medicine is what do you do with people who have heart  
15 disease and going to work. So it had all the  
16 problems of evaluation of a man's disease and how  
17 that influences his ability to work.

18 Q. So what year did you take the position  
19 at the University of Cincinnati?

20 A. 1963.

21 Q. And you were assistant professor?

22 A. Associate professor.

23 Q. Associate professor, excuse me, of  
24 preventive medicine?

25 A. Of occupational medicine.

1 Q. Of occupational medicine. Within the  
2 department of preventive medicine?

3 A. Yes.

4 Q. How long did you hold that position?

5 A. Until 1968.

6 Q. All right. During that five years, did  
7 you have occasion to see any people who were exposed  
8 to PCBs?

9 A. No.

10 Q. Okay.

11 A. During that time, practically that whole  
12 five years, I was also medical director of the Ethyl  
13 Corporation, E-t-h-y-l, and their prime product was  
14 tetraethyl lead. That's used to raise the octane of  
15 gasoline.

16 And now the problem is with present  
17 cars, the lead would poison the catalyst, so they had  
18 to get rid of the lead so they could keep the  
19 catalyst to keep the air pollution down.

20 Q. That's why we have lead-free gasoline.

21 A. That's right.

22 Q. So obviously there you dealt with  
23 workers who were exposed to lead.

24 A. And also the whole environmental issue  
25 about lead in the environment and the issue of who's

1 exposed and how much and the implications of that.

2 Q. Okay. After 1968.

3 A. I went down to Tulane University School  
4 of Medicine.

5 Q. And what did you do there?

6 A. And there I was in the department of  
7 medicine and I was professor of medicine and  
8 environmental health.

9 Q. Professor of medicine and environment --

10 A. And environmental.

11 Q. In the department of medicine?

12 A. So my specialty was in environmental  
13 health.

14 Q. Did you ever get any certification in  
15 special medicine?

16 A. No.

17 Q. Or in any field?

18 A. Occupational.

19 Q. Is there a board for occupational  
20 medicine?

21 A. It's a part of the preventive medicine.  
22 There's an American Board of Preventive Medicine.

23 Q. What year were you certified in?

24 A. I believe in 1968.

25 Q. And how long did you work at Tulane?

1 A. Five years.

2 Q. Did you hold any company positions in  
3 addition to your teaching positions?

4 A. I continued as medical director of Ethyl  
5 Corporation.

6 Q. They were an office in New Orleans?

7 A. No, they're a -- they had -- their  
8 operating headquarters is in Baton Rouge. And so  
9 they wanted me to continue being their representative  
10 on the lead issue.

11 Q. Okay.

12 A. So moving down there was quite  
13 convenient for both.

14 Q. During those five years, '68 to '73, did  
15 you have occasion to see any people who were exposed  
16 to PCBs?

17 A. No, sir.

18 Q. Okay. Was your next position with  
19 Monsanto?

20 A. That brought us up to 1973.

21 Q. Okay. I think you said it was March of  
22 '73 --

23 A. Yes.

24 Q. -- you took that position? Did you  
25 retain any teaching positions during the time you

1 were working for Monsanto?

2 A. No.

3 Q. What was your title at Monsanto?

4 A. I came to Monsanto as associate medical  
5 director.

6 Q. Okay.

7 A. With the idea that I would become  
8 medical director when the current medical director  
9 retired.

10 Q. That was Dr. Emmet Kelly?

11 A. Yes.

12 Q. And did he retire in '75?

13 A. '74.

14 Q. When in '74?

15 A. I think it was November or December.

16 Q. Okay. Is Dr. Kelly still alive?

17 A. Yes, I'm sure he is.

18 Q. All right. Did you work here in  
19 St. Louis?

20 A. Yes, our headquarters is in Creve Coeur,  
21 or on the far west side of St. Louis.

22 Q. Okay. What were your duties as  
23 corporate medical director?

24 A. My responsibility was for the health of  
25 the workers. And in order to ensure the health of

1 the workers, my approach is you have to do the  
2 industrial hygiene as well. So, again, industrial  
3 hygiene of the entire Monsanto Company was a part of  
4 our responsibility.

5 And when I came to Monsanto, they also  
6 had a toxicology division. And so that was ongoing.  
7 So the toxicology is to know the biology, the  
8 biological effect of the chemicals. The industrial  
9 hygiene is to look at the levels of exposure. And  
10 the medical section is to provide the surveillance of  
11 the workers.

12 Q. Okay. I want to get some nomenclature  
13 straight. Was the medical section a department or a  
14 division or a section or were all --

15 A. All of these -- these were all part of  
16 the department of medicine. Department of medicine.

17 Q. Okay. So within the department of  
18 medicine, you had a toxicology --

19 A. Section.

20 Q. -- section and an industrial hygiene  
21 section?

22 A. Yes.

23 Q. Did those people report to the medical  
24 director?

25 A. Yes.

1 Q. Was there someone, a physician who was  
2 let's say more immediately in charge of plant  
3 medicine or administration of the corporate medical  
4 program who worked beneath the corporate medical  
5 director?

6 A. Shortly after I arrived there, we did  
7 hire a physician to be the head of the division of  
8 occupational medicine.

9 Q. Okay.

10 A. Dr. Don Coleman.

11 Q. Dr. Coleman?

12 A. C-o-l-e-m-a-n.

13 Q. When you became the medical director,  
14 was there a person who replaced you as the associate  
15 medical director?

16 A. No.

17 Q. That position was left vacant?

18 A. That's right.

19 Q. Was that position just created so that  
20 you could have a transitional phase?

21 A. Monsanto really doesn't believe in that  
22 form of structure.

23 Q. What form of structure?

24 A. Of having an associate director.

25 Q. Had there been -- let's say before you

1 came on, was there an associate you replaced?

2 A. There was not.

3 Q. Okay.

4 A. They did have a physician there a year  
5 or two before I arrived, and I'm not sure what his  
6 title was.

7 Q. Okay. Now, Don Coleman, he also worked  
8 in St. Louis?

9 A. Yes.

10 Q. Okay. Is he still living?

11 A. No.

12 MR. CUKER: Off the record.

13 (A discussion was held off the record.)

14 Q. (BY MR. CUKER) Okay. Who was the --  
15 let's say in '73 when you came on, who was the head  
16 of the toxicology division?

17 A. George Levinskas.

18 Q. How does he spell his name?

19 A. L-e-v-i-n-s-k-a-s.

20 Q. And who was in charge of industrial  
21 hygiene?

22 A. Jack Garrett. When I came there, it was  
23 Elmer Wheeler.

24 Q. Elmer Wheeler. When did Mr. Wheeler  
25 leave the company?

1 A. About two years after I arrived.

2 Q. Okay. Did he continue to work for the  
3 company on any kind of a consulting basis after he  
4 left?

5 A. I don't think he did anything after he  
6 left. They moved off to North Carolina.

7 Q. You mean he -- his family, they meaning  
8 his --

9 A. He moved his house.

10 Q. Okay.

11 A. And retired.

12 Q. Was Mr. Wheeler ever called a director  
13 of environmental health? Was he ever given that  
14 title?

15 A. I don't know what his title was.

16 Q. You recall whether there was such a  
17 position as director of environmental health?

18 MR. MOORE: At what time, Mark?

19 MR. CUKER: At anytime that he worked  
20 for the company.

21 THE WITNESS: I don't think so. He did  
22 have responsibility for environmental aspects of  
23 PCBs. And with that, whether he had a different  
24 title because of that, I don't know.

25 Q. (BY MR. CUKER) All right. So how long

1 did Mr. Garrett remain in charge of -- as director of  
2 industrial hygiene?

3 A. He retired two or three years ago.

4 Q. Okay. And how about Mr. Levinskas?

5 A. He's still active.

6 Q. Is he still head of the toxicology  
7 division?

8 A. Yes.

9 Q. How old is he?

10 A. Huh?

11 Q. How old is he?

12 A. Sixty-two.

13 Q. Okay.

14 A. We were talking about their organization  
15 of the departments, when we -- I'm trying to think of  
16 the year when we put together a division of  
17 epidemiology headed by Bill Gaffey.

18 Q. G-a-f-f-e-y?

19 A. Yes.

20 Q. What was his -- did he have any initials  
21 after his last name?

22 A. No. Well, he is Ph.D.

23 Q. Okay.

24 A. He was a Ph.D. in biostatistics.

25 Q. Was Paul Wright ever the director of

1 toxicology when you were the --

2 A. No.

3 Q. What position did Mr. Wright hold?

4 A. He was one of the staff toxicologists.

5 Q. Okay. Was Bill Gaffey's Ph.D. in public  
6 health?

7 A. No, his was in biostatistics.

8 Q. Biostatistics. When was that division  
9 of biostatistics formed?

10 A. That's what I was trying to think of for  
11 you.

12 Q. Oh, I'm sorry.

13 A. I would think sometime around 1980,  
14 maybe a little bit before.

15 Q. That was all within the corporate  
16 medical department?

17 A. Yes.

18 Q. So all of these people report to you as  
19 the head of the corporate medical department?

20 A. Yes. And for -- we put together a  
21 Environmental Health Laboratory where we did  
22 toxicology. And we built that in about 1977, 1978.

23 Q. What was that called?

24 A. Environmental Health Laboratory.

25 Q. Who was the director of the laboratory?

1 for trace amounts, also, as far as you know?

2 A. Or else they would form it out.

3 Q. To an outside lab.

4 A. All I'm saying is the testing for purity  
5 of a product is quite different from looking for  
6 trace levels in something, and that difference in  
7 technology would make them go where it was most  
8 expedient. And I'm not sure how it was done.

9 Q. Dr. Roush, have you authored any  
10 articles in the area of occupational health,  
11 industrial hygiene?

12 A. Wrote on the borons, the boron hydride.

13 Q. Uh-huh.

14 A. And wrote a review on metals, toxicology  
15 of metals.

16 Q. As a result of your experience with  
17 lead?

18 A. Right.

19 Q. Okay.

20 A. Nothing else.

21 Q. Okay. Were you personally involved with  
22 the activities of the American Industrial Hygiene  
23 Association or the American Conference of  
24 Governmental Industrial Hygienists?

25 A. I was in the American Industrial Hygiene

1 Association for some time.

2 Q. When were you involved with them?

3 A. Probably late '50s and early '60s.

4 Q. You were not involved with them while  
5 you were working for Monsanto?

6 A. No.

7 Q. Was anybody else at Monsanto involved  
8 with them?

9 A. All the industrial hygienists  
10 practically are members of it.

11 Q. In addition to being members of it, did  
12 they get involved actually in the -- participate in  
13 its activities from any kind of a leadership  
14 standpoint or from any articles or participating on  
15 committees?

16 A. They participated in recent years in  
17 trying to write standards for chemicals that ACGIH  
18 hadn't gotten to.

19 Q. In recent years meaning when?

20 A. The last five years.

21 Q. You know if anybody at Monsanto served  
22 on the TLV committees?

23 A. I was a member of the ACGIH committee  
24 for about five years.

25 Q. When?

1 A. I retired from them about two years ago.

2 Q. So it would have been from '81 to '86?

3 A. Yes.

4 Q. Was that the TLV committee for any  
5 specific chemical?

6 A. The ACGIH committee on toxicology has  
7 about thirty members.

8 Q. Uh-huh.

9 A. And they divide up that committee into  
10 different categories. I had the hydrocarbons. That  
11 includes benzene. And someone else would have the  
12 chlorinated hydrocarbons and others would have the  
13 nitrogen containing compounds and others would have  
14 the metals.

15 Q. Did those committees work to formulate  
16 TLVs?

17 A. Yes.

18 Q. Or review TLVs?

19 A. Yes. If they wanted me to update and do  
20 the review for benzene, they would give me that as an  
21 assignment and I would come back next year with a  
22 booklet for modification, or at least an evaluation.

23 Q. You know if anyone at Monsanto served on  
24 the TLV committee for PCBs at anytime?

25 A. No, they did not.

1 Q. As far as you know, they did not?

2 A. I don't think there was anyone that ever  
3 participated in that.

4 Q. Okay.

5 A. While I was medical director, if we had  
6 some information that we thought was pertinent to a  
7 TLV, we would gather that information together and  
8 give it to the head of the AIHA, and then he would  
9 parcel out as he thought was appropriate. And they  
10 would take whatever action they thought was  
11 appropriate. So it was only supplying information,  
12 not evaluation of it that we did.

13 Q. Okay. Are you talking about generally  
14 or specifically with regard to PCBs?

15 A. I -- nothing was done on PCBs while I  
16 was there.

17 Q. Okay. Was Jack Garrett director of  
18 industrial hy -- I think you said he was director of  
19 industrial hygiene until 1986?

20 A. Yes.

21 Q. Okay. Now, my understanding is there  
22 were two PCB plants, one at Sauget, Illinois and one  
23 at Anniston, Alabama, is that correct?

24 A. Yes, but they got out of the PCB  
25 business before I joined.

1 Q. Alabama?

2 A. Yes, at Anniston. And then I'm not sure  
3 when that took place. It was done before I joined.

4 Q. Before '73?

5 A. Yes.

6 Q. So the only one left when you joined was  
7 at Sauget?

8 A. Sauget.

9 Q. Sauget. Was that called the Krummrich  
10 plant?

11 A. It's easier to pronounce, Krummrich.

12 Q. Was Krumm --

13 A. Krummrich was named for a Monsanto  
14 employee.

15 MR. BUSTER: How do you spell  
16 Krummrich?

17 THE WITNESS: K-r-u-m-m-r-i-c-h.

18 Q. (BY MR. CUKER) R-i-c-h?

19 A. Yes.

20 Q. Had you visited that plant?

21 A. Yes.

22 Q. About how often would you visit the  
23 plant?

24 A. I had the physicians that worked in our  
25 division.

1 Q. Uh-huh.

2 A. Had responsibility for all of the  
3 plants. And so one of the physicians regularly  
4 visited the Krummrich plant whenever it was indicated  
5 or on a periodic basis, both.

6 Q. You know how frequent his routine visits  
7 would be?

8 A. At least once a year, but usually with  
9 Krummrich, it would be two to three to four times a  
10 year.

11 Q. Okay. Was that Dr. Osland?

12 A. Dr. Osland was the part-time physician  
13 who was responsible on a day-to-day basis for the  
14 questions and the evaluations and the examinations.

15 Q. Okay. So he actually --

16 A. In his position, everything had to do  
17 with the man at work, deciding whether he was fit for  
18 work, whatever.

19 Q. Did they actually have an infirmary on  
20 the plant?

21 A. Yes.

22 Q. And Dr. Osland would work in the  
23 infirmary?

24 A. Yes.

25 Q. And he would be there on a daily or near

1 daily basis?

2 A. Yes.

3 Q. Depending on what his hours were?

4 A. Yes. And Dr. Spraul, who had  
5 responsibility for that, would visit and work with  
6 him as well as to do whatever else was needed.

7 Q. Dr. Spraul would be the one who visited  
8 a couple times a year?

9 A. Yes.

10 Q. How do you spell his last name?

11 A. S-p-r-a-u-l.

12 Q. What was his first name?

13 A. James. He died two or three months ago.

14 Q. Was Dr. Osland, did he -- you know if  
15 Dr. Osland had any special training in occupational  
16 medicine?

17 A. No.

18 Q. He was more or less a general  
19 practitioner?

20 A. Yes.

21 Q. Did he also have a private practice on  
22 the side?

23 A. Yes.

24 Q. Dr. Spraul, though, was he trained in  
25 occupational medicine?

1           A.     Yes, he was board certified and very  
2     respected.

3           Q.     Okay.

4           A.     In the national scene.

5           Q.     Now, how often would you personally  
6     visit the Krummrich plant?

7           A.     When Dr. Spraul would say why don't we  
8     go and look at this plant.

9           Q.     Okay. Which was about how often?

10          A.     I'd visit them every two, three, four  
11     years.

12          Q.     Okay. Did that plant -- what happened  
13     to that plant after they stopped making PCBs?

14                 MR. MOORE: The Krummrich plant now?

15                 MR. CUKER: Yeah.

16          Q.     (BY MR. CUKER) Did it remain in  
17     operation?

18          A.     Oh, yes, it's in operation, but that  
19     facility is growing. So it's a smaller plant than it  
20     was then.

21          Q.     Do they make other things there besides  
22     PCBs, when they were making PCBs?

23          A.     They make chlorodiphenyls, phthalate  
24     esters, lots of big business. Let's see, they made  
25     mercury to get chlorine. They're great chlorinators

1 of chemicals, making chlorodiphenyls and things like  
2 this.

3 Q. I see. Okay. So they have different  
4 types of chlorination processes there?

5 A. Yes.

6 Q. Now, what was the corporate medical  
7 program?

8 A. Corporate medical program was to look at  
9 the exposure of our workers and to assure that no one  
10 working was exposed over the TLV.

11 And one of the characteristics of a  
12 chemical business is that the TLV is a time weighted  
13 eight hour exposure level. Keep sucking it into a  
14 pump and it traps it and then you measure it, find  
15 out how much is there. And then you divide that by  
16 how much air went through and divide what his average  
17 exposure was.

18 But in the chemical business, always  
19 opening valves and you get little peaks, so the  
20 understanding of that peak as it relates to that  
21 average is important. And so the question of whether  
22 that short-term peak is important, that's the  
23 industrial hygiene responsibility.

24 Q. Let me stop you there. In addition to  
25 TLVs, there's what's called ceilings, is that right?

1 A. Yes.

2 Q. Would the ceiling correspond to the  
3 peak?

4 A. Yes.

5 Q. That would be the regulatory equivalent  
6 or regular standard for the peak would be the  
7 ceiling?

8 A. No.

9 Q. Okay.

10 A. The TLV is related to the average  
11 concentration. The ceiling means you don't -- that  
12 the -- the ceiling implies that there could be a  
13 hazard from the short-term exposure.

14 Q. Right. All right. Now, you said  
15 industrial hygiene's responsibility involved peaks?  
16 Please clarify. I don't want to put words in your  
17 mouth.

18 A. Industrial hygiene is to look at the  
19 exposures of the workers which includes both peaks as  
20 well as the average exposure.

21 Q. How did he --

22 A. And one of the quarrels is how short or  
23 peak can you measure. And when it gets very short,  
24 can you measure it at all.

25 Again, it involves -- you're taking

1 quantity and measuring it. So that becomes an issue  
2 as well as whether the ceiling value is important.  
3 And if you look at ACGIH book now on TLVs, a lot of  
4 ceilings have been dropped because the data wasn't  
5 documented that there was an acute effect.

6 And they are trying to go back now and  
7 decide whether they have to go back and get the data  
8 to show that those things are correct.

9 Q. Now, how does the industrial hygienist  
10 do this, look at the peaks and exposure?

11 A. I'm sorry?

12 Q. How did the industrial hygienist  
13 actually look at the peaks and the average exposure  
14 in the work place?

15 A. That is one of the responsibilities of  
16 the industrial hygienist, to make that kind of  
17 decision.

18 Q. You know how they did that at the  
19 Krummrich plant?

20 MR. MOORE: What point in time, Mark?

21 Q. (BY MR. CUKER) Let's say between '73  
22 and '76.

23 A. Well, each one of these TLVs or exposure  
24 levels has a different gadget. And you can't use the  
25 same technique for measuring one.

1 Q. Okay. Let me go back a little. By  
2 measuring, I think you could also say -- use the term  
3 sampling, is that fair?

4 A. Yes, but the sampling then includes the  
5 measuring.

6 Q. I understand.

7 A. So that problem of taking that  
8 short-term sample as well as the other --

9 Q. How frequently did they sample at  
10 Krummrich?

11 A. Each single chemical has a different  
12 strategy.

13 Q. PCBs.

14 A. PCBs. PCBs, because we don't think of  
15 them as being an acute hazard -- an acute hazard is  
16 because it has something to do with how long the  
17 exposure level is. How long that -- that peak is  
18 very short, but when it's like this and if it gets  
19 wide, then you have to talk about average exposure.  
20 So they were not doing ceiling values.

21 As a matter of fact, our exposure levels  
22 were -- had the level of detectability and that's  
23 all. They were that low.

24 Q. Okay. Which was less than a certain  
25 number?

1 A. Yes. And I don't know what that is.

2 Q. Whatever the laboratory --

3 A. Whatever the level detectability is.

4 Q. About how frequently did they monitor --  
5 did they check that?

6 A. The frequency of -- that's a strategy of  
7 industrial hygiene. It has to do with whether the  
8 plant operation has been modified since the last  
9 sample has been taken and that last sampling was  
10 done.

11 The sampling is done initially to decide  
12 where in an operation the levels are high. So they  
13 do -- they go through and do a survey, find out where  
14 the high points are. And then subsequently, the  
15 strategy, go out and get enough samples at those high  
16 points to determine whether they know what the level  
17 of exposure in that area is.

18 Then they test the others just to make  
19 sure that they're correct. And so that point over  
20 there is a place where we've got to be worrying  
21 about. So they would take more sampling there and do  
22 a concentrate.

23 Now, how much they concentrated would be  
24 dependent on the levels of exposure in the rest of  
25 the thing. If the whole room is above the TLV, they

1 have to do something to protect the man individually  
2 or to change his exposure level.

3 Q. What did they do if they saw something  
4 was above the TLV?

5 A. The question is is it like that all the  
6 time or is it the man gets it because he -- if he  
7 spends fifteen minutes a day over there. And the  
8 question is now, how best do we engineer it out by  
9 putting local ventilation to take it away, whatever.  
10 And if nothing is feasible engineering, then you put  
11 a respirator on him, protect him for that fifteen  
12 minutes.

13 Q. Okay.

14 A. So this -- all this has -- your question  
15 was the sampling strategy that's wrapped into that,  
16 because it related -- now, if the exposure level in  
17 the whole plant is at the level of detectability,  
18 they don't have to do very much. The only thing they  
19 have to do is come back there and decide that, yes,  
20 on subsequent, that it's in the same place. Then  
21 that becomes a low level and they don't pay much  
22 attention to that.

23 Q. And as far as you knew, the levels at  
24 Krummrich were always would you say within the level  
25 of detectability?

1 MR. MOORE: Well, I don't think that  
2 fairly characterizes his testimony with regard to the  
3 time frame.

4 Q. (BY MR. CUKER) Oh, yeah, I'm sorry.  
5 Between '73 and '77.

6 A. Yes.

7 Q. It was always --

8 A. Below the level of detectability.

9 Q. Below the level of detectability. So  
10 PCBs were -- during the time that -- between '73 and  
11 '77, they never actually found PCBs in the air above  
12 detection limits?

13 A. I have to go back and check, but that's  
14 my impression.

15 Q. Okay.

16 A. I think that's probably right.

17 Q. All right. Now, in addition to this  
18 testing in the work place, was there any periodic  
19 examinations of the workers at that plant as part of  
20 the corporate medical program?

21 A. Yes.

22 Q. Okay. What was that?

23 A. Did a yearly examination on all the  
24 workers throughout Monsanto.

25 Q. At every level?

1 A. At every level.

2 Q. White collar, blue collar?

3 A. Yes.

4 Q. Okay.

5 A. But it was voluntary.

6 Q. Along with the examination, were there  
7 lab tests done, blood tests?

8 A. It depends on what we're talking about.

9 Q. Okay. Let's say for workers -- factory  
10 workers in chemical plants, as part of their physical  
11 examination, did they also receive any standard  
12 tests?

13 A. They had chest x-rays, pulmonary  
14 function, hearing test examination, physical  
15 examination, blood count.

16 Q. CBC?

17 A. Yes.

18 Q. Okay.

19 A. And urinalysis. And other things were  
20 added as Dr. Osland or whoever thought was indicated.

21 Q. Okay.

22 A. That was in the past. Now we've added  
23 an SMA-12.

24 Q. I understand. Oh, SMA-12 has since been  
25 added?

1 A. Yes.

2 Q. When was that added?

3 A. Sometime in the early -- mid '70s.

4 Q. Mid '70s?

5 A. (Witness nods head affirmatively.)

6 Q. While you were -- okay. While you were  
7 director or associate director?

8 A. While I was director.

9 Q. Do you know whether it was customary for  
10 Dr. Osland or Dr. Spraul to have SMA-12 and/or liver  
11 function tests done routinely on workers at the  
12 Krummrich plant?

13 A. No.

14 Q. You don't know or they did not?

15 A. They were not, until we instituted  
16 everyone got them all the time.

17 Q. Okay. And everyone meaning everyone in  
18 the whole company?

19 A. Yes.

20 Q. Dr. Roush, I'm going to show you a  
21 document which was produced by Monsanto in the Paoli  
22 yard litigation. It's date stamp number PRR 002778,  
23 a letter from Emmet Kelly dated May 10th, 1972.

24 MR. CUKER: I'd like it to be marked as  
25 Roush Exhibit 1.

1 (Roush Deposition Exhibit No. 1 was  
2 marked by the court reporter for identification.)

3 MR. SCHNEIDER: Mark, you've produced a  
4 document parked PRR 002778. We have not seen this  
5 document here before. We have asked the plaintiffs  
6 to produce all documents in their possession relating  
7 to PCBs, and this document has not been produced.

8 MR. CUKER: For the record, the document  
9 does not relate to PCBs at the Waynesboro plant.

10 MR. MOORE: You want the witness to look  
11 at the document?

12 MR. CUKER: Yeah.

13 MR. MOORE: All right. And I would  
14 point out for the record that the document is dated  
15 May 10, 1972, which was some time before Dr. Roush  
16 became associated with Monsanto. Go ahead.

17 MR. BUSTER: And his name doesn't appear  
18 anywhere on the document.

19 MR. MOORE: That is correct. Go ahead.

20 Q. (BY MR. CUKER) Dr. Roush, you see that  
21 refers to certain tests which were done on workers at  
22 the Krummrich plant?

23 A. I'm not that far, but I see it.

24 Q. Okay.

25 A. Yes.

1 Q. Okay. Did that list of tests contain  
2 all the components of an SMA-12?

3 A. I think so.

4 Q. Okay. Do you have any personal  
5 recollection of those tests being done or hearing  
6 about them after you joined the company?

7 MR. BUSTER: Which tests are you  
8 referring to?

9 MR. CUKER: Really, all the tests that  
10 comprise the SMA-12.

11 MR. BUSTER: Has he ever heard of all  
12 the --

13 MR. CUKER: No. If he doesn't  
14 understand my question, he can tell me.

15 Q. (BY MR. CUKER) Do you understand my  
16 question, Doctor?

17 A. Please repeat it.

18 Q. Okay. Did you hear -- do you have any  
19 recollection of hearing or learning after you joined  
20 the company that that battery of tests had been given  
21 to the workers, to a group of workers at the  
22 Krummrich plant?

23 MR. BUSTER: Object to form.  
24 Ambiguous.

25 THE WITNESS: I didn't know it was done.

1 Q. (BY MR. CUKER) Okay. You did not know  
2 it was done?

3 A. No. And I saw -- I didn't see a report  
4 of it that had been done.

5 MR. MOORE: You've answered the  
6 question.

7 Q. (BY MR. CUKER) Okay. Now, is this the  
8 first time you've seen that report?

9 A. Yes.

10 Q. All right. You don't -- do you know  
11 whether that -- those tests were given to any more  
12 than just the twenty-seven workers mentioned in that  
13 letter?

14 A. I didn't know it was done, I wouldn't  
15 know if it was more.

16 Q. Okay. Were there any documents that  
17 described or gave guidelines for the implementation  
18 of the corporate medical program?

19 MR. MOORE: Are you through with this  
20 document?

21 MR. CUKER: Yeah, I am.

22 MR. SCHNEIDER: Let me see that.

23 THE WITNESS: There were guidelines that  
24 had been given by Dr. Kelly, but this was all in  
25 place when I arrived. So that examination, as I

1 described to you before, was examination that was a  
2 part of the routine. This obviously was a special  
3 examination.

4 Q. (BY MR. CUKER) Okay. The examination  
5 that was part of the routine, was that described in  
6 the guideline through Dr. Kelly?

7 A. It was communicated and I'm not sure  
8 just how it was communicated. But when I would visit  
9 plants, that's what I would hear.

10 Q. Okay. Did that have a name? Did that  
11 document have a name?

12 MR. BUSTER: What document?

13 MR. CUKER: The document of guidelines  
14 from Kelly for the implementation of the corporate  
15 medical program.

16 MR. BUSTER: Object to the form.

17 THE WITNESS: I don't think it -- it may  
18 have.

19 Q. (BY MR. CUKER) Okay. When the SMA-12  
20 was added, was that inserted in the guidelines?

21 A. Yes.

22 Q. Okay.

23 A. What do you mean, through the whole  
24 company?

25 Q. Yeah.

1           A.     Yes.   Because, again, that was a special  
2 examination.

3           Q.     Okay.

4           MR. CUKER:   Off the record.

5           (A discussion was held off the record.)

6           Q.     (BY MR. CUKER)   Now, did the corporate  
7 medical department have access to a medical library?

8           A.     We had our medical library.

9           Q.     Okay.   Or toxicological library?

10          A.     It's part of it.

11          Q.     I'm going to give you the names of  
12 several treatises and just ask you whether these  
13 books were in the library or whether you or other  
14 Monsanto people used this during the period '73 to  
15 '77.   Patty, P-a-t-t-y?

16          A.     Yes.

17          Q.     Sax, S-a-x?

18          A.     We used it.   We have it, but we didn't  
19 use it.

20          Q.     Okay.

21          A.     We didn't ignore it, but by and large,  
22 it wasn't a material we ever used.

23          Q.     Clinical Toxicology of Chemical Products  
24 by Glennon, Gosidge & Hodge?

25          A.     Yes.

1 Q. The Merk Index?

2 A. Yes.

3 Q. And Hamilton and Herdy Industrial  
4 Toxicology?

5 A. And Hardy.

6 Q. Hardy? The answer to that one is yes,  
7 also?

8 A. Yes.

9 MR. CUKER: I'd like to have this marked  
10 as Roush Exhibit 2.

11 (Roush Deposition Exhibit No. 2 was  
12 marked by the court reporter for identification.)

13 MR. MOORE: You want the witness to look  
14 at this?

15 MR. CUKER: Yeah.

16 Q. (BY MR. CUKER) Dr. Roush, if you don't  
17 mind, while they're looking at that, I'm going to ask  
18 you a question unrelated to that. Did anyone  
19 calculate how much Monsanto spent for the corporate  
20 medical plan per worker?

21 MR. MOORE: At what point in time?

22 Q. (BY MR. CUKER) Let's say between '73  
23 and '77.

24 A. To ask your question again, is it local  
25 or how big is your question? Are you talking about

1 the whole company?

2 Q. Well, let's -- I'll take the answer any  
3 way you can give it to me. Let's start with the  
4 whole company, if you can give it to me as the whole  
5 company. But I'm specifically interested in the  
6 Krummrich plant.

7 A. I don't know. Their budget for their  
8 program was theirs, so I don't know that.

9 Q. So that would come out of the divisional  
10 budget?

11 A. Yes.

12 Q. All right. Where is the -- all right.  
13 Go ahead. What would you know?

14 A. Our department. And it was something --  
15 it went up and down.

16 Q. Sure.

17 A. It was someplace on the order of five  
18 million dollars plus toxicology.

19 Q. Plus the five to ten million for  
20 toxicology you talked about before?

21 A. Yes.

22 Q. All right. Your budget did not include  
23 the environmental testing in the work place?

24 A. No.

25 Q. That came out of the divisional budget,

1 also?

2 A. Yes.

3 Q. And you don't know what that would be?

4 A. No.

5 Q. Okay. Have you ever seen Roush  
6 Exhibit 2 before, Dr. Roush?

7 A. I might have. It's old and it's been  
8 modified since ACIA took over major responsibility.  
9 And Shell, who -- this came from Shell first and then  
10 AIHA picked them up.

11 Q. When was it modified?

12 A. All I know is ACIA took a major  
13 responsibility for this after -- some time along in  
14 there.

15 Q. I'm sorry, say --

16 A. Sometime in this time frame, that AIHA  
17 cropped out of doing this kind of work.

18 Q. Can you recall approximately when that  
19 was?

20 A. No.

21 Q. Was that before or after PCBs were  
22 banned?

23 MR. MOORE: Well, object to the  
24 characterization of the question.

25 MR. CUKER: Okay.

1 our customers was the responsibility of the operating  
2 division.

3 Q. Okay. During the period '73 to '77, do  
4 you know what protective measures were used by  
5 workers at the Krummrich plant?

6 A. They wear coveralls --

7 MR. BUSTER: In which part of the  
8 Krummrich plant?

9 MR. CUKER: PCBs.

10 THE WITNESS: They wear coveralls, but  
11 the whole plant wore coveralls, so it was a chemical  
12 industry type coverall.

13 Q. (BY MR. CUKER) Made of what?

14 A. Cotton.

15 Q. And when you say coveralls, did this --  
16 what did it cover? Are we talking about like an  
17 apron like thing?

18 A. No, no. It's a suit.

19 Q. A whole body suit?

20 A. A whole body suit.

21 Q. Okay.

22 A. But that -- the whole plant did that.

23 Q. Okay.

24 A. And it's kind of characteristic. And  
25 when I visit the plants, they would -- whatever plant

1 I visit, they would be wearing that same coverall.

2 Q. And they're made of cotton?

3 A. Yes.

4 Q. Okay.

5 A. There was not a concern for them being  
6 impervious to chemicals. They were clean enough so  
7 that the man spilled something on him, his supervisor  
8 or someone would say go change your clothes if they  
9 thought that was appropriate, depending on the size  
10 of that.

11 Q. Did the company provide the coveralls?

12 A. Yes.

13 Q. Did the company clean the coveralls?

14 A. Within my framework, yes. And I'm not  
15 sure if all of them did that. But, yes, my answer is  
16 yes.

17 Q. What does my framework -- within your  
18 framework?

19 A. The time when I was watching them.

20 Q. Oh, okay. Did they -- did these workmen  
21 wear gloves?

22 A. They wore gloves when there was -- when  
23 they were in possibility of having exposure to the  
24 material.

25 Q. By exposure, you mean skin contact?

1 A. Yes.

2 Q. What kind of gloves?

3 A. I don't recall.

4 Q. Boots?

5 A. No. They wore shoes that they wore  
6 there and didn't take home.

7 Q. The company provided the shoes, also?

8 A. I think they purchased them at reduced  
9 price.

10 Q. Oh, so the employees would purchase them  
11 from the company --

12 A. Yes.

13 Q. -- at like a subsidized price?

14 A. Yes. There would be someone come  
15 through on a regular basis.

16 Q. Okay. Did anyone -- did you ever see  
17 anyone at the Krummrich plant wearing respirators?

18 A. Not with the PCBs.

19 Q. Okay. About how many times were you at  
20 the Krummrich plant during the time PCBs were being  
21 made there?

22 A. Two or three times.

23 Q. Okay. Do you know what workers were  
24 told about what to do if PCBs did spill on their  
25 clothing?

1           A.     No.  You're asking specifically and I  
2     can't answer that.

3           Q.     Okay.  I think you said earlier you  
4     had -- you seemed to have some understanding that the  
5     supervisor would, on occasion, tell them to change  
6     their clothes if they saw a stain on them.

7           A.     Yes, that was the general rule as  
8     opposed to specific for PCB.

9           Q.     It was general for any chemical?

10          A.     Yes.

11                 MR. BUSTER:  I believe he said depending  
12     on the size of the spill and the circumstances,  
13     also.

14                 MR. CUKER:  Okay.

15                 THE WITNESS:  Yes.

16          Q.     (BY MR. CUKER)  In what way would the  
17     size and circumstance of the spill influence that  
18     decision?

19          A.     If the man was there and got all of his  
20     clothes sprayed, and depending on what the chemical  
21     was, they would go and have him wash, shower right  
22     then and put on clean clothing.  And so something  
23     less than that, they would say do something about  
24     that, whatever that means.

25          Q.     Did they have showers on the premises?

1 A. Yes.

2 Q. Were showers required of any group of  
3 workers?

4 MR. MOORE: Relative to PCB production?

5 MR. CUKER: No, just --

6 Q. (BY MR. CUKER) For instance -- well,  
7 were showers required of anybody who worked at the  
8 Krummrich plant?

9 A. I can't offhand recall. In order to be  
10 sure of that, you'd have to have them go through a  
11 shower to make sure that takes place. There's a lot  
12 of places that we recommend that showers be taken.

13 Q. Was it recommended at Krummrich?

14 A. I don't know.

15 Q. Okay. Did they have lockers, workmen  
16 have lockers?

17 A. Yes.

18 Q. Okay. Were the showers approximate to  
19 the lockers?

20 A. Yes.

21 Q. Do you recall whether there were signs  
22 there saying you should shower before you go home?

23 A. No, I don't remember.

24 Q. Okay. About how many people worked in  
25 the Krummrich plant in the -- maybe we should get a

1 description of all the operation. You said they  
2 had -- they were involved in a lot of chlorination  
3 processes.

4 A. Yes.

5 Q. How many different buildings were there?

6 A. I don't know.

7 Q. Okay.

8 A. Didn't think of counting buildings.

9 Q. I understand. The PCB process had its  
10 own building?

11 A. Yes.

12 Q. Approximately how many workers worked in  
13 that building? If you can recall.

14 A. About sixty.

15 Q. Okay. Dr. Roush, I'm going to show you  
16 a document produced by Monsanto in this litigation  
17 stamped BRW 000515. It's a handwritten memo from  
18 David Wood dated 2/29/76, and attached to it is a  
19 report from a Dr. Stopford dated January 30th, 1976.

20 MR. CUKER: Let this be marked as Roush  
21 Exhibit 3.

22 (Roush Deposition Exhibit No. 3 was  
23 marked by the court reporter for identification.)

24 THE WITNESS: All right.

25 Q. (BY MR. CUKER) Okay. Dr. Roush, let me

1 just ask you generally, do you today have any  
2 independent recollection of any dealings with the  
3 Mallory Company in the early part of 1976?

4 A. No.

5 Q. Okay. Have you reviewed any documents  
6 relating to that before your deposition?

7 A. There was several of them.

8 Q. Okay. Was this one of them?

9 A. Yes.

10 Q. Okay. You are -- well, your name does  
11 appear on this document.

12 A. Yes.

13 Q. Can you tell from the location of this  
14 name whether you are a to, a from, or a cc?

15 A. I'm a cc.

16 Q. Okay. There's a statement in here, it  
17 says "This is on medical department file." You see  
18 that?

19 A. Yes.

20 Q. "Do not put in our file."

21 A. Right.

22 Q. Is that in or on?

23 A. On.

24 Q. On our file.

25 A. I don't understand, but it says on our

1 file, I think.

2 Q. Which medical department are they  
3 talking about?

4 MR. MOORE: Well, wait a minute. It's  
5 not fair for him to say what David Wood was talking  
6 about. He said he had no recollection of that.

7 Q. (BY MR. CUKER) Okay. Do you have -- do  
8 you know on what file Dr. Stopford's report was kept?

9 MR. BUSTER: Object to form.  
10 Ambiguous.

11 THE WITNESS: It says it's in the  
12 medical department file. That would be our file.

13 Q. (BY MR. CUKER) Can you ever recall  
14 getting Dr. Stopford's report, whether through this  
15 memo or --

16 A. No.

17 Q. There's some handwriting in the upper  
18 left-hand corner of the second page. Do you  
19 recognize the handwriting?

20 A. No.

21 Q. It's not your handwriting?

22 A. No.

23 Q. You know if it's Mr. Wood's?

24 A. No, I do not know.

25 Q. Okay. There is a reference here to you

1 having some time restraints I think in the last  
2 sentence of the letter.

3 A. Yes.

4 Q. Do you -- can you tell me what type of  
5 time restraints that would be?

6 MR. MOORE: You're asking him to look at  
7 the date and see if he recalls what his time  
8 situation was?

9 MR. CUKER: Just generally in the early  
10 part of 1976.

11 THE WITNESS: They had me doing lots of  
12 things.

13 Q. (BY MR. CUKER) They had us all doing  
14 lots of things.

15 A. Yeah.

16 Q. Was it -- how -- was it -- strike that.  
17 Did you ever have meetings with other  
18 companies that were using PCBs?

19 A. If -- no. If it was, it was rare. It  
20 was not a common.

21 Q. Okay. What person or what group of  
22 people in the company would be responsible for  
23 handling that issue?

24 MR. BUSTER: What issue?

25 MR. CUKER: The issue of how PCBs were

1 being used at the plants of customers of Monsanto.

2 MR. BUSTER: I have to object to the  
3 form of that question as being overly broad. I think  
4 it's so broad that it's not capable of a response.

5 MR. MOORE: It also assumes that those  
6 kind of communications were going on. There really  
7 is no evidence on this record about that at this  
8 point.

9 THE WITNESS: Ask the question again,  
10 can you?

11 Q. (BY MR. CUKER) All right. Who at  
12 Monsanto -- well, strike that. I'll put some  
13 evidence in.

14 Were you aware that Monsanto had  
15 required its customers to sign an indemnity agreement  
16 regarding the use of PCBs?

17 A. No.

18 Q. You were not aware of that --

19 A. No.

20 Q. -- in '73? Were you aware that Monsanto  
21 had expressed a concern to its customers about  
22 environmental contamination with PCBs?

23 MR. BUSTER: Object to the form.

24 THE WITNESS: My offhand answer is that  
25 with -- we don't have any responsibility for

1 environmental contamination. I would say yes.

2 Q. (BY MR. CUKER) Okay. Do you know who  
3 at the company was responsible for dealing with the  
4 customers to review how PCBs were used --

5 A. No.

6 Q. -- in terms of environmental discharges?

7 A. No.

8 Q. Do you know who at the company was  
9 normally responsible for answering questions about  
10 the toxicology of PCBs that were asked by customers?

11 MR. BUSTER: Same time frame, '73 to  
12 '77?

13 MR. CUKER: Yeah.

14 THE WITNESS: The business group, the  
15 same division.

16 Q. (BY MR. CUKER) Okay. Be that division  
17 in the chemical company?

18 A. Yes.

19 Q. Did Mr. Papageorge work in that  
20 division?

21 A. I -- I would say yes.

22 Q. Okay.

23 A. All based on my same idea, my  
24 understanding of the division. And I'm putting  
25 division where I think it should be.

1 Q. Dr. Roush, I want to turn to page two of  
2 Dr. Stopford's report. And there's a list here of a  
3 program that he recommends. You see that?

4 A. Uh-huh.

5 Q. I'm going to go through each item of the  
6 list and ask you, as best as you can recall, whether  
7 these were part of the Monsanto corporate program in  
8 1976.

9 A. In general?

10 Q. In general, yeah. And when I -- in  
11 general, but I understand that this is a company wide  
12 program, but we also understand that included in the  
13 program were the PCB workers at the Krummrich plant,  
14 is that correct?

15 A. Yes.

16 Q. Examination and history?

17 A. Yes.

18 Q. Physiologic parameters?

19 A. Yes.

20 Q. All right. What is your understanding  
21 of what that term means?

22 A. I -- the only thing I can think of is  
23 talking about blood pressure, respiratory rates and  
24 such as that.

25 Q. Cholesterol and triglycerides?

1 A. No.

2 Q. WBC count?

3 A. Yes.

4 Q. Hemoglobin?

5 A. Yes.

6 Q. Platelet count?

7 A. Yes.

8 Q. SGOT, LDH, Alk. Phos., bilirubin, SGPT,  
9 GGTP, LAP?

10 A. No.

11 Q. Okay. Are those all part of an SMA-12?

12 A. Yes.

13 Q. Is it your testimony that the SMA-12 was  
14 not part of the corporate medical program in January  
15 1976?

16 A. That's about the time or before -- right  
17 around that time we made it corporate wide.

18 Q. Okay. So it could have been, you're  
19 not -- I don't want to pin you down to dates if  
20 you're uncertain, but I just don't want it to be  
21 understood that it was definitely not part of the  
22 plan in January '76. Your testimony is it could have  
23 been --

24 A. Yes.

25 Q. -- but you're not sure? Okay. Thyroid

1 panel?

2 A. No.

3 Q. Urine porphyrins?

4 A. No.

5 Q. Was one of the reasons for the tests  
6 that Monsanto did as part of its corporate medical  
7 program to ascertain whether people in the work place  
8 were having any medical problems as a result of  
9 exposure to chemicals?

10 A. Yes.

11 Q. Okay. And was that also true of the  
12 workers in the PCB department at the Krummrich plant?

13 A. Yes, but they aren't all equal. There  
14 are some -- so some of them were being done as a part  
15 of a routine and others were because we were  
16 interested about that time.

17 Q. Okay. Interested -- what do you mean by  
18 interested in them at that time?

19 A. Whether there was -- somebody reports an  
20 effect that we want to know whether it's happening in  
21 our workers. Or we had done some study in our  
22 biologic testing and environmental health laboratory  
23 or someplace else that talks about an effect we may  
24 want to be able to conclude.

25 Q. All right. When you say interested at

1 that time, you mean interested from a research point  
2 of view or --

3 A. Understanding --

4 Q. -- learning point of view?

5 A. Yes.

6 Q. Attempting to learn what kinds of  
7 problems could result from chemical exposure?

8 A. Whether it's believable or not, whether  
9 it happens or not.

10 Q. All right. Dr. Roush, it's my  
11 understanding there were a variety of actions that  
12 can be taken by a company in a situation where a  
13 worker has a positive finding on a exam. I think you  
14 already testified about one of them, which was  
15 engineering controls to lower the level, if the level  
16 was high, if it was in excess of the TLV. I also  
17 recall one other thing is to pull a man off the job.  
18 That's another thing which companies do sometimes.

19 How did Monsanto determine what action  
20 it would take upon a positive finding in a worker in  
21 one of these exams?

22 A. Got a man with an abnormality, you want  
23 to know what to do with him. First, you have to  
24 decide whether that effect was related to his work.  
25 And so the first thing you have to decide is whether

1 there's a specific effect that may be related to that  
2 chemical or are we talking about nonspecific effects  
3 that may be related.

4 Q. Okay.

5 A. So if it's one that we knew is related,  
6 we'd have to decide whether it was sufficient -- it  
7 would have to be removed.

8 Q. Meaning -- who would have -- you mean  
9 the worker would have to be removed.

10 A. That would be one possibility.

11 Q. Uh-huh.

12 A. And the other possibility is to move him  
13 from that high exposure to another place where  
14 there's lower exposure, or to move him to another  
15 place where such exposure couldn't occur.

16 And in order to do all that, since most  
17 effects that we see are nonspecific, you'd have to  
18 decide whether you think that that's related or not.  
19 That's where the argument comes.

20 Q. Okay. So this was pretty much a very  
21 individualized decision-making process by the plant  
22 doctor?

23 A. How to get there. How to reach the  
24 decision whether his effect was work-related or not.

25 Q. Okay.

1 (A break was taken.)

2 Q. (BY MR. CUKER) Dr. Roush, in the  
3 situation where workmen would be moved to a different  
4 area, either a less exposed area or a non-exposed  
5 area, was it part of the company policy to inform the  
6 worker the reasons for moving him?

7 MR. MOORE: Now you're talking about  
8 Monsanto, 1973 to '76?

9 MR. CUKER: Correct.

10 THE WITNESS: It's hard to speak for all  
11 plants. It's hard to speak for all physicians that  
12 do not work for us full-time. And we only had very  
13 few full-time.

14 Q. (BY MR. CUKER) I'm talking about the  
15 policy and the guidelines as you understood them.

16 A. They were to be told why they were being  
17 moved.

18 Q. Okay. Do you know Thomas Evans?

19 A. Yes.

20 Q. Okay. Did he replace you?

21 A. No.

22 Q. Okay.

23 A. He was given responsibility for  
24 industrial hygiene and safety and trace chemicals lab  
25 that we talked about looking for environmental

1 contaminants.

2 Q. Is that his position with the company  
3 today?

4 A. Yes.

5 Q. Can you give any personal recollection  
6 of any meeting with the Mallory people in March of  
7 1976?

8 A. No.

9 MR. CUKER: For the record, why don't we  
10 have marked as Exhibit Roush 3 --

11 MR. BUSTER: We've already -- this will  
12 be Roush 4.

13 MR. CUKER: Roush 4, excuse me. This is  
14 a memo from looks like J. A. Alley to J. C. Weber,  
15 and you're copied, dated March 19th, 1976.

16 (Roush Deposition Exhibit No. 4 was  
17 marked by the court reporter for identification.)

18 MR. MOORE: Mark, did you read the  
19 production numbers in on this one?

20 MR. CUKER: Oh, I did not.

21 MR. MOORE: That's fine. I just want  
22 the record to be clear that this appears to be a  
23 number of documents stapled together which may or may  
24 not be related, to the extent that they ought to all  
25 be stapled together.

1 In any event, they bear production  
2 numbers from the Brewer case BRW 001877 through BRW  
3 001886. Dr. Roush has just glanced at these, so  
4 let's decide what you want to do with these, Mark,  
5 before we spend a lot of time on them.

6 Q. (BY MR. CUKER) All right. Doctor, did  
7 you review those before today?

8 A. Yes.

9 Q. Okay. Let me direct your attention  
10 to -- let's see, the first page, item d.

11 A. Yes.

12 Q. You see there's a reference there, it  
13 says "Bud would like to defuse the situation at  
14 Mallory which has resulted from Stopford's  
15 recommended course of action." Did anybody tell you  
16 what situation at Mallory was that needed to be  
17 defused?

18 A. No.

19 Q. You have any understanding of what that  
20 was?

21 A. Pardon?

22 Q. You have any understanding of what that  
23 was at all?

24 A. No.

25 Q. Okay. The third page of Mr. Alley's

1 memo, under h, under Watch outs.

2 MR. CUKER: Off the record.

3 (A discussion was held off the record.)

4 Q. (BY MR. CUKER) Under h, it says --  
5 where it says "We should not exhibit any prior  
6 knowledge of Dr. Stopford's recommendations," did  
7 anybody ever give you any reason for not  
8 acknowledging Dr. Stopford's recommendations?

9 A. No.

10 Q. You have any understanding what the  
11 reasons were?

12 A. No.

13 Q. Now, in this memo itself -- rather, I'm  
14 sorry, in the attachments, if you'll turn to the next  
15 to last page --

16 A. One with Wolsky?

17 Q. Yeah, the one with Wolsky, you'll see it  
18 says "We have the following questions for Dr. Roush  
19 of Monsanto." Do you recall ever answering those  
20 questions?

21 A. No.

22 Q. Was it your practice to directly answer  
23 questions like that posed by customers or was it your  
24 practice simply to tell them what Monsanto's own  
25 policies were? Or both?

1 A. I'm not sure I could generalize.

2 Q. All right. I'm going to just ask you  
3 these questions today and ask you, if you can, to  
4 tell me what your state of mind was back in March of  
5 1976 with regard to these questions.

6 Did you agree with the recommendation of  
7 the Industrial Hygiene Association that, quote,  
8 "Persons who are regularly or repeatedly exposed to  
9 chlorodiphenyls should be examined periodically to  
10 detect early evidence of skin irritation and/or liver  
11 damage?" Did you agree with that back in 1976?

12 A. Not -- not in itself. Not as presented  
13 here.

14 Q. Okay. What is the nature of your  
15 disagreement?

16 A. If the exposure is almost zero, if you  
17 can't detect it, you certainly wouldn't do that.

18 Q. Okay.

19 A. And so somehow it's related to the level  
20 of exposure.

21 Q. Well, this does say regularly or  
22 repeatedly exposed in the question.

23 A. The question is what's exposure.

24 Q. You mean level of exposure?

25 A. Yes.

1 Q. Okay.

2 A. If the exposure is close to zero, if I  
3 can measure it but it's not close to the TLV, then I  
4 don't have the same level of concern if that level  
5 was at or above the TLV.

6 Q. Okay. When you say close to the TLV,  
7 what do you mean?

8 A. Depends on the chemical.

9 Q. PCBs.

10 A. Didn't worry much about PCBs.

11 Q. Even if they were close to the TLV?

12 A. Yes. That's based on history. We went  
13 for many years without having had any problems with  
14 the workers.

15 Q. But the levels of the Monsanto work  
16 place were, I think you said, below detection levels?

17 A. When I was there.

18 Q. When you were there. Okay.

19 Number two, were you at the time  
20 concerned over dioxanes which might be formed on  
21 heating PCBs?

22 A. I don't think dioxanes were formed. Not  
23 dioxanes. Dioxanes is -- I'm not even sure why  
24 dioxanes are here.

25 Q. Misnomer for dioxins, i-n-s?

1           A.     Yes. But I don't think dioxins are  
2     formed by PCBs.

3           MR. MOORE: Just to clarify, Dr. Roush,  
4     is it correct that your testimony would be that you  
5     do not relate dioxanes as spelled here or dioxins,  
6     d-i-o-x-i-n-s, as being related to PCBs?

7           THE WITNESS: That's right.

8           Q.     (BY MR. CUKER) Just if I could go back  
9     to number one, because I think your answer varied  
10    with the level of exposure. Is it your testimony  
11    that in March of 1976 you would have agreed with that  
12    for people who were exposed to levels in excess of  
13    the TLVs?

14          A.     I don't know. It would depend on the  
15    situation.

16          Q.     All right. Number three, back in 1976,  
17    what was your understanding of what type of hygiene  
18    measures should be taken to prevent physical contact  
19    of personnel with PCBs? Would you recommend the use  
20    of gloves, overalls, head covers, goggles, shoes, et  
21    cetera?

22          A.     I would --

23                 MR. BUSTER: Object to the form. It's  
24    compound.

25          Q.     (BY MR. CUKER) You can take those one

1 at a time if it's easier for you, Doctor. Would you  
2 recommend gloves?

3 A. If there was hand contact with it, yes.

4 Q. Overalls?

5 A. Yes.

6 Q. Head covers?

7 A. It all depends on the circumstance in  
8 which it's being used. If there was any evidence of  
9 it being generated so that there would be head  
10 exposure, the answer would be yes. But if not, if we  
11 only have to worry about there being skin contact, we  
12 don't have to do that.

13 Q. Goggles, your answer would be the same?

14 A. Yes.

15 Q. In other words, if there's a chance of  
16 it getting in your eyes?

17 A. Yes.

18 Q. Shoes?

19 A. Shoes, all the time there.

20 Q. All the time, did you say?

21 A. Yes.

22 Q. Okay. What was your understanding in  
23 March of 1976 of the best method of cleaning PCBs  
24 from the hands?

25 A. I don't know. It was a written policy

1 that had been going on for years and no one had  
2 talked to me about it being a concern about getting  
3 off the skin. It never came -- it never came to my  
4 attention as a problem.

5 Q. I'm sorry, you said it was a written  
6 policy for years?

7 A. They have a policy within the operating  
8 unit that make PCBs how -- where they go to wash off  
9 their hands, they use what is standard practice  
10 there. And I'm not -- I don't know what that was.

11 Q. Okay. Well, didn't they wear gloves in  
12 that unit?

13 A. Yes.

14 Q. Did it normally get on their hands, as  
15 far as you knew?

16 A. Not in gross quantities, but there could  
17 be times when the man didn't expect to get it on his  
18 hand and got it on his hand and went there and washed  
19 it off.

20 Q. Okay.

21 A. But it also could be the man wearing the  
22 gloves, you would want him to wash his hands before  
23 he left the unit.

24 Q. Now, going back to the annual physicals  
25 that were done, was part of the annual physical to

1 it's a big drop, it probably won't. But also if it's  
2 a big drop, he won't get it in his lungs but he will  
3 get it on his skin.

4 So most of all, that exposure is not  
5 going to be a very fine spray that would get down the  
6 lung. So most of my problem is related to the skin,  
7 but I have to verify all of those things I just said.

8 Q. All right. Let me take you to the next  
9 page. There were some questions there. I'm just  
10 going to ask you what your -- again, what your state  
11 of mind was back in March of 1976 with regard to  
12 these questions.

13 Number one, "What procedure is suggested  
14 when a health problem which is not work-related is  
15 discovered?" Let me just ask you -- let me clarify,  
16 what was Monsanto's procedure for that under the  
17 corporate medical plan?

18 MR. MOORE: At or about that time?

19 MR. CUKER: Yeah, at that time.

20 THE WITNESS: Well, it just consists  
21 with good medical practice. A man has some problem  
22 that's not work-related, he should be told about it  
23 so he can get something done about it if indicated.

24 Q. (BY MR. CUKER) What information was  
25 given the employees concerning the reasons for and

1 results of the medical exams at Monsanto?

2 A. The employees were told that the  
3 examination was part of the medical policy, but it  
4 was not required that they take the examination.

5 Q. Okay.

6 A. It was just a part of our overall  
7 general policy.

8 Q. Number three, "What kinds of medical  
9 records" --

10 MR. BUSTER: Excuse me. I don't believe  
11 he was finished answering the question.

12 MR. CUKER: I'm sorry.

13 THE WITNESS: The results of the  
14 examinations?

15 Q. (BY MR. CUKER) Uh-huh.

16 A. The results of the examinations were  
17 given to the man if it was related to the future  
18 itself. It's the same old problem of do I tell you  
19 your eyes aren't as good as they were last year or do  
20 I tell you if your vision wasn't quite the same as it  
21 was last year.

22 Most things would be said, but one of  
23 the quarrels we've got in medicine is what you tell a  
24 man. You may have a heart problem, but I'm not  
25 sure. It has the same kind of an overtone. But

1 between the employee and his doctor, the information  
2 was given to the man.

3 Q. Okay. And the answer to number four,  
4 were physicals under the Monsanto corporate medical  
5 plan given before the employees commence employment  
6 as a basis for comparison with later examinations?

7 A. An examination, we didn't -- we did what  
8 was called a preplacement examination, which is  
9 explicit or just exactly to your question. A  
10 preplacement exam is before he was given a job.

11 It was not perfect because when he  
12 changed jobs, every once in a while a man would slip  
13 through and we wouldn't do a preplacement before he  
14 moved to a new assignment, but may want it. But  
15 that's part of the difficulty of making things  
16 happen. But our goal was to have an evaluation for  
17 comparison with later exams.

18 Q. Okay. Do you remember any discussions  
19 about Monsanto requesting that Mallory not take its  
20 lawyer to this meeting?

21 A. No.

22 MR. MOORE: Well, he's already said --  
23 well, Mark, before we get into a lot of these do you  
24 recall, he said he doesn't have any recollection.

25 MR. CUKER: There's not going to be a

1 lot of them.

2 MR. BUSTER: Did you get the answer?

3 Q. (BY MR. CUKER) The answer is no?

4 A. Uh-huh.

5 Q. All right. Do you know whether any  
6 Monsanto medical personnel evaluating workers, PCB  
7 workers at the Krummrich plant, were ever told to pay  
8 any special attention to liver abnormalities should  
9 they show up in these workers?

10 A. No, I don't.

11 Q. You don't recall one way or the other?

12 A. No.

13 Q. Or whether it was their practice to  
14 take -- well, let me go back. I think you testified  
15 earlier that certain effects in the worker were  
16 suspected as possibly resulting from the chemical  
17 exposure. Did Monsanto medical personnel ever  
18 suspect liver symptoms as possibly resulting from PCB  
19 exposure during the time that you were there?

20 A. Not that I know of.

21 Q. Is there anyone who would be more  
22 familiar with that than you?

23 A. Dr. Osland.

24 Q. Okay. Would Dr. Spraul have been more  
25 familiar with that than you?

1 A. Probably so.

2 MR. CUKER: Okay. I have no more  
3 questions.

4 MR. BUSTER: Can we take a break,  
5 please?

6 (A break was taken.)

7 Q. (BY MR. CUKER) I just have one other  
8 question. Before your deposition, did you discuss  
9 the case with any representatives of Mallory Company,  
10 either Mr. Schneider or Mr. Buster?

11 A. I talked to both of them.

12 Q. You did speak to both of them?

13 A. Yes.

14 Q. For about how long?

15 A. Three hours.

16 Q. And what was your discussion? When was  
17 this?

18 A. Last week.

19 Q. Okay. What was your discussion with  
20 them?

21 A. Related primarily to these documents.

22 Q. Okay. What else did it relate to?

23 A. I don't think there was anything else.

24 Q. Okay. Was there any discussion about  
25 the toxicity of PCBs?

1 A. Indirectly.

2 Q. Was there a discussion about a  
3 similarity of position between the Mallory Company  
4 and the Monsanto Company on the toxicity of PCBs or  
5 lack thereof?

6 A. No.

7 MR. CUKER: That's all I have.

8 CROSS EXAMINATION

9 BY MR. BUSTER:

10 Q. Dr. Roush, I'm Kevin Buster from the law  
11 firm of King & Spalding. We represent Duracell  
12 International, Inc. in this litigation.

13 I'd like to direct your attention back  
14 to Roush Exhibit 4, please, and specifically the  
15 first page of this exhibit, point 3a, which appears  
16 to be a list of proposed attendees at a meeting. You  
17 see that?

18 A. Yes.

19 Q. The last entry on the list is a fellow  
20 named Dr. Len Goldwater, Consultant to Mallory. Do  
21 you know a Dr. Leonard Goldwater?

22 A. I know him very well.

23 Q. Did you know him back in the spring of  
24 1976?

25 A. Yes.

1 Q. How did you know Dr. Goldwater?

2 A. He has a national reputation as a  
3 toxicologist and his real strength is in knowledge of  
4 mercury. His moving to Duke was a part of his  
5 expertise that they wanted to capture.

6 Q. Now, when you say toxicology, to your  
7 knowledge, was Dr. Goldwater knowledgeable in the  
8 area of occupational medicine?

9 A. Yes, the application of toxicology and  
10 understanding and relationship to occupational  
11 medicine was his forte.

12 Q. What was his reputation in occupational  
13 medicine? When you said he had a national  
14 reputation --

15 A. Yes, yes.

16 Q. When you said that, did you include  
17 occupational medicine as well as toxicology?

18 A. Oh, yes.

19 Q. What was your practice in the spring of  
20 '76 if a customer asked you whether it should perform  
21 medical screenings for PCB workers, workers who came  
22 into contact with PCB?

23 MR. CUKER: Objection. You can answer.

24 THE WITNESS: If they asked me about  
25 what they should do with exposure to PCBs, I would

1 have to in some way get an evaluation of the  
2 circumstances in which the PCBs were being used.

3 Q. (BY MR. BUSTER) Would you undertake to  
4 do that yourself or would you undertake to advise  
5 them to have some knowledgeable consultant or someone  
6 like that do that?

7 MR. CUKER: Objection.

8 Q. (BY MR. BUSTER) This would be a  
9 customer of Monsanto.

10 A. It would be a very unusual circumstance  
11 if Monsanto did not ask me to do such a thing, and so  
12 I would not do it myself and I would recommend that  
13 someone did. But, you know, I can't foresee a  
14 circumstance -- some circumstance that I might not  
15 have done it for Monsanto.

16 Q. All right. Outside of Monsanto, if a  
17 customer came to you with that problem, what would  
18 your response have been?

19 A. I would recommend to get someone to  
20 evaluate the circumstance.

21 Q. Based upon what you know about  
22 Dr. Leonard Goldwater, is he or is he not a person  
23 who would be suitable to perform such a  
24 consultation?

25 MR. CUKER: Objection.

1 THE WITNESS: He is an excellent  
2 physician with a great deal of experience and was  
3 quite capable of doing something like this.

4 MR. BUSTER: No further questions.

5 MR. MOORE: Emhart?

6 MR. SPODEN: Emhart doesn't have any  
7 questions. Thank you.

8 MR. MOORE: Any questions?

9 (Roush Deposition Exhibit No. 5 was  
10 marked by the court reporter for identification.)

11 REDIRECT EXAMINATION

12 BY MR. CUKER:

13 Q. Dr. Roush, I've had marked Roush  
14 Exhibit 5 an exhibit produced by Monsanto in this  
15 lawsuit number BRW 002025 through 002040. It is a  
16 sixteen page list of PCB related lawsuits against the  
17 Monsanto Company. I would like you to tell me first  
18 of all whether you've given depositions in any of  
19 those cases. And if the answer is yes --

20 A. One.

21 Q. In one? Okay. Which one was that, sir?

22 A. I don't know.

23 Q. Well, can you refresh your recollection?

24 A. No, I've not given -- in depositions,  
25 they just tell me we're going to be there, and the

1 relationship of that to some chemical had no meaning  
2 to me at all, some company.

3 Q. I'm sorry, sir, I don't understand.

4 A. I had no understanding of why the  
5 lawsuit was taking place when I gave a deposition or  
6 when I would testify.

7 Q. Was it a PCB related lawsuit?

8 A. One, yes.

9 Q. Did you give a deposition in a PCB  
10 related lawsuit?

11 A. Yes.

12 Q. Where was that deposition given?

13 A. In Houston.

14 Q. Okay. You remember who the lawyers  
15 were?

16 A. Pardon?

17 Q. You remember who the lawyers were?

18 A. No.

19 MR. BUSTER: I'd like to point out that  
20 this is in no way follow-up to questioning I did. I  
21 mean it seems a little inefficient.

22 THE WITNESS: No, but I'm sure I can get  
23 that name.

24 Q. (BY MR. CUKER) All right. Well, if you  
25 can supply that to me through Mr. Moore --

1 A. Sure.

2 Q. -- then I don't think that we need to  
3 belabor that any further.

4 MR. CUKER: That's all I have.

5 MR. MOORE: Okay. All through.

6

7

\_\_\_\_\_  
GEORGE ROUSH, M.D.

8

Subscribed and sworn to before me on

9

this \_\_\_\_\_ day of \_\_\_\_\_, 1989.

10

My commission expires \_\_\_\_\_.

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\_\_\_\_\_  
NOTARY PUBLIC

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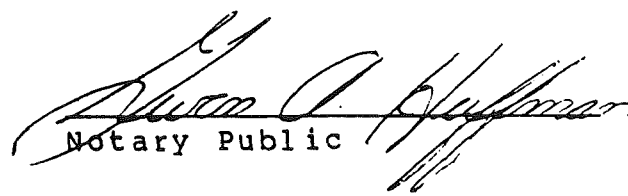
## NOTARIAL CERTIFICATE

STATE OF MISSOURI           )  
                                  )  
COUNTY OF ST. LOUIS       )

I, Gwen A. Huffman, a Registered Professional Reporter and Notary Public duly commissioned and qualified in and for the County of St. Louis, State of Missouri, do hereby certify that, pursuant to agreement between Counsel, came before me on the 20th day of December, 1988, at the Karpowicz Reporting Company Conference Room, 314 North Broadway, 11th Floor, St. Louis, Missouri, GEORGE ROUSH, M.D., who was by me first duly sworn on his oath to testify to the truth and nothing but the truth of his knowledge touching and concerning the matters in controversy in this cause; that he was thereupon carefully examined upon his oath, and his examination reduced to writing under my supervision; that the deposition is a true record of the testimony given by the witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal this 20th day of January, 1989.

My commission will expire January 27th, 1991.

  
Notary Public

KARPOWICZ REPORTING COMPANY  
408 Olive Street, Suite 316  
St. Louis, MO 63102

January 11, 1989

Dr. George Roush  
10 Babler Lane  
St. Louis, MO 63124

In Re: Katherine Joyce Brewer, et al. vs  
Monsanto Corporation, et al.

Dear Dr. Roush:

This letter, incorporated as the last page of your deposition taken on December 20, 1988 will serve as notice to you that your testimony is now ready for your reading and signing of same.

I would appreciate your contacting my office by calling 314/621-8883 so that arrangements can be made to accomplish this.

This letter is being mailed to you, as you know, by Certified Mail with return receipt requested. If we have not heard from you within thirty days after receiving your return receipt, this testimony will be filed with our indication of this offer of submission to you and your refusal to sign.

I would appreciate hearing from you at your earliest convenience and appreciate your cooperation in this regard.

Sincerely yours,

Gwen A. Huffman, RPR

CERTIFIED MAIL: P 714 737 465

MAILED ON: January 11, 1989

KARPOWICZ REPORTING COMPANY

HARTOLDMON0009996

1 UNITED STATES DISTRICT COURT  
 2 MIDDLE DISTRICT OF TENNESSEE  
 COLUMBIA DIVISION

3 KATHERINE JOYCE BREWER, )  
 et al., )

4 Plaintiffs, )

5 -vs- )

6 MONSANTO CORPORATION, )  
 7 et al., )

8 Defendants. )

Nos. 1-88-008 and  
 1-88-0014 through  
 1-88-0368  
 Judge Wiseman

9 A F F I D A V I T

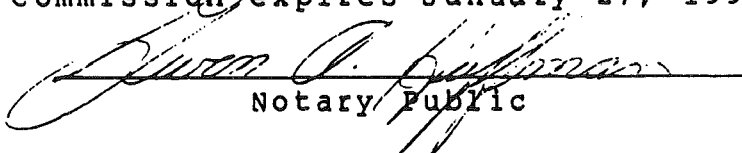
10 I, GWEN A. HUFFMAN, a Registered  
 11 Professional Reporter and Notary Public within and  
 12 for the State of Missouri, do hereby certify that  
 13 under Certified Mail No. P 714 737 465

14 DR. GEORGE ROUSH

15 was duly notified that his deposition taken in the  
 16 above matter had been transcribed and could be read  
 17 and signed; that signed receipt was returned showing  
 18 signature date of \_\_\_\_\_

19 That over thirty days have elapsed since the sending  
 20 of the aforementioned Certified Letter; that there  
 21 has been no response from this party or counsel; that  
 22 therefore, said deposition is herewith filed.

23 My Commission expires January 27, 1991.

24   
 Notary Public  
 25

1 A. Sure.

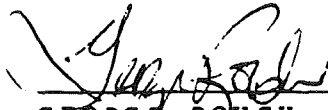
2 Q. -- then I don't think that we need to  
3 belabor that any further.

4 MR. CUKER: That's all I have.

5 MR. MOORE: Okay. All through.

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GEORGE ROUSH, M.D.

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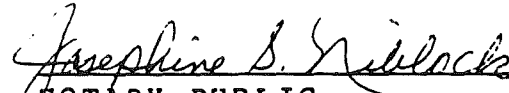
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Subscribed and sworn to before me on  
this 30th day of January, 1989. JOSEPHINE S. NIBLOCK  
Notary Public - State of Missouri  
St. Louis County  
My commission expires ~~My Commission Expires January 18, 1991~~

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NOTARY PUBLIC

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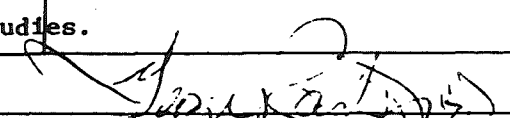
Karpowicz Reporting Company  
1323 Ambassador Building  
NEW ADDRESS  
St. Louis, Missouri 63101  
Seventh Street

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408 OLIVE STREET  
ST. LOUIS, MO 63102

Joyce Brewer VS Monsanto

UPON READING THE DEPOSITION AND BEFORE SUBSCRIBING THERETO, THE DEPONENT  
George Roush, Jr. INDICATED THE FOLLOWING CHANGES SHOULD MADE.

| PAGE NO. | LINE NO. | CHANGE TO:                                                                                                                       | STATEMENT OF REASON FOR CHANGE |
|----------|----------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 5        | 17       | 1951-52, I had a fellowship from the National Heart Institute at the University of Pittsburgh in the Department of Biochemistry. |                                |
| 5        | 22       | I was at the Staten Island Marine Hospital in a Residency in Internal Medicine.                                                  |                                |
| 7        | 7        | what we call petroleum derivative chemicals, carbon hydrogen series.                                                             |                                |
| 9        | 18       | so they could use the catalyst to keep the air pollution down.                                                                   |                                |
| 10       | 7        | I was Professor of Medicine in Environmental Health.                                                                             |                                |
| 15       | 11       | No, he is not living in St. Louis. He resigned to go into a consultation practice.                                               |                                |
| 18       | 13       | He was Director of Epidemiology which was formed sometime around 1980.                                                           |                                |
| 19       | 1        | There have been a number of heads.                                                                                               |                                |
| 19       | 17       | LC50s. We also did a number of subchronic studies.                                                                               |                                |

  
(Signature of Witness)

HARTOLDMON0009999

Karpowicz Reporting Company  
1323 American Building  
NEW ADDRESS  
St. Louis, Missouri 63101  
Seventh Street

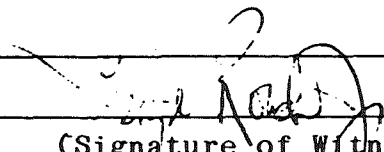
KARPOWICZ REPORTING COMPANY  
316 MERCHANTS LA-LEUE BLDG.  
408 OLIVE STREET  
ST. LOUIS, MO 63102

Jpyce Brewer VS Monsanto

UPON READING THE DEPOSITION AND BEFORE SUBSCRIBING THERETO, THE DEPONENT

George Roush, Jr. INDICATED THE FOLLOWING CHANGES SHOULD MADE.

| PAGE NO. | LINE NO. | CHANGE TO:                                                                                             | STATEMENT OF REASON FOR CHANGE |
|----------|----------|--------------------------------------------------------------------------------------------------------|--------------------------------|
| 20       | 1        | biologic testing laboratory.                                                                           |                                |
| 20       | 25       | looking for trace concentrations of the product and not trying to determine the purity of the product. |                                |
| 21       | 19       | There were four major companies. They were the chemicals, plastics, fibers, and ag chemicals.          |                                |
| 23       | 2        | or else they would farm the analysis out - they would use a commercial testing laboratory.             |                                |
| 26       | 8        | give it to the head of the ACGIH.                                                                      |                                |
| 26       | 25       | business at Anniston before I joined Monsanto.                                                         |                                |
| 31       | 16       | how much air went through the pump and decide what his average exposure was.                           |                                |
| 47       | 8        | modified since ACGIH took over major responsibility for TLVs.                                          |                                |
| 47       | 17       | dropped out of doing these Hygienic Guides.                                                            |                                |
| 51       | 10       | depending on the size of the contaminated spot or area.                                                |                                |
|          |          |                                                                                                        |                                |
|          |          |                                                                                                        |                                |
|          |          |                                                                                                        |                                |
|          |          |                                                                                                        |                                |
|          |          |                                                                                                        |                                |

  
(Signature of Witness)

HARTOLDMON0010000