

IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON, WEST VIRGINIA

JAMES M. ADKINS, Administrator
of the Estate of Ralph E. Adkins,
Deceased, et al,

Plaintiffs,

vs.

MONSANTO COMPANY, a Delaware
Corporation,

Defendant.

No. 81-2098

Deposition of
FERDINAND C. MEYER
taken on behalf of
the plaintiffs.

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Reporter: M. Joy Springer

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Plaintiffs,)

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MONSANTO COMPANY, a Delaware)
Corporation,)

Defendant.)

APPEARANCES:

Messrs. Calwell, McCormick & Peyton,
by W. Stuart Calwell, Jr., Esq., For the Plaintiffs;

Messrs. Bowles, McDavid, Graff & Love,
by Charles M. Love, III, Esq., For the Defendant.

IT IS STIPULATED AND AGREED by and between
counsel for the plaintiffs and counsel for the defendant
that the deposition of FERDINAND C. MEYER may be taken
pursuant to Rule 26(a) of the Federal Rules of Civil Pro-
cedure, on behalf of the plaintiffs, on July 6, 1983, at
the Radisson Hotel, Room 215, 9th Street and Convention
Plaza, St. Louis, Missouri, before M. JOY SPRINGER a
Notary Public within and for the County of Madison, State

1 of Illinois; that the issuance of notice and dedimus is
2 waived, and that this deposition may be taken with the same
3 force and effect as if all Federal rules and statutory
4 requirements had been complied with.

5 IT IS FURTHER STIPULATED AND AGREED that any
6 and all objections to all or any part of this deposition
7 except objections as to form of the questions asked or
8 answers given, are hereby reserved and may be raised on
9 the trial of this cause; and that the signature of the
10 deponent is not waived.

11 * * * * *

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15 FERDINAND C. MEYER,
16 produced, sworn and examined on behalf of the plaintiffs,
17 deposes and says as follows:

18 EXAMINATION

19
20 BY MR. CALWELL:

21 (Whereupon the reporter marked the
22 following exhibits for the purposes of
23 identification: Plaintiff's Deposition
24 Exhibit #252 (Monsanto's I.D. #8323313
25 through 8323315, inclusive), consisting of

1 three pages; Plaintiff's Deposition Exhibit
2 #253 (Monsanto's I.D. #8323245 through
3 8323248, inclusive), consisting of four pages;
4 Plaintiff's Deposition Exhibit #254 (Monsanto's
5 I.D. #231728 through 231737, inclusive), con-
6 sisting of ten pages; Plaintiff's Deposition
7 Exhibit #255 (Monsanto's I.D. #8323234 and
8 8323235), consisting of two pages; Plaintiff's
9 Deposition Exhibit #256 (Monsanto's I.D.
10 #8323217 through 8323219, inclusive), consisting
11 of three pages; Plaintiff's Deposition Exhibit
12 #257 (Monsanto's I.D. #8323177 and 8323178),
13 consisting of two pages; Plaintiff's Deposition
14 Exhibit #258 (Monsanto's I.D. #233695), con-
15 sisting of one page; Plaintiff's Deposition
16 Exhibit #259 (Monsanto's I.D. #8323203 through
17 8323205, inclusive), consisting of three pages;
18 Plaintiff's Deposition Exhibit #260 (Monsanto's
19 I.D. #8323173, 8323174, 8323176 and 8323175),
20 consisting of four pages; Plaintiff's Deposition
21 Exhibit #261 (Monsanto's I.D. #8323145 and
22 8323146), consisting of two pages; Plaintiff's
23 Deposition #262 (Monsanto's I.D. #8323065
24 through 8323070, inclusive), consisting of six
25 pages; Plaintiff's Deposition Exhibit #263

1 (Monsanto's I.D. #8323037 and 8323038), con-
2 sisting of two pages: Plaintiff's Deposition
3 Exhibit #264 (Monsanto's I.D. #231686 through
4 321688, inclusive), consisting of three pages;
5 Plaintiff's Deposition Exhibit #265 (Monsanto's
6 I.D. #8323147 through 8323149, inclusive), con-
7 sisting of three pages; Plaintiff's Deposition
8 Exhibit #266 (Monsanto's I.D. #8330067 and
9 8330068), consisting of two pages; Plaintiff's
10 Deposition Exhibit #267 (Monsanto's I.D. #8331208
11 8331209), consisting of two pages; Plaintiff's
12 Deposition Exhibit #268 (Monsanto's I.D. #8331208
13 and 8331209), consisting of two pages; Plaintiff's
14 Deposition Exhibit #269 (Monsanto's I.D. #8322384),
15 consisting of one page; Plaintiff's Deposition
16 Exhibit #270 (Monsanto's I.D. #8330036), con-
17 sisting of one page; Plaintiff's Deposition
18 Exhibit #271 (Monsanto's I.D. #236056 through
19 236069, inclusive), consisting of four pages;
20 Plaintiff's Deposition Exhibit #272 (Monsanto's
21 I.D. #236065), consisting of one page; Plaintiff's
22 Deposition Exhibit #273 (Monsanto's I.D. #8325873,
23 8325874 and 8325872), consisting of three pages;
24 Plaintiff's Deposition Exhibit #274 (Monsanto's
25 I.D. #236180 and 236181), consisting of two pages;

1 Plaintiff's Deposition Exhibit #275 (Monsanto's
2 I.D. #8326129 through 8326142, inclusive, and
3 #8326149 through 8326160, inclusive), consisting
4 of twenty-six pages; Plaintiff's Deposition
5 Exhibit #276 (Monsanto's I.D. #8331279 and
6 8331280), consisting of two pages; Plaintiff's
7 Deposition Exhibit #277 (Monsanto's I.D. #235680),
8 consisting of one page; Plaintiff's Deposition
9 Exhibit #278 (Monsanto's I.D. #236249 through
10 236252, inclusive), consisting of four pages;
11 Plaintiff's Deposition Exhibit #279 (Monsanto's
12 I.D. #8323392 through 8323394, inclusive), con-
13 sisting of three pages; *Plaintiff's Deposition
14 Exhibit #281 (Monsanto's I.D. #8323340 through
15 8323342, inclusive), consisting of three pages;
16 Plaintiff's Deposition Exhibit #282 (Monsanto's
17 I.D. #83331273 and 8331274), consisting of two
18 pages; Plaintiff's Deposition Exhibit #283
19 (Monsanto's I.D. #8330781), consisting of one
20 page; Plaintiff's Deposition Exhibit #284
21 (Monsanto's I.D. #8300999), consisting of one
22 page; Plaintiff's Deposition Exhibit #285
23 (Monsanto's I.D. #8300998), consisting of one
24 page; Plaintiff's Deposition Exhibit #286
25 (Monsanto's I.D. #8325604), consisting of one
*Plaintiff's Deposition Exhibit #280 (Monsanto's

1 page; Plaintiff's Deposition Exhibit #287
2 (Monsanto's I.D. #8331712), consisting of one
3 page; and finally, Plaintiff's Deposition
4 Exhibit #288 (Monsanto's I.D. #8331272), con-
5 sisting of one page.

6 Q Would you state your name, please?
7 A Ferdinand C. Meyer.
8 Q And where do you live?
9 A I live at #18 Roclare Lane in Town and
10 Country, Missouri, 63131.
11 Q And are you employed?
12 A No. I retired about three and a half years
13 ago, February of 1980.
14 Q Retired from Monsanto?
15 A Yes.
16 Q When you were employed by Monsanto, what
17 was your last job with them?
18 A I was Director of Special Projects in the
19 Department of Medicine and Environmental Health.
20 Q In St. Louis?
21 A Yes.
22 Q Where did you attend college?
23 A Shurtleff College in Alton, Illinois.
24 Q And what degree did you receive?
25 A A.B.

1 Q Was there any major field that you studied?
2 A Chemistry.
3 Q What year did you graduate?
4 A 1938.
5 Q Upon graduation did you do graduate work?
6 A Yes. At the University of Illinois.
7 Q What degree did you receive?
8 A Master's Degree, M.S. degree.
9 Q What in?
10 A In organic chemistry.
11 Q What year did you receive that degree?
12 A 1940.
13 Q Did you take further courses?
14 A Yeah. I went to the University of Wisconsin.
15 Q What did you do there?
16 A Took the Doctor's Degree there in Organic
17 and Biochemistry.
18 Q Is that a Ph.D.?
19 A Ph.D. in 1943.
20 Q Were you in the military?
21 A No.
22 Q What was your doctoral thesis?
23 A Was on the Synthesis and Hydrogenation of
24 Methyl Phenanthrenes.
25 Q How do you spell that?

1 Q How do you spell that?

2 A M-e-t-h-y-l, p-h-e-n-a-n-t-h-r-e-n-e-s.

3 It's been a long time ago. I can't hardly remember that.

4 Q After receiving your Ph.D. did you seek
5 employment?

6 A Yes. I came to St. Louis with Monsanto in
7 June of 1943, and I had worked in St. Louis laboratories
8 the summer before I graduated as a summer employee.

9 Q When you came to work for Monsanto as a
10 full-time employee, what were you doing?

11 A Oh, my first assignment was in the chemical
12 warfare, Classified Chemical Warfare Project, and I was
13 involved in that until 1945. I then was transferred to
14 the Chemical Warfare Plant for about eight or nine months
15 across the river in Monsanto, Illinois, I guess at that
16 time. It's now Sauget.

17 Q What kind of work were you doing in this
18 position? Was it just laboratory work?

19 A I was doing laboratory work in both
20 synthesis and development of procedures which could be
21 transferable into the plant across the river.

22 Q When you say you do laboratory work, does
23 that mean you actually work with chemicals?

24 A Manipulated chemicals in the laboratory.

25 Q Conducted experiments?

1 A Conducted experiments, right.

2 Q During your course work and training, did
3 you receive any instruction on handling dangerous or
4 poisonous or toxic substances in the laboratory?

5 A Well, you got most of that -- unfortunately,
6 in schools you didn't get a lot of that. You got most of
7 that after you got in the industry, I'm sorry to say.

8 Q After you got in the industry?

9 A They were much more cognizant of that in
10 industry than at school levels. They were pretty lax on
11 that. You had a seminar or two in grad school, but it
12 wasn't emphasized as strong as it is in industry. I hope
13 it is today, but at that time it was pretty lax.

14 Q So when you started working for Monsanto
15 the first of the summer as an intern or employee, I guess,
16 did you receive any particular training on the handling of
17 those kinds of substances?

18 A Well, they had regular safety programs and
19 safety meetings in Monsanto. At that time I can't recall,
20 you know, the exact frequency of them, but this was a common
21 part of our overall training. Anyone connected with the
22 laboratory went to the regular safety meetings where both
23 physical safety and chemical handling were discussed and
24 fire safety and all aspects of safety on the job.

25 Q Did that training continue throughout the

1 time you were --

2 A Always. Throughout the time I was with the
3 company.

4 Q So you were with the Classified Chemical
5 Warfare Project when you first went to work with Monsanto
6 until 1945?

7 A Yeah. Until the war ended. Came back from
8 across the river, I guess, that was September of '45.
9 That's my best recollection.

10 Q Did you have a title during that period of
11 time?

12 A Research Chemist.

13 Q What was your next position with the company,
14 job?

15 A Well, let's see, in '49 I was made Group
16 Leader.

17 Q Of what?

18 A In general chemical processes. No particu-
19 lar field at that time.

20 Q Were you assigned to a particular operating
21 unit of the company?

22 A Yes. I was in the St. Louis Research
23 Department of the then Organic Division that it was called
24 at that time.

25 Q And you were a group leader, is that right?

1 A Yes. I think that happened in 1949.

2 Q Were there manufacturing facilities within
3 the Organic Division?

4 A Oh, sure. Our laboratory was right on the
5 site down here that's South Second Street. That was our
6 original Queeny Plant was located at that site, and as a
7 matter of fact, the home office was there at that time.

8 Q Were there other manufacturing plants in
9 that group?

10 A Yes. The ones that I recall at the time, I
11 think, were the Krumrich Plant across the river, and I'm
12 not certain at that time whether the Nitro Plant was part of
13 Organic Division or not. It may have been, but I don't
14 recall. At one time it was called the Rubber Service
15 Division. I'm just not recalling for sure whether it was
16 actually a part of the Organic Division at that time.

17 Q How long did you remain as a group leader
18 in the Organic Division?

19 A Until 1954.

20 Q Do you recall if during that period of time
21 the Nitro Plant was within the Organic Division?

22 A I think it was.

23 Q You were a group leader of research chemists?

24 A Yes. Normally that would consist of anywhere
25 from two to five chemists. Groups were fairly small in the

1 Organic Division.

2 Q What was your mission as a group leader of
3 research chemists?

4 A Well, the mission was to do both exploratory
5 and process development when a product reached a point of
6 potential commercial interest.

7 Q Did you do any testing for hazardous or
8 toxic substances?

9 A Did I personally do any?

10 Q Well, was your research group ever involved
11 in that kind of thing during the 1949-54 period?

12 A No.

13 Q During that period did you have anything to
14 do with the development of a process to manufacture 2,4,5 T?

15 A To the best of my recollection, no. I was
16 involved more generally in the general pharmaceutical inter-
17 mediate group. Sulfa drug intermediates, various animal
18 oil intermediates, antihistamines. One of our products is
19 still marketed by Eli Lilly in the antihistamine area.

20 Q Was there a group that you were aware of
21 during that period 1949 to '54, a research group, doing
22 work with 2,4,5 T?

23 A I'm not sure about 2,4,5 T. I was aware of
24 a group, I think, the Dvornokaff group, who had done some
25 work on 2,4 D.

1 Q What was his name?

2 A Man by the name of Dvornokaff. He's dead
3 now. D-v-o-r-n-o-k-a-f-f. He was of Russian attraction.

4 Q He was a group leader, as you were?

5 A Yes. He was a group leader at that time.

6 Q During this period of time when you were a
7 group leader, did you do any work at all, that you can
8 recall, for the Nitro Plant?

9 A No, I don't recall that I was ever involved
10 because, generally, you see, we had a method of operation
11 that when a particular research group developed a process,
12 they stayed with it as it went into the pilot plant and went
13 into the plant for demonstration on a production level; and
14 we, I don't recall any, either myself or any member of my
15 group, ever been involved in a demonstration at Nitro. If
16 we had done work on it in the laboratory, we would have gone
17 to Nitro for the demonstration and pilot plant or production.

18 Q That was the procedure, then?

19 A That was the procedure at that time.

20 Q You don't recall ever going to Nitro for
21 that sort of thing and, therefore --

22 A No, I did not.

23 Q What was your next position with the company?

24 A Assistant Director of Research at the same
25 site.

1 Q And did that begin in about 1954 or sometime
2 during that year?

3 A Yeah. I think there was a reorganization
4 of the company at that time, and that's when it occurred.

5 Q And how long did that job last?

6 A Around three years. Until 1957.

7 Q During that job, 1954 to 1957, did you have
8 any connection with the Nitro Plant?

9 A I had charge of an oil additive group at
10 that time, and I never visited the Nitro Plant. I think
11 there was a defoaming agent made at Nitro that had been
12 developed at Dayton that was a part of the oil additive
13 activities, but we had nothing to do with that in our
14 chemistry groups in St. Louis. That was already in pro-
15 duction. It come out of our Dayton Laboratory. I don't
16 recall ever having any direct contact with the Nitro Plant
17 at that time during that particular period.

18 Q Now, as Assistant Director of Research, what
19 was your job or mission?

20 A Well, I had several groups reporting to me
21 at that time.

22 Q These would be like research groups?

23 A Several research groups, and they were
24 primarily in the oil additive section and some pharmaceuti-
25 cal intermediates at that time.

1 Q During that three-year period?

2 A During that three-year period. Things like

3 vanillin, ethyl vanillin, flavor intermediates, pharmaceutical

4 intermediates. Most of the products at Queeny Plant and

5 across the river that Monsanto had leased the Chemical

6 Warfare Plant, and at the end of the war we were producing

7 some oil additives in that plant that had formerly been used

8 for chemical warfare production.

9 Q You talking about pharmaceuticals?

10 A Yes.

11 Q What classification, if any, would 2,4,5 T

12 fall into?

13 A That would have been a pesticide and an

14 agricultural chemical.

15 Q When you were Assistant Director of Research,

16 did any of the research groups involved in the pesticide or

17 agricultural products report to you?

18 A I honestly can't recall that they did.

19 That's a long time ago, but that's my best recollection.

20 Q Were there other assistant directors of

21 research?

22 A Yes, there were.

23 Q And was this research effort divided into

24 categories, like, pharmaceuticals and pesticides and

25 agricultural?

1 A Yes, it was.

2 Q Do you recall who was the Assistant Director
3 of Research who might have been responsible for the pesti-
4 cides and organic chemicals?

5 A At some point in time -- I don't recall the
6 exact time -- a man by the name of Dr. Oliver DiGarmel
7 (phoenetic) was made Assistant Director of Research, and
8 the testing of agricultural chemicals -- we had a greenhouse
9 and so on that were developed sometime in the early '50's,
10 as I recall. He was put in charge of that effort. Now,
11 it's possible or even probable that some of the process work
12 may have been under his direction at that time too, but I
13 can't be certain of that. He might have had charge of the
14 testing and the process work might have still been in some
15 other group, but it's possible that that did report to him
16 at that time.

17 Q What was your next job?

18 A My next job, I was transferred to Dayton
19 to our Central Research facility in Dayton, Ohio, as an
20 Associate Director of Research under Earl Gresinkamp, who
21 was director of that laboratory.

22 Q And what category of substances were you
23 working with in that job?

24 A Well, I had the organic, essentially the
25 organic chemical portions of that, and the engineering and

1 process portions of the effort.

2 Q Did that involve any pesticides or agri-
3 cultural products?

4 A Well, we had primarily exploratory programs
5 at that site, and so it involved the synthesis of many types
6 of chemicals as a matter of routine course were screened as
7 pesticides, rubber chemicals, plasticizers, all kinds, you
8 know, the whole gamut, that Monsanto might have been involved
9 in. So, yes, some of those chemicals, undoubtedly a good
10 many of them, were tested. That testing was done -- ori-
11 ginally, there again, a small herbicide testing program in
12 Dayton, but when the Organic Division became actively
13 involved, that testing program was transferred to the
14 Organic Division and only as synthesis, the preparation of
15 new compounds for testing, stayed in Dayton.

16 Q And that's when you arrived on the scene in
17 Dayton?

18 A That's correct. In 1957, spring of 1957.

19 Q How long did you remain in that position?

20 A Well, until we came back to, my recollection,
21 we came back to St. Louis, another reorganization and they
22 moved the whole laboratory back to the new laboratory in
23 St. Louis. That was in 1961.

24 Q You were there for several years, then?

25 A Yes. About four and a half years, something

1 like that.

2 Q During that period of time, 1957 to 1961,
3 do you remember doing any work with the synthesis of
4 2,4,5 T?

5 A No, we wouldn't have been involved in that
6 kind of work. That's one that would have been the respon-
7 sibility of the Organic Division where I was in St. Louis,
8 or in Nitro, some other area.

9 Q You say it would have been the responsibility
10 of the Organic Division in St. Louis where you spent 1954
11 to '57? That would have been simply under another assistant
12 director of research?

13 A Yes, my best recollection.

14 Q For example, that Oliver DiGarmel?

15 A That would be my best guess as far as
16 St. Louis is concerned. Some of that work, in my recollec-
17 tion also, I think may have gone on in Nitro at the Nitro
18 laboratory. I can't be certain who the person was down
19 there, but it may well have been Wendell Metsner at that
20 time, and subsequently in late '50's Dr. George Staly would
21 have been in charge of the work at the Nitro laboratories.
22 Both those gentlemen are deceased now.

23 Q Now, as an Associate Director of Research
24 at Dayton, what was your job? Did you have groups reporting
25 to you that were involved in research?

1 A I had two groups. One under Milton Gosner
2 and one under Rudolph Schuler, who was in charge of the
3 engineering and process development function in Dayton.
4 There was a third polymer program that reported directly to
5 Gresinkamp, the director of the laboratory.

6 Q Now, during the time that you were Assistant
7 Director of Research and later as an Associate Director of
8 Research, was there a medical department at Monsanto during
9 that period of time?

10 A Yes.

11 Q Was it called the Medical Department?

12 A Yes.

13 Q And do you remember who the head of that was?

14 A Dr. Emmet Kelly was head of Monsanto's
15 Medical Department for almost since I came to the company
16 until he retired in, I don't recall exactly. Dr. Roush had
17 been brought in previous to that and then he took over as
18 Director of the Medical Department whenever Dr. Emmet Kelly
19 retired.

20 Q During the time you were Assistant Director
21 of Research and Associate Director of Research, was there a
22 corporate policy or any reporting channel you followed to
23 the Medical Department regarding any of the findings that
24 you were aware of?

25 A Well, any toxicology that was developed on

1 our products went through the Medical Department. They had
2 toxicologists and industrial hygienists there.

3 Q In the Medical Department?

4 A In the Medical Department. And that would
5 have followed through, maybe not directly through the
6 Medical Director. He would have been copied in and
7 knowledgeable about it. But Elmer Wheeler at that time
8 back in that day, I think, was our toxicologist. Jack
9 Garrett was an industrial hygienist. Those are the two
10 names I remember working with at that day.

11 Q And those two gentlemen were, of course, in
12 the Medical Department?

13 A Yes.

14 Q Now, as a Research Chemist or really as an
15 Assistant Director of a group or groups of research chemists
16 and as an Associate Director of Research, I guess, groups of
17 research chemists, how would you know that you had a toxicology
18 finding or something that would be of interest to a
19 toxicologist, that you should report it to the Medical
20 Department through appropriate channels?

21 A Well, generally from your knowledge of
22 knowing chemicals and their toxicology, you reason the
23 potential toxicology of new chemicals that you work with,
24 and in general, acute toxicities were obtained on any new
25 materials we would be involved with as a first step. If we

1 are going into a production level or something of that kind
2 along the way, there would be some chronic tests run and
3 usually, I suspect, back in that day there were probably
4 more three-month chronic tests that would be carried out on
5 products. We would work with the Medical Department. We
6 had no animal testing at Monsanto at that time. Animal
7 testing was done by outside laboratories and the Medical
8 Department would arrange for those tests.

9 Q During your course work and on-the-job
10 training at Monsanto, did that include some studies of
11 toxicology? I may be using the term loosely.

12 A Yeah. Of the nature of chemicals and their
13 effects on mammalian species, yes. In terms of our actually
14 running the tests ourselves, no, but knowledge of how they
15 were run and of their effects, we were always conscious of
16 products that we were working with in terms of their
17 potential toxicology as a chemist. And you were being
18 trained, you learned that aeromatic nitro compounds were
19 something to be careful of, and aeromatic amino compounds
20 were something to be careful with, and so this was part of
21 your general training in chemistry that you went through in
22 school and after you got out of school.

23 Q That's something you kept abreast of?

24 A That's something you had to keep abreast of.
25 You were responsible for that aspect of your own safety

1 activities, and if you had a group, you were responsible
2 for the health and safety of the group that were involved
3 when they were dealing with chemicals.

4 Q So if I understand your testimony, then, as
5 your various research people would find these toxic sub-
6 stances or toxicities that would occur, you might report
7 that, then, to the Medical Department through some channel?

8 A We would report to the Medical Department
9 on those products that we were taking beyond an initial
10 laboratory stage and ask for toxicity studies to be arranged
11 on them, it was something we were going to develop other
12 than purely making a sample and setting it on a shelf and
13 testing it. If we were going beyond that point, we would
14 get outside toxicology tests run on them. But we would not
15 every time something was synthesized in the laboratory as a
16 new material, we wouldn't routinely report that to the
17 Medical Department and say, we think this is or is not
18 toxic. It was only when it was going to go beyond an ini-
19 tial exploratory stage that we would then discuss with the
20 Medical Department.

21 Q You're familiar with a family of substances
22 generally referred to as dioxins?

23 A Yes, I am.

24 Q When did you first find out about this
25 family of substances called the dioxins?

1 A I guess, to my best recollection, it was in
2 the late '60's or early '70's when some toxicology began to
3 be reported. I think maybe the American, either one of the
4 national agencies or American Cancer Institute, or one of
5 those, had reported some toxicology on them.

6 Q Would you have learned that just through
7 your general reading in connection with your profession?

8 A Yeah, because I wasn't really connected to
9 anything with pesticides at that time. When I came back to
10 St. Louis, I became part of the New Enterprise Division and
11 was involved in completely unrelated new business sales and
12 so on in commercial development activities and so on, so I
13 would not have seen any Organic Division reports any longer
14 on the chemistry of those various kinds of things. I would
15 have picked that up from general reading of the literature,
16 technical literature.

17 Q So that family of substances would not have
18 occurred in the kinds of work that you were involved in
19 during the '50's and '60's?

20 A No. Even though I was familiar with 2,4,5 T,
21 I mean, I knew 2,4,5 T and how it was made and all that
22 kind of thing; but as I recall, those particular impurities
23 were not identified until the late '50's, '58 or '59. I
24 don't know the exact date.

25 Q When did you become aware of how 2,4,5 T was

1 made and what was in it?

2 A Well, I would have probably been aware of
3 that in the middle '40's. I think that was when 2,4 D and
4 2,4,5 T -- that's just a general time frame. I don't know
5 the exact dates. When they were tested and developed as
6 herbicides, I would have been fully aware of how they were
7 manufactured and that kind of thing.

8 Q That was during some of your course work?

9 A No. I think I would have learned that after
10 I came to Monsanto. I doubt whether -- I'm not sure 2,4 D
11 -- well, 2,4 D may have been known back at the time I was
12 in school, but I'm not sure if it was a production chemical
13 at that time. There has been a lot of work done on natural
14 hormones, the auxins, so on --

15 Q The natural dioxin?

16 A The natural auxins. These were plant
17 hormones that had been discovered, and later it was found
18 that products like 2,4 D and 2,4,5 T would mimic the
19 activity and be much more active than the natural material,
20 the auxins, so to speak. As I recall, some of the auxins
21 were indoleacetic acid was one. There was work being done
22 on a lot of testing of synthetic hormones of that kind that
23 affected plant growth, but I don't recall that those things
24 were in production before I graduated. They might have
25 been, but I don't recall that they were. I may have learned

1 about the production aspects of those after I came to
2 Monsanto.

3 Q And when did you learn that there were
4 impurities associated with the production of 2,4,5 T?

5 A I don't think I would have known that until
6 I learned the effects of dioxins, the toxic effects, because
7 I just didn't have any connection with those programs at
8 Monsanto during the '60's. I was in a completely different
9 division and we had products that had no relationship to
10 pesticides or ag chemicals.

11 Q During the period of time that you were
12 Assistant Director of Research, were you aware of any health
13 problems associated with 2,4,5 T at the Nitro Plant?

14 A I really don't recall at that time. I'm
15 sure somewhere along the line I read about an accident that
16 took place in 1948 in the company announcement, but I don't
17 recall any follow-up knowledge of that at the time.

18 Q What about during the time you were
19 Associate Director of Research?

20 A No. I made visits with several of our
21 people maybe once a year to Nitro from Dayton. We used to
22 drive down to coordinate work -- we synthesized new products
23 and they would test them at Nitro and rubber chemicals
24 primarily because none of the pesticide testing was done
25 at Nitro; so we would send materials that were new materials

1 that were a potential interest as rubber chemicals. They
2 had the Rubber Evaluation Laboratory at Nitro at that time.
3 We would go down and meet, perhaps, once a year, reviewing
4 testing data and products that we had synthesized in the
5 Dayton Laboratory to coordinate that work and see where we
6 went from there in terms of planning new programs for
7 exploratory rubber chemicals. So I went to the Nitro Plant,
8 to the Research Plant.

9 Q During 1957 to '61.

10 A '57 to '61 period. But I really wasn't
11 aware of any health problems. That wasn't a subject that
12 was of interest to us or we discussed at the time. Don't
13 recall ever being involved with that at that time.

14 Q After 1961 what did you do?

15 A Well, let's see, I was in the New Enterprise
16 Division and made Director of Evaluation and Control, which
17 was sort of a business development and new business develop-
18 ment function. I think that was around 1962 or three when
19 I changed to that role.

20 Q I'm sorry, the Director of --

21 A Director of Evaluation and Control.

22 Q What's that mean?

23 A Well, I guess that's sort of a pseudonym
24 for commercial development and budgetary control. We were
25 really trying to develop new businesses in electronics, and

1 we began to do some work in enzyme chemistry, biochemistry
2 at that time in the New Enterprise Division. It was an
3 outgrowth of the former Central Research Department which
4 was followed in with other new projects throughout the
5 company division into what was called the New Enterprise
6 Division. They decided for unrelated new products and
7 businesses they would set up a New Enterprise Division to
8 develop those, and so there were some textile projects
9 pulled out of the Textile Division and put into New Enter-
10 prise. The little bit of biochemical work we had in
11 Central Research -- we did some enzyme work in Central
12 Research in Dayton under Dr. Darlington. That was pulled
13 into this function. So we pulled a goodly number of
14 exploratory new product functions that were unrelated to
15 the existing lines of businesses into that New Enterprise
16 Division.

17 Q And that was located in St. Louis?

18 A That was located in St. Louis, although,
19 some of the research was done other places. There was
20 still some things done in Dayton related to it, there were
21 some things done at the Textiles Research Triangle in
22 North Carolina that related to that division.

23 Q Now, as Director of Evaluation and Control,
24 did you have any connection with the Nitro Plant?

25 A Nearly as I can recall, no.

1 Q How long did you remain in that job?

2 A Oh, let's see, probably until -- I'm
3 guessing -- '68 or '69. I'm a little hazy on these dates
4 because it's been quite a while ago. Then I became
5 Director of Biomedical Technology.

6 Q In '68, '69?

7 A Yeah. That's into research development
8 again. This was more of a commercial products introduction
9 and development function.

10 Q The Director of Evaluation and Control job?

11 A Right.

12 Q Then you moved into what, now?

13 A Primarily research related to biochemistry
14 and biomedical research. See, I had related experience in
15 pharmaceutical chemistry field and I had taken a minor in
16 biochemistry in school and so on, and we were increasing
17 our effort there and I moved into that.

18 Q What operating unit was that?

19 A That was part of the New Enterprise Division
20 at that time.

21 Q Was that a lateral move or advancement?

22 A It was a lateral move.

23 Q And what did that job involve? The same
24 kind of thing, just a different job?

25 A Yeah. Same kinds of things, different

1 subjects. I had several groups reporting to me and we had
2 work going on, some work in trying to develop new phar-
3 maceuticals, some work in enzyme chemistry. We carried on
4 some outside contract research with different contract
5 laboratories and so on.

6 Q Did that work involve any products or sub-
7 stances they use at the Nitro Plant?

8 A Let me see. They were so unrelated to
9 anything related to rubber chemicals or pesticides that I
10 don't -- let's see -- as you know, there were a lot of
11 materials made at Nitro. That's why I'm trying to think
12 carefully.

13 Q Yes, sir.

14 A No. Insofar as I'm aware, nothing that we
15 were doing in the biomedical field related directly to
16 anything that was going on at Nitro in pesticides. See,
17 by that time we folded everything related to pesticides or
18 to biologically active agricultural chemicals into an Agri-
19 cultural Division. That was about 1962. All of that kind
20 of research was done, then, from that point on as a part
21 of Agricultural Division.

22 Q Agricultural Division?

23 A Yes. I don't think that anything we did
24 and were involved in at that time had any relationship to
25 the Nitro Plant or the Nitro products.

1 Q And it was during this period of time when
2 you became Director of Evaluation and Control and moved
3 over to your other position that you first learned about
4 the dioxin, is that right?

5 A Yeah. It would have been in the period of
6 the late '60's, early '70's. Probably be late '60's.

7 Q Did you receive any training or information
8 from your company regarding that particular substance or
9 family, group of substances?

10 A Well, yes, I'm sure. I didn't receive
11 information, but I was aware -- I don't recall receiving
12 any direct memos on dioxin toxicity or anything at that
13 time with Monsanto; but, of course, I was aware of the
14 problems that people were raising with respect to Agent
15 Orange and I was aware at the time the company went out of
16 business of making 2,4,5 T. But other than that, I had no
17 direct relationship to the technical work that was going on
18 in that area.

19 Q At that time in the late '60's and early
20 1970's who was raising questions about Agent Orange?

21 A I just remember literature, reading litera-
22 ture about different activist groups that were concerned
23 about the spraying that was being done on the jungles and
24 people raising questions whether that was a desirable thing
25 for the populace and so on.

1 Q Again, that was part of your general reading?

2 A Part of my general reading, yes.

3 Q Was there any specific reading that came
4 from your company regarding that situation?

5 A I don't recall any. I wouldn't have been
6 probably on a list that would have seen that kind of informa-
7 tion at that time, as I recall, because I was in a completely
8 different field and different area.

9 Q Now, during this period of time when you
10 were made Assistant Director of Research and then moved on
11 up to your positions held in the late '60's and early '70's,
12 was there a corporate policy in place designed to communi-
13 cate information about toxicity and health hazards to the
14 workers in the work place?

15 A I'm trying to think when I would have become
16 -- I wasn't involved in production, of course. There were
17 always corporate policies in terms of from the time I came
18 to the company of the proper protection of operators and
19 so on in our plant. I personally was involved in many
20 transfers of chemicals technology from the laboratory into
21 a pilot plant and into internal scale production in talking
22 to operators about hazards involved in the chemicals that
23 we were making, and I have worked personally with operators
24 in the plant, say --

25 Q I didn't mean to interrupt. Was that part

1 of your job as, say, Assistant Director of Research?

2 A That was not part of my job as Assistant
3 Director of Research. I was still doing that kind of work
4 as group leader. I would go out into the plant personally
5 on demonstrations and work with operators when I was in the
6 Chemical Warfare Plant. I was actually with the operators
7 as new products was being put into production and communi-
8 cating verbally and so on the potential hazards involved
9 when operators were involved in products. I'm not quite
10 sure what your original question was. When I was aware
11 there were direct programs of communication?

12 Q I just asked if during that period of time
13 there was some policy that set up the procedure of communi-
14 cating --

15 A Well, I can't speak for our plants because
16 I wasn't in the plant. I would presume there was such a
17 policy because whenever I was involved in the plants that I
18 was involved in, there certainly was policy of both the
19 production materials and when we were there we were on new
20 materials, and we assumed some responsibility with that as
21 research people along with the production people.

22 Q So this function of communicating to the,
23 as far as you're concerned, the communicating, say, to the
24 operator, you carried that out more when you were a group
25 leader, I suppose?

1 A That's correct. When I was at the assistant
2 director level, I probably would be out on an inspection
3 for maybe an hour and I wasn't directly involved during the
4 operation. I have worked many a shift work, stayed with a
5 process through midnight and into the early shift to be sure
6 that the chemistry and everything was properly carried out
7 when the new product was going into production, and I
8 wouldn't have been involved with that at the assistant
9 director level.

10 Q As a group leader did you understand that
11 was part of your responsibility --

12 A Oh, absolutely. At that point, yes.

13 Q And how would you know what to tell these
14 people about the toxicity?

15 A Well, I would know either from the toxicity
16 that we had run ourselves in the company or from my general
17 knowledge of the structures of the materials and their
18 potential toxicities.

19 Q Were there occasions when you advised people
20 about long-term health effects?

21 A I can't cite you a specific example because
22 back in that day you didn't run long-term studies, two-year
23 studies on everything you worked with.

24 Q Yes, sir.

25 A I could cite those products that were known

1 in the literature and by structural relationships -- for
2 example, aeromatic amines, if you were making an aeromatic amine,
3 you automatically assumed that was a toxic material because
4 it caused aplastic anemia. Anilines and everything related
5 to anilines you'd have to make that same assumption and
6 would so communicate.

7 Q So, at least, from your own personal knowl-
8 edge, that kind of information would have been transferred
9 to the operator?

10 A Yes, it certainly would have been in the
11 case where I was involved on a project.

12 Q Did you have any communication with the
13 Medical Department in terms of increasing your knowledge
14 about the toxicity of the things you worked with so to
15 better inform the operator?

16 A We had regular safety meetings in which all
17 aspects of safety were discussed and reviewed with the
18 toxicity of products that Monsanto made or used in their
19 manufacture, and those were meetings that were regularly
20 carried out within the company. Monsanto was proud of --
21 I think we were second best to duPont with safety. But
22 they were proud of their record in safety, and that was
23 something that was drilled into me from the time I came
24 into the company.

25 Q So if health information or toxicity

1 information about a particular substance that Monsanto knew
2 about wasn't communicated to the workers or the supervisors
3 or the operators, would that amount to a deviation from
4 corporate policy?

5 A It certainly would have been in any opera-
6 tion I was connected with.

7 Q When you were Assistant Director of Research,
8 you had group leaders, I guess, reporting to you?

9 A Yes.

10 Q Did you instruct them along the lines that
11 you have just testified about in terms of communicating this
12 health information to workers?

13 A Yes. We had regular meetings with our
14 people, and in all those meetings the safety aspects were
15 paramount. We set up very early in Monsanto partially as
16 a result of an accident that one of my products had back in
17 the early '40's, we set up an engineering review group.
18 Before any product could be taken out of the laboratory, it
19 had to have a formal review of the hazard aspects of the
20 scale-up, taking it from the laboratory to a larger scale,
21 which included chemical toxicity, which included fire
22 safety, what could happen if it overheated, all of the
23 aspects, and before any product could be put into a pilot
24 plant for interim scale production -- Dr. Robert Howard
25 at that time was the Engineering Director and he was a

1 member of that group and then the assistant director and
2 the group leader of the project involved and then, as I
3 recall, there were a couple people from unrelated groups
4 that would be involved in that. So that was part of our
5 operating procedures in the Organic Division going back, oh,
6 not more than two or three years after I came to the company
7 back in the middle '40's and on.

8 Q That is a long-standing policy?

9 A Yes, it was. I had an accident. I blew up
10 a reaction. Fortunately, nobody was injured. In about
11 1945. I was starting up a new project and I was with
12 another chap. I went home at five o'clock. He told me,
13 well, I'll stay with it. He was an engineer. He called me
14 about six-thirty and said, you're reactor just blew up.
15 My God. Fortunately, it was about a hundred-gallon kettle
16 -- I'll tell you, that made a believer out of me. I never
17 left another reactor until it was complete from that time
18 on. Fortunately, it happened about the time that the
19 operators were out of the building. It just blew the top
20 off the kettle and sprayed stuff out around. We have had,
21 say, from experience long-time policies to review carefully
22 before we went out of the laboratory.

23 Q Now, at some time did you learn that it was
24 determined in 1957 that the dioxin was a cause of chloracne?

25 MR. LOVE: Object.

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A. No.

MR. LOVE: Object to the form of the question.

A. No.

MR. LOVE: In that you haven't laid a basis for it.

Q. You can go ahead and answer it.

A. What was the question again?

Q. Well, did you learn at some point in time that in 1957 dioxin was determined to be the cause of chloracne at the Nitro Plant?

A. I didn't learn anything about the -- I learned somewhere along the line in my general reading that dioxins had been identified in 1958 or '59, not that they were the cause of the chloracnes. I don't remember when I learned -- I learned of their toxicity in the late '60's. I don't know when it was learned that the dioxins might be the cause of chloracne. See, it wasn't unusual. The sensitivities of people to chemicals are quite a well-known phenomenon. I had the people, for example, in the laboratory that have had some sensitivity, say, to a nitrochlorobenzene. You might get a skin rash, and you took people out of connection with anything like that. You couldn't really predict what chemicals people might develop a sensitivity to if they just had some contact with them of any kind. So I

1 just don't recall at any particular point in time when I
2 knew that dioxins might cause a chloracne. I learned about
3 the toxicity of the dioxins in the late '60's. I'm not
4 aware that I knew anything about -- if I knew about chlor-
5 acne, I probably would have assumed it was trichlorophenols
6 that were the product of the reaction at the accident in
7 Nitro might have been that cause rather than dioxin because
8 I just didn't know anything about the dioxin toxicity.

9 Q According to the company policy, would the
10 causal connection between dioxin and the chloracne be the
11 kind of thing that would have been communicated?

12 MR. LOVE: Objection to the form of
13 the question again. Go ahead and answer it.

14 A Could I have it again?

15 MR. CALWELL: Read it back.

16 (Whereupon the reporter read back the
17 preceding question.)

18 A Communicated to the workers?

19 Q Yes, sir.

20 A It would be my opinion, yes.

21 Q And that question, of course, was in connec-
22 tion with our discussion about communicating toxicity and
23 health hazards to the workers that you were familiar with?

24 A Yeah.

25 Q Was it your experience in the laboratory

1 that if someone developed a sensitivity to a particular
2 substance, he was removed?

3 A Oh, immediately.

4 Q Was that person re-exposed subsequently?

5 A No. They were put in completely different
6 areas.

7 Q Why was that?

8 A Why was it?

9 Q Yes, sir.

10 A Well, you don't deliberately expose people
11 to something that's causing them physical harm.

12 Q Even if it's just a rash?

13 A Even if it's just a rash. I remember a
14 particular case when a man in our enzyme research, most
15 people aren't affected by enzyme, but there are a small
16 number of people who are. This chap got breaking out on
17 his hands, and he was taken out of that area and put in
18 another laboratory in another area and it cleared up, and
19 we never put him back on that project.

20 Q Is that some kind of a principle of hygiene
21 or something that exists in your field? I mean, how do you
22 know to do that? Where did the idea come from, if you know?

23 A Well, it's just common sense, I guess, more
24 than anything else.

25 Q Did you ever receive any instruction from

1 Monsanto in that sort of thing?

2 A Well, I guess I can't answer that because I
3 don't recall. I would have from my own knowledge known
4 that. Whether I learned that from my general knowledge of
5 the literature or whether somebody in the Medical Department
6 instructed me, I don't recall.

7 Q As an assistant --

8 A It's possible or even probable in the case
9 of the one that I'm remembering in the enzyme area that we
10 did in fact discuss this with the Medical Department and
11 probably their recommendation also was that he be taken out
12 of that. I would have done that from my own knowledge as
13 well, but I'm sure we would -- he would have gone over to
14 the Medical Department for treatment anyway, and I'm sure
15 that would have been their recommendation. That's just a
16 well-known general principle, as far as that's concerned.

17 Q Did the person that you're talking about
18 have any discretion as to whether he stayed there or moved
19 on?

20 A Did he have discretion?

21 Q Uh huh. I mean, did the company just tell
22 him, you're going over to another place?

23 A I guess, the answer was he was given the
24 opportunity, and I don't think he would want to stay where
25 his hands were breaking out.

1 Q Now, did this situation involve research
2 chemists?

3 A Yeah, it was a technical person handling
4 enzymes.

5 Q When you were a group leader, did you
6 instruct your people along those lines?

7 A You mean as far as sensitivities were con-
8 cerned?

9 Q Yes, sir.

10 A I don't recall specifically doing that, but
11 I'm sure if I had a case, I would have, yes, without ques-
12 tion.

13 Q When you became Assistant Director of Research,
14 did you instruct the group leaders that were under you along
15 the same lines?

16 A That would have been part of our general
17 safety meetings that we had.

18 Q And, I assume, that would have held true
19 when you became an associate director? You would have
20 instructed the directors and they in turn would have
21 instructed group leaders?

22 A That's correct.

23 Q To your knowledge, was that an accepted
24 corporate policy?

25 A I think that's a fair statement.

1 Q Do you know if production people were
2 covered by these same policies?

3 A From my personal knowledge, I don't know.

4 Q Do you know second-hand?

5 A Will you restate the question?

6 Q Do you know second-hand whether production
7 people in Monsanto Company who may have developed a sensi-
8 tivity are covered by the same policy of being removed and
9 never re-exposed?

10 A It would be my opinion they were. Not
11 being directly involved in production, I didn't personally
12 remove anybody from contact with the chemical.

13 Q All right. We have gotten you up to the
14 early '70's.

15 A Uh huh (yes).

16 Q What did you do next for the company?

17 A Well, I stayed in the biomedical program
18 until, I guess, about '77. Then the New Enterprise Division
19 -- another reorganization -- the New Enterprise Division
20 was kind of folded back in different areas, and I went over
21 to the Medical Department.

22 Q And what did you do in the Medical Depart-
23 ment? Did you have a title?

24 A I was called Director of Special Projects.

25 Q And what did that job entail?

1 A. Well, it involved a number of projects
2 related to mostly attempting to develop a thorough and com-
3 plete background of the personnel and health records for
4 our various production plants. We were organizing and
5 developing a complete epidemiology program for the company.

6 Q Now, when did this begin, this effort?

7 A. Well, it was under way -- some work had been
8 done over the years on an outside contract basis.

9 Q Kind of piecemeal?

10 A. We didn't have a separate department per se
11 within the company until, I guess, mid-'70's, something of
12 that kind, and we had some individuals involved in that
13 prior to my going there, but I increased it and got it going.
14 At the same time I was reaching a point where I was intending
15 to retire in a couple, three years, so I was also looking
16 for an outside man we could bring in to continue the effort.

17 Q So if I understood what you were saying
18 there, when you moved over to the Medical Department in 1977,
19 you set about kind of pulling together and getting an effort
20 under way to develop some epidemiology?

21 A. Pulling together and increasing the effort.

22 Q Towards the development of what?

23 A. Of a epidemiology function, which included
24 the computerizing of all of our plant personnel records and
25 getting data into shape so that health and environmental

1 health studies could be continued.

2 Q At the same time you had an eye towards
3 leaving the company and were looking for a fellow to take
4 over for you?

5 A Yes.

6 Q Did you find a guy to do that?

7 A Ultimately.

8 Q Who was that?

9 A Dr. Gaffey.

10 Q Did he work with you or under you prior to
11 your retirement?

12 A When he came on board, he took over that
13 effort.

14 Q When did he come on board? Just whatever
15 your recollection is.

16 A Would have been the latter part of '78 or
17 early '79, that general area.

18 Q Late '78, early '79?

19 A That's my best recollection.

20 Q So for about eighteen months or so you were
21 kind of a prime mover of this epidemiology effort?

22 A That's correct.

23 Q And was that entire function turned over to
24 Dr. Gaffey?

25 A Dr. Gaffey.

1 Q Is he an M.D. or a Ph.D.
2 A He's a Ph.D.
3 Q Did you have any specialized training in
4 epidemiology?
5 A Do I?
6 Q Yes, sir.
7 A No. Many of the techniques and the experi-
8 mental procedures, the statistical treatments and so on, are
9 very similar to those you have in a biomedical research
10 function, and so it was something that was --
11 Q It was compatible?
12 A Not foreign to my experience in terms of the
13 methodology. We had epidemiologists also that worked under
14 me.
15 Q So based on your experience in the biomed-
16 ical field and then your approximate eighteen months sojourn
17 as the mover of this epidemiology program in Monsanto, did
18 you generally become aware of the field of epidemiology?
19 A Yes.
20 Q What is the purpose of an epidemiology
21 program at Monsanto?
22 A It's to follow the effects or potential
23 effects of the work place on the health of our employees
24 over a period of time and to identify at as early a stage
25 as possible any adverse effects that might be involved.

1 Q To identify causation?

2 A You never, quote, I guess, identify causa-

3 tion. You associate efforts with chemicals. I guess a

4 true epidemiologist would never say he has an absolute

5 answer to something of that kind. Just all the more work

6 to be done.

7 Q Is it a complex multifactoral process?

8 A Like any biological research.

9 Q Is that a term of art in epidemiology?

10 A What?

11 Q Complex multifactoral process.

12 A I don't know that as a specific term. That's

13 something I just heard you say.

14 Q Have you heard epidemiologists talk about a

15 webb of causation?

16 A A webb of causation? I'm not sure I under-

17 stand what that question is about.

18 Q You haven't heard it, then?

19 A Not in that particular form.

20 MR. LOVE: Let me object to the form of

21 the question. Are you asking him if he's heard

22 a specific phrase?

23 MR. CALWELL: Yes.

24 A I don't think I've heard that specific

25 phrase, in answer to that. That's why I was hesitating

1 giving an answer. I'm not sure what you meant by it.

2 Q You become aware of the basic measurements
3 used in epidemiology during your period of time as Director
4 of Special Projects?

5 A Yes.

6 Q And was this in connection with the develop-
7 ment of the epidemiology program at Monsanto?

8 A That's correct.

9 Q Now, you have testified that you began to
10 pull together, I guess, what had been some kind of an ongoing
11 effort on behalf of Monsanto to develop some epidemiology
12 program. Could you tell me what that ongoing effort con-
13 sisted of as you found it in 1977?

14 A Yes. We had about three people involved,
15 which Judy Callan at that time was the first formal epi-
16 demologist. That function had had some work done with the
17 industrial hygienist function. They have some background
18 in epidemiology, although, they are not just trained in
19 that field, and we were beginning -- we had the intent at
20 the time to try to pull all of our plants worldwide, and
21 that's a lot of plants, as you recognize, into a common
22 system where we could get all of our back records and so on
23 on the computer so that studies of that kind could be done
24 with a reasonable amount of effort. Epidemiology is a very
25 painstaking kind of research, as you can probably appreciate.

1 It involves thousands and thousands of individual work
2 records and health records and so on, and without ultimately
3 having that kind of information completely computerized, you
4 have a mammoth job to do epidemiology on the scale that is
5 needed for a company as diverse as Monsanto.

6 Q If you know, is epidemiology the only way
7 that Monsanto has attempted to associate illnesses in the
8 workplace with certain chemicals?

9 A Oh, no. Obviously, there are many individual
10 observations made by physicians in plants and that kind of
11 thing and before formal epidemiology was instituted.

12 Q When was that, if you know?

13 A When formal epidemiology was instituted?

14 Q Yes.

15 A As a discipline?

16 Q Well, that you know. You said before.
17 What time did you understand it?

18 A Well, I guess, epidemiology has been around
19 a long time, but it really came, I guess, to the forefront
20 when Sir Richard Dahl in England first identified and corre-
21 lated the effects of cigarette smoking on lung cancer. He's
22 sort of the dean of epidemiology, and that happened, I
23 guess, in the mid-'50's, late '50's that that began to be
24 appreciated, maybe not wholly accepted, but, at least,
25 there was good methodology applied. It had been known.

1 earlier, of course, back in the early 1900's of the effects
2 of coal tar on the chimney sweeps in England, but I think
3 the coming of age of real statistical analysis and applica-
4 tion of good experimental methods and provision of adequate
5 controls and so on, probably Sir Richard Dahl was a key
6 mover in that field, to my knowledge.

7 Q Do you know when Monsanto first availed
8 itself of the principles of epidemiology?

9 A I'm trying to think back on programs we may
10 have worked on outside the company. Inside the company the
11 formal development of the function as an in-Medical Depart-
12 ment function would have been in the mid-'70's.

13 Q What about Monsanto's availing itself of
14 outside contractors, I suppose, for that function?

15 A Well, that could have been done as early as
16 in the '50's, I would guess. There was work done in pulling
17 together some medical records by outside contract people, I
18 think, as early as the '50's; but as a function within the
19 Medical Department, only a few companies had recognized
20 that as an essential function until the '60's and '70's,
21 and, I guess, it was the mid-'70's before that was set up.
22 There aren't too many companies have it internally now.
23 There are still a number of them that have to rely on out-
24 side contractors.

25 Q But as far as you know, the outside

1 contractors were available in the middle '50's?

2 A I don't know that, I really don't. That was
3 a developing function, and just when that became a function
4 you can contract for outside, I don't recall. I wasn't
5 involved in it at that time.

6 Q Aside from the evidence discipline utilized
7 to associate illnesses or diseases with substances in the
8 workplace, did Monsanto follow any other discipline or
9 course of action to make those kinds of associations at any
10 time that you're aware of?

11 A Well, of course, they have always had a
12 medical examination program on a periodic basis and usually
13 annually going back as far as I can remember.

14 Q Would that be like a plant physician pri-
15 marily involved in that?

16 A Plant physician for annual physicals and
17 that kind of thing. And I suspect the first one that I
18 would be aware of was a program on para-amino-biphenyls.

19 Q PAB's?

20 A In which that association was made with
21 people in the PAB Department.

22 Q Do you know how that association was made?

23 A Well, from the fact that those people in
24 those departments were showing up with a problem. That was
25 the association of the Medical Department and the individual

1 cases that were being exhibited.

2 Q As far as you know, that determination was
3 made more in a clinical sense as opposed to epidemiology?

4 A May have been some outside work done at that
5 time to associate to. I'm not sure specifically what was
6 done outside of the fact that a program of medical monitoring
7 and so on was begun back at that time, and all of the
8 people who had any association with PAB's were regularly
9 monitored for bladder irregularities and so on.

10 Q When you became the Director of Special
11 Projects in the Medical Department, was it necessary for
12 you to avail yourself of the history of Monsanto's efforts
13 to determine these associations between workplace exposures
14 and illness?

15 A Well, not in a normal way. We began to pull
16 together all of the personnel records and health records
17 from all of our plants and to examine them in an organized
18 way both from the point of view of the health records per se
19 and the point of view of the records of deceased personnel
20 as well because that's something of equal importance in
21 looking back is what happened to those who died, have they
22 had abnormal patterns compared to other control populations
23 and so on.

24 Q As you began this function, did that include
25 the Nitro Plant?

1 A Yes, it did.

2 (Whereupon a short recess was taken,
3 after which the following proceedings were
4 had:)

5 Q Doctor, just before we took a little break
6 you were talking about your efforts in your new job as
7 Director of Special Projects. You were beginning, I think,
8 to tell us about your efforts, including the Nitro Plant.
9 If you could continue.

10 A What question was that?

11 Q I asked you, I think, if your review of
12 these various records and so forth included the Nitro Plant,
13 and so I asked you what did in fact you do with those
14 records, what records are you talking about?

15 A Well, this is all the personnel records as
16 far back as we had them and the health records, and we were
17 getting those together to put them in the computer so we
18 could do complete epidemiological studies regarding the
19 Nitro Plant.

20 Q Now, at that point in time did you have
21 some protocol or design for the epidemiology studies that
22 you were going to do?

23 A Well, we would have a general design for
24 whole-plant studies. We had been involved in it, a corre-
25 sponding study at our Springfield Plant; and so, yes, the

1 answer to that would have been we did have an overall plant
2 design study for those kinds of efforts and it would corre-
3 late in number of departments in a given plant with the
4 people that had worked there versus controls who had not
5 worked there and so on.

6 Q So you had a whole-plant design?

7 A Which could be adapted to individual depart-
8 ment designs at any time we needed to pull out given data.
9 Wherever the data were sufficient to do that, it could be
10 adaptable either to a whole-plant study or if we had the
11 records adequately transferred to the computer, you alter-
12 natively could pull out designs that would apply to a given
13 department if you had those records complete.

14 Q Did you have more than one classification
15 of whole-plant design for this epidemiological study?

16 A I'm not sure I understand the question.

17 Q Well, did you just have one standard whole-
18 plant design for the various manufacturing plants in the
19 Monsanto Company that you simple adapted to various plants?

20 A Well, methodology that's useful for one
21 plant would be adaptable to another plant, yes. Although,
22 specifics would vary depending on the longevity of the
23 records and other things, and that varied.

24 Q You say you had a similar study ongoing at
25 Springfield?

1 A Yes. We had a whole-plant study. I don't
2 know the exact timing. I think the Springfield study was
3 further along in our program than the Nitro Plant was at
4 that time, but both plants were under study during that
5 period.

6 Q Now, at the Nitro Plant what did the method-
7 ology call for?

8 A Well, it called for both a study of the
9 deceased persons from the Nitro Plant as well as a health
10 study, health examinations of workers who were not deceased
11 and still working at the plant and those who had retired.
12 That part of the study as well as consulting on the deceased
13 study was carried out by an independent group at the Uni-
14 versity of Cincinnati under Dr. Suskind.

15 Q Now, those were the two basic areas in the
16 methodology of the Nitro undertaking, right?

17 A Yes.

18 Q The deceased persons and then a health
19 study on those presently employed and those retired?

20 A That's correct.

21 Q Now, would the information gathered per-
22 taining to those two classifications at the Nitro Plant
23 then become the raw data for your epidemiological study?

24 A That's correct. And for ongoing. See, the
25 goal was to have all of our plants with ongoing data that

1 would be kept current, then, on the computers so that we
2 would very quickly be able to spot any trends or any adverse
3 effects in the future as well as determining those which
4 might have occurred in the past that we had no knowledge of
5 at the time.

6 Q Now, with reference to the health study, I
7 assume that there were controls used?

8 A No study is worthwhile if there isn't.

9 Q Who designed the controls?

10 A The study design specifically was Dr.
11 Suskind's.

12 Q And the health study part?

13 A On the health study part. We had an input
14 in looking at his design because we were going to pay for it.
15 We could add things, but we certainly had no ability to do
16 the other way. In other words, if we wanted other tests
17 that weren't scheduled, we could add to it.

18 Q You could add to it but you couldn't take
19 it away?

20 A But there's no way we affected that study.
21 In wanting to get more complete data -- it was our advantage
22 since we were going to pay for the study to have it as com-
23 plete and definitive as possible, and that was our goal.

24 Q Now, what was -- I know this is a very
25 broad question -- but what role did you play in the bringing

1 together of this health study part that we are talking
2 about at the Nitro Plant?

3 A Well, I was the contact with Dr. Suskind in
4 arranging to have the study done, to have the tests done,
5 to pay for it, to budget for it, and to ensure that all of
6 the records that were available were made available to
7 Dr. Suskind's team, all of the past records that we had in
8 addition to the current work that he was going to do in
9 examining people.

10 Q Now, when was the decision made, if you know,
11 to implement this health study phase of this epidemiology
12 effort we have been talking about?

13 A Oh, I got to think back a little bit.
14 Probably in the last half of 1978, as I recall, to my best
15 recollection.

16 Q You know who made that decision?

17 A Well, the ultimate decision would have been
18 made by Dr. Roush, but there would have been people who had
19 to concur in it, of course, which we did. Would be the
20 Nitro Plant management who also had to make available the
21 records and the people to help with their categorizing it
22 and so on.

23 Q Do you know whose idea it was to start with?

24 A Well, the idea for the study came from the
25 Medical Department originally because we had scheduled all

1 of our plants at some point in time when we had the capa-
2 bilities to do that. We had other studies ongoing as well
3 at the time. I mentioned the Springfield Plant. There were
4 some other plants as well. So you can't do everything at
5 once. We had the Nitro Plant was one that was high on
6 priorities as well as Springfield, and we had work going on
7 for Texas City, we had work going on for some of our textile
8 plants and so on.

9 Q What was the goal of the health study?

10 A Well, the goal of the health study was to
11 determine the state of health of the current employees and
12 to attempt in that process to define if there were any
13 ongoing problems that could be traced to their work environ-
14 ment.

15 Q To create an association between their
16 health problems and the workplace?

17 A If such existed.

18 Q Who was studied at the Nitro Plant?

19 A All of the current employees, plus all of
20 the identifiable retirees, including some who were brought
21 in from Florida, as I remember. I guess, they retired in
22 other areas. So as completely as possible we tried to
23 identify everyone who's still in the plant or if they have
24 left the company but we still knew that they were in the
25 Nitro area, they would have been included too in addition to

1 retired people.

2 Q Was that all employees or just certain
3 employees at the plant at Nitro, in other words, the entire
4 work force?

5 A It was the entire -- let me think a minute.
6 Yeah, it was the entire work force.

7 Q Do you know the approximate number?

8 A If you included the retired and so on, I
9 think something in the range of thirteen to fifteen hundred
10 examinations. That's my best recollection.

11 Q So that I understand, the health study
12 aspect of this epidemiological process we have been talking
13 about at Nitro was to include all persons who had worked at
14 the Nitro Plant regardless of where in the plant they worked?

15 A That's correct.

16 Q And what time period was that to include?

17 A Well, it went back as far as we had records.
18 That is, if they had come to work in 1930, if they were
19 still at the plant, they were part of that study. And, of
20 course, the study of deceased would have included as many
21 people as could be identified regardless of where they were.

22 Q And you believe that that ultimately totaled
23 approximately thirteen hundred people?

24 A That's my best recollection.

25 Q Who decided that the Nitro study should

1 include all employees, both, I guess, present and past?

2 A Well, to do a well-controlled study it was
3 most desirable and necessary to include, if you're going to
4 be able to pick out five departments, like, a 2,4,5 T
5 department, if you wanted to look at that as a separate
6 thing, you had to have essentially all of the other employees
7 as well to have adequate controls and to have a complete
8 picture of what might be involved at that plant. The best
9 you can do is get everyone you can into the study, including
10 retirees and others who are known to be in the area.

11 Q Now, was that part of Dr. Suskind's design
12 or Monsanto's?

13 A That was part of Dr. Suskind's design but
14 concurred in and agreed by Monsanto as well.

15 Q Could you have vetoed that?

16 A Not and have him do the study. We wouldn't
17 have wanted to, but we could have. He wouldn't have done
18 the study unless it could have been done to his specifica-
19 tions.

20 Q Now, was there a control group identified
21 in connection with the health study portion?

22 A Well, as far as the whole plant was con-
23 cerned, the control group would have to be the community.

24 Q Which community?

25 A It would be the Nitro and the Charleston

1 community. Well, that would have to do with rates of
2 disease of various kinds within, say, a given county and a
3 given state which you always have to do if you're going to
4 compare a given plant. You have to compare the general
5 populace of that people in the plant as a control.

6 Q So for the whole-plant study which sought
7 to include everybody who ever worked at the Nitro Plant and,
8 of course, the limitation was where you had records, obvi-
9 ously.

10 A Yeah.

11 Q The control group was the Nitro/Kanawha
12 County area?

13 A Yeah, wherever such data is available of
14 county records or local records. Epidemiologists will often
15 use a state, they will often use national numbers, but the
16 best numbers are as close as you can get for a control
17 group, say, within a given county where other people live.

18 Q Do you know if this particular study relied
19 on Kanawha County?

20 A I can't recall that specifically. I think
21 it probably did, but I don't recall specifically. I've
22 not seen Dr. Suskind's formal results from this study. I
23 retired before he made a formal report on that study.

24 Q Now, were there other control groups
25 identified for other parts of the health study?

1 A There were control groups that were identi-
2 fied within the plant that, for example, if you were going
3 to study one department and you could identify all the
4 people in the plant who had never worked in that department,
5 they could serve as a control to compare the health status
6 for people in that department. So it's possible you could
7 use an in-plant control.

8 Q So if I understood you correctly, the study
9 had several levels. You had the whole-plant study, and the
10 control was, you believe to be, Kanawha County, for example?

11 A Uh huh (yes).

12 Q Then, apparently, there were some depart-
13 mental studies or, at least, a part of the health study
14 focused on the in-plant departments?

15 A Yes.

16 Q And for those departmental inquiries you
17 identified an in-plant control?

18 A That's correct.

19 Q And the in-plant control group would have
20 been those workers identified as having not been in the
21 particular department you were studying?

22 A That would be the procedure, yes.

23 Q Now, if you recall, which departments of
24 the Nitro Plant were studied or focused on?

25 A Well, certainly one of the departments that

1 would be most closely focused on would be 2,4,5 T because
2 of the concern on the part of a number of groups with the
3 potential effects of the impurities, dioxins, in those
4 departments.

5 Q In connection with the 2,4,5 T Department
6 study, that was done, what were the parts of the study?

7 A You mean as far as Suskind's health study?

8 Q Yeah. Right now we are talking about health
9 aspects of this epidemiological effort that Monsanto began
10 to undertake in 1977.

11 A Well, to the degree that I am knowledgeable
12 about the results of the study, all of the people that we
13 could identify from personnel records that had had an
14 association with the 2,4,5 T Department and its precursor,
15 trichlorophenols -- I forgot the numbers of those depart-
16 ments -- and in the laboratories, whoever had analyzed them
17 in the control laboratories and where there was any connec-
18 tion in their personnel records with that department along
19 the way over some twenty years until the department was shut
20 down, that would have been one, say, departmental group
21 associated with 2,4,5 T production.

22 Q Let me ask you about that. Would people
23 who were identified as maintenance people have been included
24 in the departmental classification of those exposed to
25 2,4,5 T?

1 A My recollection is to the extent -- you see,
2 some of them were general. They weren't specifically
3 assigned to that department, and wherever there was a ques-
4 tion about it, they would have been included, assumed they
5 did work in that department. I don't recall exact numbers
6 of maintenance people, but where there was knowledge of
7 supervisors or of the people themselves, if during their
8 examination they were asked that question, "well, you were
9 a maintenance person, did you ever spend any time in that
10 department," they would have been included as a part of
11 the exposed group. There is a gray area in some of the
12 maintenance people because if they didn't remember that
13 they had worked there or didn't show up as being assigned
14 to that department at some point, they might be overlooked,
15 but I'm sure they were asked that question as part of
16 methodology if they were maintenance people.

17 Q So the general maintenance were not included
18 unless there was some indication from their personnel
19 records or unless the guy would show up and say, listen,
20 I worked in there?

21 A That's my recollection of the way it was
22 handled. That's a specific detail, but I think that's the
23 way it was handled.

24 Q So that gave you the departmental people
25 to find in terms of this health study?

1 A Uh huh (yes).

2 Q Now, who was the control group for that
3 departmental group?

4 A The control group would have been all of the
5 other people who worked in the plant over that period of
6 years if we were talking about the deceased study or --

7 Q We are talking about the live study now.

8 A We are talking about the live study, all
9 the people that were now still in the plant currently and
10 who had retired but were still alive and could be identified.

11 Q Now, what time period was the 2,4,5 T
12 departmental study concerned with?

13 A I can tell you not exact dates because I'm
14 not exactly sure when 2,4,5 T started up. I think, as I
15 recall, a specific accident occurred in 1948. Then that
16 would have been from that point -- the department might have
17 been going for a year or so before that. I'm not sure
18 exactly when that department started up, but I think it
19 was shut down in '69.

20 Q So to your recollection the time period of
21 the 2,4,5 T department study was about 1948 or '49 through,
22 say, 1969?

23 A That's my best recollection.

24 Q Now, was the control group similarly iden-
25 tified in that time period?

1 A No. The control group would have been all
2 of those who were still in the plant who had worked at that
3 time period plus those -- now, my recollection is a little
4 bit hazy here -- I think it included those people who had
5 come to work after '69 who were still a part of the plant.
6 In other words, they are exposed to everything else in the
7 plant but they were never exposed to 2,4,5 T, obviously,
8 it's been shut down and torn down by that time, but they
9 would still be included in the control group because we
10 wanted as many controls as we could get. The bigger the
11 control, the better for comparative purposes. It's my
12 recollection that it included both the people who had
13 worked at some time during that twenty years and were still
14 there but had never had any association, as best we could
15 determine from their personnel records, or if there were
16 questions, I mean, individuals were questioned at the time
17 of the exam too, plus the people who had come to work after
18 the exposure period in 2,4,5 T and also were never exposed
19 to 2,4,5 T but they would have been of use potentially for
20 other departments in the plant ultimately as far as
21 epidemiology was concerned. So what you tried to do with
22 the 2,4,5 T Department study was to identify those who had
23 some connection with 2,4,5 T and use as a control everybody
24 else in the plant that you could reasonably identify who
25 was not exposed and who was retired and we could contact.

1 Q Do you have a recollection as to the number
2 of people in the control group?

3 A Well, I am a little bit hazy here, but my
4 recollection would be of the order of magnitude of three
5 hundred, perhaps, that were associated with 2,4,5 T, and
6 the rest of the thirteen hundred, make eight hundred to a
7 thousand -- don't hold me to those numbers because I just
8 don't remember the exact ones -- eight hundred to a thous-
9 and may be control group. Maybe three times the controls
10 that we had that were associated with 2,4,5 T Department.

11 Q Do you know why the county wasn't used as
12 a control group?

13 A Well, the best control group that you can
14 have are other people as closely similar to the people
15 that you're studying and go out from there. In other words,
16 if you have a large enough group for a control, the in-plant
17 controls would presumably come from similar ethnic back-
18 grounds and personal habits and all the rest of the things
19 that might affect health who are associates of these people
20 but who did not have an association with that given depart-
21 ment or chemicals involved would be the best control you
22 could have. Now, there often are limitations in numbers,
23 and that's one of the reasons we wanted as many as possible.
24 That's why we tried to examine everybody in the plant.
25 Then the next best control group is a group from the area

1 or the county who then have some differences because some
2 of them may work at duPont and be exposed to something else
3 or heavy drinkers or maybe any number of reasons why they
4 have different personal habits, different ethnic backgrounds,
5 what have you, that would affect a general kind of health
6 study. After that you go to state figures and after that
7 you go to national figures. But other things being equal,
8 the best groups you can have are those that work in the
9 same general environment but not specifically exposed to
10 the products that you want to look at, but you do all of
11 them generally if the data are available.

12 Q Were you able to define the physical
13 parameters of exposure to 2,4,5 T during the departmental
14 studies?

15 MR. LOVE: I don't understand your
16 question.

17 A You'll have to define that for me.

18 Q Would you define a physical location of
19 where a person would have to have been in order to have
20 been exposed to 2,4,5 T within the Nitro Plant during the
21 time period '48 to 1969?

22 A Yeah, the most precise physical location,
23 of course, would be the departments themselves.

24 Q Which would be the building?

25 A The buildings that those departments were

1 located in, the laboratory area where samples were analyzed,
2 for, say, analytical people who were analyzing samples.
3 Obviously, you can't say that a mechanic might have gotten
4 some on his shoe and walked out of there into an alley and
5 might have spread a little bit in the alley. There are no
6 ways to completely define that. You define this as best
7 you're able to from the departments that are involved.

8 Q So as far as you know, the definition for
9 physical location for the 2,4,5 T departmental study or
10 included the buildings where the process was carried on
11 and the laboratory?

12 A Yes.

13 Q Where it might have been tested?

14 A Yes.

15 Q Any warehouses on site where it might have
16 been stored?

17 A That's correct.

18 Q Any building that was associated?

19 A Any immediate adjacent areas -- as you know,
20 there was an accident in '48, and immediately adjacent area
21 in terms of the alleyway and so on from that building,
22 there was some fogging out of material there and there were
23 people either going through or from that department at the
24 time who were affected. Those are included in such studies
25 where they were known to be close to that department at the

1 time or they came down, they had some skin eruption as a
2 result of it, so on, during the accident period.

3 Q What about people who would have worked in
4 the adjacent areas during the production time period of
5 '48 to '69?

6 A There's no way -- are you suggesting an
7 operator might come over and visit with another operator,
8 something of that kind?

9 Q If I understood what you said earlier, in
10 '48 this autoclave failed and spewed some material all over
11 the place and there is some indication that, perhaps, got
12 into an area, perhaps, outside the immediate building.

13 A In the alleyway.

14 Q In the alleyway. If I understand your
15 testimony, you were able to identify people who might have
16 gotten in that alleyway on cleanup crew, or whatever, and
17 included them in the 2,4,5 T --

18 A Where there were records or they so indi-
19 cated it was true.

20 Q My follow-up question was, there was adjacent
21 buildings where other processes were carried on. Were the
22 people in those buildings adjacent to the ongoing 2,4,5 T
23 process in Building 91, were they included in the 2,4,5 T
24 departmental study?

25 A Probably only if they indicated they had

1 some effects from that accident. If they said, "well, I
2 was standing in the building down there and I had a little
3 skin rash," and they recorded same, yes, they would have
4 been included. We have no other way to identify who would
5 have been involved other than in that case they themselves
6 made some statement to that effect either because they
7 reported their rash to the Medical Department or to the
8 nurse at the plant or they so indicated at the time of
9 their physical examination when it was carried out.

10 Q Was any inquiry made about those people in
11 adjacent areas who were there during the normal production
12 of 2,4,5 T?

13 A I don't know. I don't think I can answer
14 that. Say that question again.

15 Q 2,4,5 T was produced about a twenty-year
16 period at the plant?

17 A That's correct.

18 Q There was an isolated incident in 1949, and
19 you, apparently, made specific inquiry about people who
20 might have been exposed there?

21 A Yes.

22 Q Now, there was the ongoing production of
23 2,4,5 T. Was any inquiry made of people who had worked in
24 adjacent areas to the ongoing production process of 2,4,5 T?

25 A Unless it showed up in the personnel records,

1 which it would not, or unless they volunteered the informa-
2 tion at the time of the medical exam, I don't think they
3 would have been included. In other words, I don't think a
4 routine questioning was done of all the people outside of
5 the medical examination even when they were examined.

6 Q But you were specific on the 1949 incident
7 to try to get all those people?

8 A Yes. You can't do a perfect job of identi-
9 fying people's locations thirty years after the facts, so,
10 yes, we can't say one hundred percent that we got every
11 single individual. We made every attempt to do that, but
12 you have to work within the limitations of the situation.

13 Q Am I correct, then, in understanding that
14 a basic assumption that was made on the 2,4,5 T departmental
15 study was that unless you were associated in that department
16 by the criteria we have just talked about or unless you
17 made some specific complaint to those doing the examina-
18 tions, you were considered not to have been exposed to
19 2,4,5 T?

20 A Unless you answered in the negative at the
21 time of the examination. As I recall, I think people were
22 asked when they took their examination, did they have any
23 association with that department as a part of the other
24 studies in which they were involved; and if they didn't
25 say they had and if we didn't have them listed in the

1 personnel from those departments or the laboratories that
2 analyzed them or the warehouse, what have you, they would
3 not have been included.

4 Q Were air studies looked for or consulted
5 in reaching the decision to make the assumption that expo-
6 sures did not occur outside the 2,4,5 T Department?

7 A No. Those studies weren't being done
8 routinely at that time in any industrial operations that
9 I'm aware of.

10 Q Would that have been something that you
11 would have consulted had they existed?

12 A If the data had been available, we certainly
13 would have looked for it, sure.

14 Q Was any investigation made as to the
15 handling of the dust from the 2,4,5 T process building?

16 A At what period of time? During this study?

17 Q What I'm talking about is the way you set
18 up the controls and parameters of the 2,4,5 T Department
19 study.

20 A Well, I guess I have to tell you I don't
21 know, but since routine studies of air and dust, other
22 than in immediate reaction areas were used to make routine
23 studies of solvent compounds and so on in the reactors;
24 but in terms of the general plant environment,
25 routine studies of air and dust weren't available at that

1 time, they weren't carried out in that day. So the answer
2 would be we wouldn't have any data at that time available.

3 Q Do you know if it was looked for?

4 A I'm sure we looked for every bit of data
5 we could find. But that's only a statement that we tried
6 to find every piece of data affecting that plant that we
7 could find, analytical and otherwise; and it's my opinion
8 that very little data would have been available related to
9 the air concentrations. That wasn't a routine operation
10 in those days. It's possible. You might have to query
11 somebody from the plant. It's possible there might have
12 been some later studies near the end of the time when the
13 plant was finally shut down that were made of dust, but I
14 don't know if there were any or not. It's my guess there
15 may not have been any available.

16 Q If the members of your control group were
17 exposed to concentrations of 2,4,5 T dust, would that have
18 affected the validity of the control group.

19 A If that exposure had been substantial, it
20 could have.

21 Q Did you determine any exposure criteria for
22 the 2,4,5 T departmental study?

23 A No, because there's no data available on
24 specific levels of exposure.

25 Q Did you consult any or ask for or see any

1 laboratory tests or results of 2,4,5 T products during the
2 1949-69 period for levels of dioxin?

3 A Let me have the question again.

4 MR. CALWELL: Strike that question.

5 Q Let me do this. You testified that you did
6 not establish any exposure criteria for the 2,4,5 T itself?

7 A That's correct, because there were no data
8 available.

9 Q What were the substances that you were
10 looking for in the 2,4,5 T departmental study of exposure?

11 MR. LOVE: Substances?

12 MR. CALWELL: Yeah.

13 Q Were you just looking for 2,4,5 T product
14 exposure?

15 A We were looking for people who had worked
16 in 2,4,5 T Department and related areas which we could find
17 where any effects on health might be apparent from a study of
18 deceased and a study of people who were currently employed
19 or retired from a physical examination and health study.

20 Q Did you consider dioxin levels in the
21 2,4,5 T?

22 A We do not have any data available on dioxin
23 levels.

24 Q During the period '49 to '69?

25 A I can't say specifically there were not any

1 in the last year or so. I don't know. I'm not sure at
2 what point in time there would have been an analytical
3 method for dioxins. There probably was a dioxin specifica-
4 tion somewhere in the '60's, but I don't recall the specific
5 time that that might have been the case.

6 Q Did you look for records of dioxin levels
7 in the 2,4,5 T product at Nitro in connection with this
8 study?

9 A Yes. People did look at those records as
10 part of the study.

11 Q Do you know who did that?

12 A I can't tell you specifically who did that.
13 It's probably the analytical people at Nitro that made the
14 data available.

15 Q Who would they have made it available to?

16 A Let me think a minute. I guess, I don't
17 know.

18 Q Now, aside from the 2,4,5 T departmental
19 study, were there other departmental studies carried on
20 with connection with the whole-plant study?

21 A I'm not sure at that time what had been
22 done by Suskind other than 2,4,5 T at this point. I didn't
23 see his final result. He would have been looking at other
24 areas, I'm sure, but I don't know what results might have
25 come forth from his analysis.

1 Q Do you know what areas he would have been
2 looking at?

3 A Well, I'm sure there would have been data
4 that would have come up from the PAB Department. They
5 certainly would show up in a disease study and in a health
6 study where anyone has had a bladder problem. Probably
7 other rubber chemicals, probably mercaptobenzothiazole.

8 Q Is that MBT?

9 A Uh huh (yes).

10 Q Anything else?

11 A Those are the ones I would recall most
12 closely. I just don't recall any others that might have
13 been potential candidates to examine for.

14 Q Now, we have talked about the 2,4,5 T
15 departmental study and how you went about identifying the
16 members of the 2,4,5 T Department and the control group and
17 so on. Was the same process carried out for MBT?

18 A I don't know that it was.

19 Q Again, I am just talking about the live --

20 A I don't know that it wasn't either. I just
21 don't recall.

22 Q What about PAB?

23 A That may have been apparent from Suskind's
24 data. Whether he analyzed that data for the other depart-
25 ments I'm not sure because I haven't seen his other report.

1 The data would be available to do so because from personnel
2 records we can tie back to people that were there.

3 Q You just don't know?

4 A I don't know. His primary purpose was the
5 2,4,5 T Department and dioxin.

6 Q And why was that?

7 A Well, he had been involved years ago as a
8 referral physician for a number of the more severe cases of
9 skin eruptions from that accident, which I think you're
10 well aware of, and he had followed for many years -- he got
11 into public health and was the Director of Public Health
12 at the University of Cincinnati -- other activities related
13 to dioxin and similar kinds of materials, and he was intently
14 interested in following up the long-range effects of some
15 of these things. I think NIOSH had also been requesting
16 what he might know about further cases of dioxin effects
17 over a long period of time. So he had an interest as part
18 of his professional life to define any long-term effects
19 that might be resulting from association with dioxin,
20 2,4,5 T.

21 Q In the course of your duties as a Director
22 of Special Projects, right?

23 A Uh huh (yes).

24 Q Did you have occasion to review Suskind's
25 earlier reports and studies on the Nitro Plant?

1 A Yes. Those reports and studies were in
2 personnel medical records at Nitro and in the Medical
3 Department.

4 Q Were those reports and studies, to your
5 knowledge, in each of the medical personnel files of the
6 examined employees, is that where you found them?

7 A I don't recall whether they were part of
8 the personnel files or personnel and medical files. I just
9 don't recall.

10 Q You don't know whether these studies were
11 actually in the medical files or not?

12 A Well, I looked at both personnel and medical
13 files, and they were in one or both. I don't recall whether
14 they were in both or in medical files and not in personnel.
15 I just don't recall that.

16 Q I'm going to hand you what has been previously
17 marked Plaintiff's Deposition Exhibit #3 and ask you if you
18 can identify that.

19 (Whereupon a short recess was taken,
20 after which the following proceedings were had.)

21 Q Doctor, you have had an opportunity to look
22 at Plaintiff's Deposition Exhibit #3, have you not?

23 A Yes.

24 Q Do you recognize that document?

25 A Yes.

1 Q And what is it?

2 A It's a report of follow-up cases on the

3 Nitro Plant in 1953 that Suskind was asked to make after he

4 had been called in as consultant.

5 Q And you have seen that before?

6 A I've seen it before.

7 Q And where did you see that document?

8 A I saw this document in the Monsanto medical

9 file in St. Louis. As I recall, that's where I first saw it.

10 Q Was that document in the individual medical

11 records files of the affected individuals involved in that

12 study?

13 A This whole document?

14 Q Yes.

15 A I don't recall that the whole document --

16 Q Was a part of that in there?

17 A Well, reports on individuals would have

18 been found in the personnel or medical files at Nitro, I

19 mean, reports on those individuals that are mentioned in

20 there, yes. Those reports were separately in the files

21 down at Nitro.

22 Q Now, are you referring to parts of that

23 report?

24 A It would be part of the report about indi-

25 viduals because I first, as I recall, I first saw some

1 individual reports of individual's treatments that were
2 related prior to a complete, this complete study, as such.
3 That's my best recollection. In other words, those names
4 were familiar to me before I ever saw this report as being
5 some of the more severely affected people at the Nitro Plant.
6 And those that were sent for further consultation with
7 Suskind.

8 Q Are you saying that your recollection is
9 that there were summaries of Plaintiff's Deposition Exhibit
10 #3 pertaining to each individual identified in Exhibit 3
11 in the individual medical files?

12 A To the best of my recollection, those
13 individuals who had follow-up treatment that were referred
14 to here were in the medical files, and whatever treatment
15 was done locally who may not have been referred to Suskind
16 originally because only the more severe ones -- a number of
17 them were treated by physicians in the Kanawha Valley. I
18 don't remember the names of the physicians, but there were
19 two or three of them. Those records of all the people,
20 including the ones that Suskind is referring to, the more
21 severe cases that he was involved in, were in either medical
22 or personnel files or both, and I don't recall specifically
23 which.

24 Q Were those reports that you're referring to
25 reports by Dr. Suskind that you saw in those files?

1 A Where he was involved in examining the
2 individuals, yes.

3 Q For example, in Plaintiff's Exhibit #3 there
4 are some thirty-six people identified by name and there are
5 test results contained in the exhibit and results of exami-
6 nations. Did you see medical reports by Dr. Suskind con-
7 taining this information in each of the individual's medical
8 files?

9 A I can't tell you that I saw every one of
10 those in every individual file because I don't remember.

11 Q Did you see any of them?

12 A But I saw a number of those names and
13 recognize a number of those names from the results that I
14 picked up in the files down at Nitro before I saw this
15 report.

16 Q But there were papers in there by Dr. Suskind
17 in those individual files, that's what I'm trying to get at.

18 A I don't recall whether they were summaries
19 of his results or whether they have his signature at the
20 bottom. If you're asking that, I don't recall.

21 Q You don't know that there were any papers
22 in there by Suskind of summaries of Suskind's results?

23 A I don't know which.

24 Q But there were some things about --

25 A But the results were there in terms of the

1 examinations of Suskind. Whether they were summaries trans-
2 ferred from a signed report of his, I don't recall. I
3 really can't recall.

4 Q And where did you see those files?

5 A That would have been at Nitro originally,
6 and then we had all of those files reproduced and they were
7 -- we had copies in St. Louis in the Medical Department.
8 That's a horrendous volume of stuff, if you can remember.
9 Also, they were available to Suskind, copies were sent to
10 Suskind, is my recollection of it.

11 Q Was that on microfilm or hard copy?

12 A I think -- we would have liked to have done
13 it on microfilm. We had hard copy in St. Louis, and I
14 don't recall if we sent hard copy or microfilm to Suskind.

15 Q Let me hand you what's been marked Plaintiff's
16 Deposition Exhibit 2.

17 MR. LOVE: This appears to be a
18 thirteen-page document. The last page ends
19 in an incomplete sentence. I would suggest,
20 perhaps, the document's not complete.

21 MR. CALWELL: May not be.

22 A The summary's not finished. They didn't
23 finish the summary.

24 Q Okay. Doctor, have you seen Exhibit 2
25 before?

1 A Yes, I've seen this exhibit.

2 Q And is that likewise a Dr. Suskind report?

3 A It looks like a follow-up of Dr. Suskind's
4 report, but it doesn't say anywhere that it is.

5 Q And you have seen that before, right?

6 A Yes, I have.

7 Q And was that report -- where did you see
8 that report?

9 A This probably was in our files in St. Louis,
10 but I think I first saw it in Nitro in the files down there,
11 this particular one.

12 Q Would that have been in the individual
13 medical files or in some other file at Nitro?

14 A It may have been in a special file of all
15 the records from an accident. I'm not certain -- I don't
16 think the whole report would have been in any one medical
17 file, but I think I saw this first at Nitro.

18 Q And when would that have been?

19 A When we started the study, what did I say
20 -- probably late '78 or early '79.

21 Q When you undertook this new job?

22 A We didn't really get the Nitro study
23 started for, you know, a few months to a year after I got
24 the new job, so I think it would have been in '78 sometime.

25 Q All right. Doctor, now, going back to the

1 overall epidemiological study that you were trying to put
2 together for Monsanto as Director of Special Projects, we
3 have just talked about the health study aspect on the live
4 and retired people at the Nitro Plant. I would like to ask
5 you now about the aspect of that study that had to do with
6 the deceased employees or ex-employees of the Monsanto
7 Company. As I understand it, that was the second arm of
8 this two --

9 A Yeah, that was completed, of course, before
10 the other was completed because the data were available.

11 Q Who performed that study?

12 A Well, the protocol was developed by us and
13 discussed and approved by Dr. Suskind, and the actual
14 details of gathering the data and so on, again, were done
15 by us; but the review of the data and the statistical
16 treatment and the conclusions were jointly developed by
17 Dr. Suskind and Judy Zack at that time.

18 Q Was that what we would call the mortality
19 study?

20 A That was a mortality study. I believe that
21 was published, as I remember.

22 Q And that was Zack and Suskind. Now, can you
23 tell me what the design of that study was, what did you rely
24 on?

25 A Well, we relied on the data that were

1 available from plant records of deceased people.

2 Q What records would that have been?

3 A Well, that would have been personnel records.

4 Q And the medical records?

5 A And medical records.

6 Q Anything else?

7 A And, of course, every death certificate is
8 run down from wherever they come from. If the people are
9 moved from the area and we know where they died, we go to
10 whatever area of the country they died in, from the county.
11 Those are public records, deceased records. And so that
12 would have included all of the people that were deceased
13 over the time period involved.

14 Q Do you know if there was a comparison made
15 between the medical personnel records and the death certi-
16 ficates in arriving at the cause of death?

17 A The answer to that is no because the cause
18 of death is certified by someone outside of Monsanto who
19 has presumably no access to our in-house medical records.
20 I mean, if they died at home, or wherever they died, it
21 would only be happenstance if the physician was the same as
22 our plant physician. So the actual cause of death would be
23 reported by the person's physician and so recorded on the
24 death certificate.

25 Q So in terms of the cause of death, as far as

1 you know, you relied exclusively on the cause listed on the
2 death certificate?

3 A Always have to do that. That's the only
4 cause that's available unless somebody dies in our plant and
5 our plant physician determines he was overcome or asphyxiated
6 or something else. Any cause of death outside of the plant
7 area would be arrived at by the individual physician
8 involved.

9 Q And so this aspect of the study did you
10 likewise try to identify everyone who was ever employed at
11 the plant who died?

12 A That's correct.

13 Q And were you able to determine what degree
14 of success that effort --

15 A Well, it was pretty high degree of success,
16 but I can't give you an exact number. You usually are not
17 happy with any kind of epidemiology study unless you can get
18 at least ninety percent of the people that you know that are
19 dead that you can identify and where they died and get their
20 death certificate. If you ask me the exact number, I don't
21 recall. Judy Zack maybe can remember, but I don't recall
22 the exact number.

23 Q What was the control group?

24 A Well, there again, the control group would
25 have been similar to what we described on the other health

1 study. It would have been in-plant people, and then you
2 always do local, state and national if the numbers are
3 available for a given deceased category.

4 Q And did you do that in this case?

5 A Yes, I'm pretty certain we did. I haven't
6 seen the paper for four years, but if the data were avail-
7 able, I think they would have all been utilized.

8 Q Now, aside from the Suskind-Zack mortality
9 study and the health study, were there any other studies
10 performed on the Nitro population in connection with this
11 epidemiological undertaking?

12 A Yes. I'm aware of Irving Selikoff. Whether
13 he did that at their instigation or what the connection was
14 as part of the union activities. He carried out a less
15 complete study. He did it outside the plant and people vol-
16 unteered for the study. He did it outside the plant and
17 people volunteered for the study. They weren't given time
18 off per se to go to the study, but he did it on weekends
19 and I don't know when. I know a doctor by the name of
20 Moses involved on his staff in that. I called him several
21 times after he completed his study wondering if he had data
22 or if he was going to have any data to supply because it
23 could have been helpful in the study we had under way. We
24 gave him lists of people at the plant and lists of people
25 who worked in that department, as I recall. He had

1 asked for that list. I don't know whether he published
2 anything or not.

3 Q Did you give him the same lists that you
4 had?

5 A No, because we hadn't completed everything
6 I gave him. We gave him lists of people that worked in that
7 department. I don't think he had the list of everyone that
8 worked in the plant. I'm not sure --

9 Q I don't mean to interrupt, but on the
10 2,4,5 T Departmental study that we just talked about, did
11 you provide Dr. Selikoff with a list of the people that you
12 identified as being in the 2,4,5 T Department?

13 A My recollection I did, yeah.

14 Q And that list, as I recall, even included
15 those general maintenance people that there was some indi-
16 cation that worked there?

17 A I don't recall exactly whether it would
18 have been included. I assume it would. There was not an
19 exact time correlation between when he asked for information
20 and we had all the information together. I couldn't tell
21 you precisely that he had every single piece of data we had
22 available for our study. I don't know that. We had no
23 control over that study. We did not see the protocol in
24 advance to what degree it was going to be properly controlled
25 and anything else about it.

1 Q In addition to the Selikoff study, are there
2 any others that you're aware of?

3 A During that general time period at the Nitro
4 Plant?

5 Q Yes, sir.

6 A No, I don't think I'm aware of any others in
7 that general time frame. You're referring to the mortality
8 studies or health studies or both?

9 Q Both.

10 A I don't recall that there were that related
11 to the Nitro Plant.

12 Q In connection with your work as Director of
13 Special Projects, did you learn that 2,4,5 T produced at
14 Nitro from 1949 to 1969 had a contaminant associated with
15 it called 2,3,7,8 tetrachlorodibenzo-para-dioxin?

16 A Yeah.

17 Q And when did you learn that?

18 A To the best of my knowledge, it probably was
19 not until toxicity data began to be published and somebody
20 would tie that back into all the producers of 2,4,5 T.
21 My best recollection would be in the late '60's, early '70's.
22 See, at that time I had no connection with that plant and
23 I would have gotten that from general reading, and I would
24 have concluded that from my general reading 2,4,5 T, if it
25 has small traces of it, that Monsanto probably had it too.

1 Q When you say the late '60's, early '70's,
2 is that when Monsanto knew?

3 A I can't speak for Monsanto at that point.
4 I can speak for myself and that I knew from what was being
5 published when the toxicology data was published and tied
6 into potential impurities and various industrial products,
7 including 2,4,5 T. I think that's the first connection I
8 would have had any knowledge of at that point.

9 Q Personally?

10 A Yes.

11 Q During your work as Director of Special
12 Projects, were you able to determine if Monsanto knew
13 during the 1979, '77, '78 period when you were Director of
14 Special Projects, that its 2,4,5 T carried with it a con-
15 taminant called 2,3,7,8 TCDD?

16 A I don't recall that I knew specifically
17 when they knew. I don't know that I ever asked that ques-
18 tion or saw anything that would have specifically told me
19 that. I would presume they knew as soon as I knew because
20 it was reported in the literature and had people that were
21 involved directly in this kind of thing.

22 Q And you knew in the late '60's, right?

23 A That's my recollection that that's the
24 first time I knew that that happened, when the toxicology
25 came out. It wasn't a field I was connected with at that

1 time.

2 MR. CALWELL: It's ten after twelve.

3 Do you want to break to get a sandwich?

4 MR. LOVE: That's fine.

5 (Whereupon the lunch recess was taken,
6 after which the following proceedings were had.)

7 Q Okay. Doctor, let me hand you what's been
8 marked Plaintiff's Exhibit #252 (Monsanto's I.D. #8323313
9 through 8323315, inclusive), and ask you to just take a
10 glance at that, if you would, please.

11 Okay. Doctor, you have had an opportunity to look
12 at Exhibit 252, have you not?

13 A Uh huh (yes).

14 Q And do you recognize that as a Monsanto
15 Company document?

16 A Yes.

17 Q And it's dated August 20th, 1979, and signed
18 by P. J. Holzapfel, and you're indicated as a person who was
19 present at a Nitro Health Study Task Force?

20 A Yes.

21 Q You were a member of the Nitro Health Study
22 Task Force?

23 A Yes.

24 Q And when did you become a member of that?

25 A I don't recall exactly when it was set up,

1 but I was a member when it was set up.

2 Q You were a charter member, right?

3 A Yes.

4 Q Do you understand or know why the Nitro
5 Health Study Task Force was brought into existence?

6 A Yeah. We wanted support and we wanted a
7 forum which we could expedite the studies that were going on
8 at Nitro. Holzapfel was production chief. We had to have
9 budgetary support for the plant as well as from the Medical
10 Department, and this was a task force that was set up to
11 help achieve that expediting those studies as rapidly as
12 possible at Nitro.

13 Q Do you know whether D. R. Bishop is a
14 member of that task force?

15 A He's a guy from Public Relations.

16 Q Do you know why a Public Relations man --

17 A Well, we had environmental, Clayton Callis
18 was Head of Environmental Work at the company, Holzapfel
19 was Director of Production for the operation that included
20 the Nitro Plant, Phocion Park, Barney Wander, he was from
21 Environmental Work. Phocion Park was our Environmental
22 Counsel from the Medical Department.

23 Q Do you know why it was necessary to expedite
24 these health studies that you referred to?

25 A Because we wanted to get the information as

1 rapidly as possible.

2 Q And why was that?

3 A So we would have a basis to determine
4 whether we had any exposures and any problems at the Nitro
5 Plant with the health of our people.

6 Q Do you know why it was decided in 1979 that
7 you needed to get this information very quickly?

8 A No more so than the fact that there was a
9 lot of concern about 2,4,5 T and dioxin both from the point
10 of view of the Vietnam veterans as well as various plants,
11 and NIOSH was concerned about it as well. We had one of
12 the original long-term groups that had been exposed. I
13 think ours was the first accident that had been reported
14 back in '48 and would have had probably the most representa-
15 tive group to determine long-term effects of any group that
16 could be chosen.

17 Q Do you know how long Monsanto knew that it
18 had one of those very first groups involved in such an
19 exposure?

20 A I guess, as soon as the people realized
21 that dioxin could be involved.

22 Q And that would have been, as far as you
23 know, in the early '60's?

24 A Late '60's, as far as I know personally.
25 Because at the time it happened nobody knew what was really

1 involved.

2 Q Do you know why you waited until 1979 to
3 get to the heart of the matter, find out why?

4 A I have no way to respond to that. The
5 toxicities of the materials weren't known until the early
6 '70's. We have a lot of employees, lot of plants, and we
7 were trying to get to a lot of projects all at the same time
8 for the company, and why this was done in '79 I can't tell
9 you.

10 Q How do you know that the toxicities weren't
11 known until the early '70's?

12 A I said my knowledge of it was the late '60's
13 or early '70's.

14 Q You don't know when Monsanto would have
15 become aware of it?

16 A I don't know that they became aware of it
17 before that. I can't answer that.

18 Q In your work on the Nitro Health Study Task
19 Force did you find out when Monsanto --

20 A No, I'm not aware if that was discussed in
21 any of the Task Force meetings, I don't remember.

22 Q Okay. Do you know who I might ask for the
23 answer to the question of when Monsanto knew about dioxin
24 and its toxicity?

25 A I would presume, some member of the Medical

1 Department.

2 Q Which member would that be?

3 A Let's see who's still there. The head of
4 the toxicology group, George Levinskas, might be the person
5 who's most knowledgeable about that.

6 Q Do you know how long he's been with the
7 company?

8 A He came sometime before I was in the Medical
9 Department. I guess, ten years.

10 Q Did you ever ask anybody about this dioxin
11 in the Medical Department? Did you ever ask them what was
12 going on with it?

13 A I didn't have to ask anybody about what was
14 going on.

15 Q Why didn't you have to?

16 A Because of what I knew from the literature
17 myself. At that point in time when I got to the Medical
18 Department, I was well familiar with the published toxicology
19 and so on as far as dioxin was concerned.

20 Q Could you tell me what you know about the
21 toxicity of dioxin in humans?

22 A Tell you what I know?

23 Q Yes.

24 A Well, in the first place, it's a family of
25 materials and they vary in toxicity. The toxicity in

1 animals is quite pronounced, particularly in small animals,
2 mice, rats, and so on.

3 Q From your reading of the literature do you
4 know when that was determined?

5 A I think I said the latter part of the '60's
6 would have been the first time that I would have been
7 familiar with that. That's my best recollection.

8 Q What about the studies that you read or the
9 literature that you're referring to?

10 A That came from the late '60's. That would
11 have been a general awareness from published literature.

12 Q Have you read anything about the effects of
13 2,3,7,8 TCDD on the human body?

14 A Yes.

15 Q What have you read?

16 A I've read some of the things that you gave
17 me to look at in terms of Suskind's work. I'm aware of the
18 studies having to do with Seveso and the fact that a number
19 of transient, relative transient effects have been observed,
20 including chloracne, which is a known phenomenon that was
21 not limited to dioxins. I was aware of chloracne having to
22 do at an early time with some of the chlorinated naphthalenes,
23 that there were transient effects related to muscular weak-
24 ness and so on from Suskind's study, that any additional
25 studies that had been done concerning the Seveso incident

1 had not shown any long-term toxicology effects in human
2 beings, and quite fortunately, I should add, because had the
3 toxicity been similar to what was observed in the small
4 animals, might have been many more effects showed up than
5 anything I was aware of or am aware of.

6 Q Do you know anything else about the effects
7 of dioxin on the human body -- when I say dioxin, I mean
8 2,3,7,8 TCDD.

9 A Yeah. No, other than the small animal
10 studies and the published studies and the work we have from
11 Suskind internally and Seveso. I am familiar with a recent
12 study that was reported out of England having to do with
13 some effects on the chromosomes. Other than that, I haven't
14 read anything recently about human effects. That was an
15 uncontrolled study which was cited as being significant,
16 but the investigator himself denied that significance, that
17 it was not anything that he could associate with dioxin.
18 It was a political football, I guess, was one of the state-
19 ments made about it.

20 Q While serving on the Nitro Health Study
21 Task Force, did you determine that any other product at
22 Nitro had the capability of producing one of the dioxin
23 isomers?

24 A I'm trying to think what else was produced
25 at Nitro. If there was, I don't recall.

1 Q Would you look at paragraph two of Exhibit
2 252, paragraph references to some suggested changes by
3 Dr. Suskind and the draft of Monsanto mortality study, do
4 you see that?

5 A Yeah.

6 Q Do you have a recollection as to what that
7 is about?

8 A There were minor wording differences, and
9 I think I was involved in that over the telephone to do
10 the final polishing. No differences in conclusion.

11 Q Do you recall what the minor wording was?

12 A I don't. I really don't know specifically
13 what the wording was. It was not of substance. It was the
14 way in which something was stated.

15 Q And the paragraph goes on to say that
16 Dr. Gaffey and possibly other DVEH personnel will visit
17 Suskind during the week of August 20th to resolve these
18 differences. Do you know if that meeting took place?

19 A I don't remember. I really don't. It's
20 just been too long ago.

21 Q So you wouldn't remember whether you were
22 there or not, right?

23 A No, I don't remember whether I was there.
24 If a meeting took place, it's possible I could have been,
25 but I don't remember.

1 Q Okay. If you'll turn to paragraph seven
2 of Exhibit 252. Do you know what Dr. Gaffey is referring
3 to there regarding the relative youth of the control group
4 making comparison difficult?

5 A I guess I have to speculate on what he is
6 referring to. My speculation would be that we mentioned
7 earlier that both people at the Nitro Plant since the plant
8 had been closed down and the people before from 1948 to '69
9 were there and that's quite a few, and I don't recall the
10 percentage, but quite a few of the control group were rela-
11 tively recent in the plant, say, in the last ten years.
12 In other words, the age of the workforce may have been
13 referred to there. That's probably what he's referring to.

14 Q Do you remember that as being a subject of
15 the criteria that you were establishing when you were
16 putting the design of these studies together?

17 A Yes. But you correct for age, when you're
18 comparing a given group, you correct for average age with
19 the sample of people that you're going to compare them with
20 on both the controls, and otherwise your results are meaning-
21 less because if you have an aged population versus a
22 younger population, they are always going to show up higher
23 percentage of cancers, and you have to correct for the
24 average age level of the population. There are ways to
25 deal with this, and if you don't deal with it -- much data

1 has come out with NIOSH and some of the government agencies
2 that's not corrected for that and the data is meaningless
3 without that kind of a correction.

4 Q I assume, then, from your testimony that
5 some correction was made to control for this discrepancy?

6 A That's routinely in any epidemiology study
7 that will withstand the jury of your peers, if you will.
8 If you don't adjust them for differences in age between the
9 groups, the data doesn't mean anything.

10 Q You testified earlier that depending on the
11 amount of dust that may or may not have been present at the
12 Nitro Plant from the 2,4,5 T process would have had some
13 effect or could have had some effect on the validity of the
14 control group, and now there is this indication about the
15 use of the control group that you had to control for. Were
16 there any other problems that you had to control for with
17 the control group as constituted from the Nitro work popu-
18 lation.

19 A I don't know of any unusual problems.

20 Q What were the usual ones?

21 A Well, we have mentioned those.

22 Q Were there any others?

23 A Of the limitations of work records and this
24 kind of thing.

25 Q And the youth?

1 A Yeah. No, I don't know of any others at
2 this point in time, I don't remember any others. See,
3 after the accident there was a good deal of tightening up
4 in a lot of areas in the way in which products were handled.
5 I have no way to know to what degree dust outside the
6 department may have been a problem.

7 Q Were you aware of a lawsuit that was filed
8 by the John Amos Nursery against Monsanto alleging that a
9 nursery where they grow trees had been damaged by escaping
10 dust from the Nitro 2,4,5 T production unit in the '60's?

11 A No, I'm not aware of that. I never heard
12 of it.

13 Q Let me hand you what's been marked as
14 Plaintiff's Deposition Exhibit #253 (Monsanto's I.D.
15 #8323245 through 8323248, inclusive). I am interested in
16 paragraph E on page three, Doctor. If you want to read
17 the whole thing, Doctor, certainly do it.

18 A Yeah.

19 Q Okay. Doctor, again, this is a Monsanto
20 document, is it not?

21 A Uh huh (yes).

22 Q And you recognize its form?

23 A Yes.

24 Q It's dated July 20th, 1979, and authored by
25 Dan R. Bishop?

1 A Uh huh (yes).

2 Q And appears to reflect the minutes of a
3 July 20th, 1979, meeting of the task force, is that correct?

4 A Yes.

5 Q And you're indicated as having been present
6 at that meeting?

7 A Yes.

8 Q Paragraph E on page three of that exhibit
9 makes reference to a meeting that you had with Dr. Suskind
10 in Cincinnati on July 17th, I presume, 1979. Do you recall
11 that meeting?

12 A Yes.

13 Q What was Suskind's role in the mortality
14 study that's referred to there?

15 A His role was to review our original protocol,
16 and he didn't need to ask to be a co-author because he was
17 automatically included as a co-author and that he reviewed
18 the summaries of data of study statistics and the conclu-
19 sion and the report and his name was included on the paper
20 that was published as a result of it.

21 Q Did Judy Zack design the protocol for the
22 mortality study?

23 A Primarily. I had some input, Dr. Roush
24 had some input, Suskind had some input, and that's essen-
25 tially it.

1 Q I believe you testified earlier that this
2 mortality study, of course, relied on the causes of death
3 indicated in the death certificates?

4 A Yeah.

5 Q And I believe you testified also that you
6 referred to other medical records in addition to the death
7 certificate. What was the purpose of looking at the other
8 medical records?

9 A The purpose of looking at the other medical
10 records was to define the sample because in order to deter-
11 mine who was in a given department versus people in other
12 departments in the plant as a whole, other medical records
13 were useful purpose in doing that. In some cases you might
14 not have all the data on a record, yet at some point in time
15 you'd find on a medical record that someone had had chlor-
16 acne, so from that record they could be included. No single
17 source is by itself the only source of data you have to use
18 when you're going back some thirty, forty years to try to
19 put together information.

20 Q Was the mortality study, then, a 2,4,5 T
21 Department study?

22 A And a total plant study. As I recall, I
23 think that was intended to be both.

24 Q If that's the case, would the same control
25 groups apply that we talked about in connection with the

1 health study?

2 A Yeah. We talked about if we were going to
3 do the 2,4,5 T study, your best sample would be the in-plant
4 study. If you're going to do a whole-plant study, then you
5 would use a control group that was outside of the plant,
6 namely, the area or the county or the state or the U. S.
7 numbers, and where they are available they usually use both
8 county and U. S. figures.

9 Q And as far as you know, that's what was
10 done in this particular mortality study?

11 A In what was published, I haven't reviewed
12 what was published. It may have been that this particular
13 study -- I don't recall whether this particular publication
14 gave the results from both the local plant study or the
15 2,4,5 T study. This particular publication may have pulled
16 out the 2,4,5 T results.

17 Q And if it did, the control group would have
18 been the in-plant people -- what I mean is, did it pull out
19 just the 2,4,5 T Department study, as far as you know?

20 A It may have used both. Since I don't have
21 it in front of me, it may have used both. I'm a little bit
22 unclear as to whether all the controls were used in each
23 study or whether they may have used the county or United
24 States figures on that.

25 Q Okay. This document I'm handing you,

1 Doctor, is Exhibit 254 (Monsanto's I.D. #231728 through
2 231737, inclusive), and again, do you recognize that as a
3 Monsanto document, recognize its form?

4 A Yes.

5 Q And it appears to be dated July 17th, 1979,
6 and is a memo over Jack P. Garrett's signature to George
7 Roush, and you're shown on the distribution list?

8 A Yes.

9 Q Do you recall receiving this document with
10 the attachments?

11 A Yes. I'm sure I did.

12 Q All right.

13 A I was aware of this information already,
14 but I did receive this and I'm sure I glanced at it.

15 Q If you would turn to page, I guess, it's
16 slide no. 6 and it's page seven of the exhibit.

17 A Uh huh (yes).

18 Q It's a reproduction of a slide captioned
19 "Carcinogenic Properties of TCDD"?

20 A Uh huh (yes).

21 Q We talked earlier about the policy of com-
22 municating health information to employees at Monsanto, if
23 you'll recall.

24 A Uh huh (yes).

25 Q Is the information contained there on page

1 seven of Exhibit 254 the kind of information that would be
2 communicated to production people, for example, at a manu-
3 facturing facility like the Nitro Plant?

4 A I can't give you an answer to that. I can
5 give you an opinion.

6 Q Okay.

7 A That that information wouldn't mean anything
8 to anybody unless there was a great deal of added explana-
9 tions and so on that went with it. A production man would
10 look at that and wouldn't know what it meant.

11 Q Would it be Monsanto's policy to make the
12 explanation and share this with the worker?

13 A I think they would share it in a general
14 way. The general information that in animals there were
15 tumors caused by these products.

16 Q Do you know if employees at the Nitro Plant
17 were ever told of the carcinogenic properties of TCDD?

18 A From my own personal knowledge, I don't
19 know.

20 Q Do you know who would know?

21 A I presume somebody in the Production
22 Department.

23 Q Who would be responsible, if you know, for
24 seeing to it that knowledge about the carcinogenic proper-
25 ties of TCDD are communicated to the affected workforce?

1 A Well, the ultimate responsibility would be
2 with the plant manager, I presume, and the vehicle by which
3 such information would be transmitted would be through the
4 industrial hygienist and the department supervisors in a
5 plant. Now, specifically, I don't know how such was handled
6 at a given plant such as Nitro.

7 Q Would it be your understanding that that's
8 Monsanto's policy?

9 A To inform employees about the toxic nature?

10 Q Through the plant manager.

11 A That would be one way to do it. They also
12 have plant newsletters by which such information is trans-
13 mitted as well. There may be other means, departmental
14 means or whatever, but there might be any one or a number
15 of them; but officially that kind of information would be
16 the ultimate responsibility of a plant manager and through
17 various supervisory groups, including industrial hygienists.

18 Q If you know, whose responsibility would it
19 be to inform the plant manager?

20 A Well, that would come from the Medical
21 Department and the Environmental Manager for that particular
22 division in the plant, one or both.

23 Q As far as you know, is that one of the
24 responsibilities of the Medical Department?

25 A To communicate toxicology information to all

1 the segments of the company?

2 Q Yes.

3 A Yes.

4 Q Is there a form that Monsanto relies on for
5 the transmittal of that information?

6 A There are many forms. I'm not sure specifi-
7 cally which one might be --

8 Q Well, tell me the ones you know about.

9 A Well, there are a whole variety of forms.
10 There is labeling information that has toxicology data in it.
11 There are various reports that come out of the Medical
12 Department on almost a monthly basis on results of toxicology
13 studies, and where those apply to a given plant, they
14 will be communicated to those people. To isolate just one
15 piece of paper and say we always use this as a means to
16 communicate, I can't tell you there is a specific piece of
17 paper to do that.

18 Q I don't mean to interrupt, Doctor, but you
19 said there's some kind of report that appears with some
20 regularity.

21 A On strictly toxicology?

22 Q Yes.

23 A No. There is a monthly report that all
24 departments in the company will issue, and the Medical
25 Department will go to key figures in the department.

1 Q How would you identify that?

2 A I guess a departmental monthly report.

3 Q Have you heard of a document called Materials

4 Safety Health Data Sheet?

5 A Yeah. That's one of the many forms that I

6 mentioned that has to go with labeling, the labeling informa-

7 tion that goes onto products.

8 Q Do you know where the Materials Data Sheet

9 goes that emanates from the Medical Department, do you know

10 where it ends up?

11 A Well, several people have inputs into them.

12 They relate to the Environmental Health Directors of the

13 operating units and of the industrial hygienists in the

14 plant, Medical Department will have a member that helps

15 put that together. As I recall, when I left, they were

16 actually issued by the Medical Department but many people

17 contributed to them in terms of what data might be available

18 to go into them. The industrial hygienist would have infor-

19 mation from the plant. The toxicologist would have data

20 from toxicology laboratory, either internal or externally.

21 The chemical data would come from a research leader. The

22 background data on the literature on the toxicology would

23 come probably from the Environmental Health Officer for

24 that product or for that department. So there were a number

25 of people that contributed to them. As many products as we

1 had, it was a continuing process of updating them because
2 as more toxicology is obtained, both in-house and from the
3 literature and various government laboratories, you have to
4 keep updating that information all the time to make it
5 current.

6 Q Would dioxin be the subject of a Materials
7 Safety Data Sheet?

8 A Well, whether it would be the subject per se
9 I'm not sure because it's not a product per se. It's
10 possible that someone might have put a report in that form
11 for dioxin, but I just don't recall.

12 Q Are these Material Data Sheets or Safety
13 Data Sheets, are they made available to production super-
14 visors or people out in the plant?

15 A It's my understanding they are.

16 Q Is that just part of the regular distribu-
17 tion?

18 A I believe that's true, but that's my
19 opinion.

20 Q If you'll look at page eight of that exhibit
21 which is designated slide no. 7, I believe.

22 A Yeah.

23 Q It is, again, a reproduction of a slide?

24 A Uh huh (yes).

25 Q That's captioned "Symptoms of Toxicity of

1 TCDD in Man"?

2 A Yes.

3 Q Is this the kind of information that would
4 be transmitted to workers in an effective production unit
5 regarding TCDD?

6 A I would have to state an opinion that it
7 would be.

8 Q And do you know what form this kind of
9 information would take in the context of Monsanto's opera-
10 tion?

11 A No. It would have to be one of the communi-
12 cations in a plant of some type, and I don't know specifically
13 what would have been used for that type of information.

14 Q And would this type of information come
15 from the Medical Department initially?

16 A The initial data would come from the Medical
17 Department, yes.

18 Q And in the normal course of events it would
19 find its way to the plant manager?

20 A Yes, that would be a normal way. He would
21 be aware of it. It might have been transmitted to an indus-
22 trial hygienist in which the plant manager was copied in
23 and so on, but he should be aware of it.

24 Q So it wouldn't be unusual, it would be the
25 normal thing to expect when Monsanto became aware of these

1 symptoms of toxicity of TCDD in man to have this information
2 transmitted, then, to the appropriate production level and
3 disseminated to the worker?

4 A I guess I don't know how to answer that.
5 I guess it would be a normal thing.

6 Q And that, of course, is based on your years
7 of experience with Monsanto? Like you say, you're really
8 giving your opinion based on your experience more than any-
9 thing else?

10 A That's right.

11 Q You don't know, as a matter of fact, whether
12 the information contained on page eight of Exhibit 254 was
13 in fact disseminated to the workers at Nitro, do you?

14 A No.

15 MR. LOVE: Can you specify the time
16 period you're talking about.

17 Q Anytime during the period of time that you
18 were employed by Monsanto.

19 A What's the question refer to? You said I
20 didn't --

21 Q As a matter of fact, you didn't know?

22 A No.

23 Q Mr. Love wanted to know what time period we
24 were talking about.

25 A No.

1 Q At least for the time you worked there you,
2 as a matter of fact, don't know that it was, is that right?

3 A Right, because this is a statement after the
4 fact. Statements of toxicity of TCDD. Well, these symptoms
5 were being observed. Nobody knew what TCDD was.

6 Q How do you know that?

7 A Well, because at the time that Suskind
8 reported these results from people at Nitro, nobody knew
9 there was such a thing as TCDD, nobody knew what it was
10 that could cause these kinds of symptoms. So when they are
11 saying here symptoms of toxicity of TCDD in humans, that's
12 an inferential thing, that's an assumption that it was TCDD, and
13 it was specifically unknown at the time it was causing these
14 kinds of effects. That's all I'm saying.

15 Q Are you talking about 1953?

16 A I'm talking about 1953. Nobody knew there
17 was a TCDD in the first place, that some chemical involved
18 in those departments, whether it was the products or raw
19 materials or what, if these were being caused there was
20 something there, but no one knew what it was. They are
21 labeled after the fact. That it was TCDD, that's an assump-
22 tion.

23 Q But these symptoms were known to Monsanto
24 in 1953?

25 A Oh, yes. Yes.

1 Q And Monsanto knew there was at least a
2 temporal association with 2,4,5 T and these symptoms, is
3 that correct?

4 A That's correct.

5 Q And in keeping with Monsanto's policy, then,
6 workers who were exposed to 2,4,5 T and exhibited the
7 symptoms listed on page eight of Exhibit 254 would neces-
8 sarily, then, have been removed from further exposure to
9 2,4,5 T, isn't that correct?

10 A Would necessarily have been removed?

11 Q As would the laboratory technician who had
12 the rash that you talked earlier.

13 A Not necessarily. That was a large eruption
14 of materials. It was not known at that time whether under
15 operating conditions that any of these things would be
16 formed. There were people that had very high exposures
17 because of an accident that happened in the plant.

18 Q But in keeping with Monsanto's --

19 MR. LOVE: Let him finish.

20 A Up until that accident none of this had
21 come about and they had been exposed before that period of
22 time to the degree that the department had been operated
23 successfully.

24 Q Monsanto knew that some or all of these
25 symptoms listed on page eight of 254 were present in workers

1 exposed after the 1949 explosion engaged in just the pro-
2 duction of 2,4,5 T, did it not?

3 A I think that's the case, yes.

4 Q Were these workers when they began to
5 exhibit --

6 MR. LOVE: Excuse me. Was your ques-
7 tion directed to those exposed in the autoclave
8 incident?

9 MR. CALWELL: No. Afterwards. In the
10 production.

11 MR. LOVE: In normal production after
12 the autoclave incident?

13 MR. CALWELL: Yeah.

14 A I guess you have to repeat the question.
15 You said after the accident.

16 Q As a matter of fact, Monsanto knew that
17 there were workers at the Nitro Plant who had not been
18 exposed --

19 A Who had these symptoms.

20 Q Some or all of them?

21 A Some or all of them.

22 Q Who had not been exposed to the 1949 auto-
23 clave incident?

24 A I'm not sure I can make that statement
25 because no one knows what was formed at that point in time

1 in and around the accident in the buildings that necessarily
2 would say that that operation if it was continued under
3 proper conditions would cause any of these things.

4 Q I understand. My question is that Monsanto
5 simply knew that people working in the 2,4,5 T production
6 who were not exposed in 1949 exhibited some or all the
7 symptoms listed on page eight?

8 A No, I can't say that they did.

9 Q Not even with reference to chloracne?

10 A Chloracne, I would say that's a true state-
11 ment because there were occasional cases of chloracne that
12 occurred after the accident, yes.

13 Q And in keeping with Monsanto's --

14 A But I can't say that about any of these
15 other things because it just isn't available.

16 Q At least that you know about?

17 A Yes.

18 Q In keeping with Monsanto's policy, do you
19 know if these workers who exhibited chloracne were removed
20 from further exposure to 2,4,5 T?

21 A I don't know what the policy was at Nitro
22 at that time. It's my opinion that there was an optional,
23 I believe I remember there was an optional situation with
24 respect to workers in that department; and that's what I
25 remember hearing, that there was an option to people whether

1 they wanted to work in that department after the accident.
2 People were very upset, as you can well imagine, in forty-
3 eight hours when you have that many people exposed and they
4 get chloracne. I don't know exactly how the plant did
5 handle that, in answer to the question, but I know there
6 was an optional situation whether people wanted to go back
7 in the department or not.

8 Q In your work on the Nitro Health Task Force
9 I believe you testified that you learned in at least the
10 late '60's or early '70's that dioxin was suspected as
11 being the cause of at least the chloracne.

12 A Yeah.

13 Q And these other symptoms listed on page
14 eight?

15 A Yeah.

16 Q Do you know if that was communicated to the
17 affected workers who over the years had exhibited chloracne?

18 A That was after the plant was shut down and
19 the workers were dispersed in other areas. I don't know the
20 answer to that.

21 Q Are you saying because the workers were
22 dispersed, you couldn't have gotten to them to tell them?

23 A No. I'm saying I don't know. I just com-
24 mented that the workers by that time, the department was
25 shut down and the equipment dismantled, and I just don't

1 know whether that was communicated to them. Some of these
2 situations I recognize as things that came out as a result
3 of studies from the Seveso thing which happened after the
4 dioxins were known and some similar types of temporal activi-
5 ties that were being reported.

6 Q Which of those do you recognize as coming
7 from the Seveso?

8 A The fatigue --

9 Q Let me make sure I understand what you're
10 saying. These are symptoms that you recognize as resulting
11 from the Seveso incident in Italy --

12 A That were reported.

13 Q And not symptoms that were reported in
14 Nitro?

15 A No, I didn't say that.

16 Q Okay.

17 A I said by that time you had had two situa-
18 tions where you had had a similar type of accident and had
19 some of these same symptoms. That tends to reinforce that
20 people are making the assumption that the dioxins were
21 implicated in some of these things in the earlier accident.
22 The fact that from Seveso I recognized several of these
23 conditions from there would tend to support the inference
24 that it was TCDD that would be involved as of the time that
25 data was reported.

1 Q All right. So fatigue was one of those?

2 A Yeah. Fatigue in addition to the chloracne.

3 Q What else?

4 A Easy fatigability, those are two that are

5 very close. I think I recognize the loss of libido from

6 the Seveso thing as well. Those were the only two I'm sure

7 of.

8 Q All right, sir.

9 A It's been about, I guess, four or five years

10 since I saw the results of Seveso too.

11 Q Let me hand you, if I can hand that one

12 back, hand you Exhibit 255 (Monsanto's I.D. #8323234 and

13 8323235), and ask you to take a look at that.

14 Paragraph B of Exhibit 255 makes reference to,

15 apparently, some disagreement over some data that's going

16 to be released. What are they talking about there, that

17 data?

18 A Well, that's a result of the -- those were

19 the results of the mortality study.

20 Q Excuse me, Doctor. We forgot to do this.

21 This does appear to be a Monsanto document to you, is that

22 true?

23 A Yes.

24 Q Dated July 16th, '79?

25 A Yes.

1 Q And is the minutes of the Nitro Health Study
2 Task Force, apparently, prepared by Dan R. Bishop. Now, you
3 were about to say that paragraph B was referring to the
4 mortality study.

5 A I'm trying to look at the date and see
6 whether that's mortality or health study. Yes, it's the
7 mortality study.

8 Q Do you know what the reason for the urgency
9 was there to get this information released?

10 A I guess primarily to alleviate concern and
11 to get data out for people to know the results that people
12 at Nitro were well aware over a period of time that we were
13 doing all the personnel and the health study, even prior to
14 the time we had the physical examinations done, and we
15 wanted to alleviate those concerns with the data as soon as
16 it was available.

17 Q Do you understand what Mr. Bishop is talking
18 about there in the last sentence of paragraph B where it
19 says, "We feel it could compromise his credibility and his
20 independence -- extremely important aspects of our overall
21 strategy"?

22 A You're talking strictly about Bishop's
23 opinion. There was never any idea that Suskind was going
24 to issue a joint release with Monsanto as a news release.
25 As a technical publication subject to review of his peers

1 and so on, yes, but that's strictly a statement that Bishop
2 made without knowing anything about the situation.

3 Q Do you know what the overall strategy was
4 that's referred to there?

5 A Well, that merely says that we wanted the
6 data that we were putting together and health studies to be
7 as independent as they could possibly be so Monsanto could
8 not be accused of biasing the data that was done. In other
9 words, it had been our intent from the beginning to have
10 Suskind propose this study, develop the criteria for it.
11 All we did was pay for it. We had no control once that
12 study was decided upon. Like I say, we made suggestions of
13 additional things for completeness, but in no way were you
14 influencing what Suskind wanted to do relative to the health
15 examination, nor would we have had any influence over what
16 he was willing to sign his name jointly with us as a party
17 of the development of the protocol and the analysis of data
18 on the mortality study. So Bishop may have felt without
19 knowing what the situation was when he made a statement
20 like that, issue a joint news release. There was never any
21 idea that Suskind would join Monsanto in the news release
22 regardless of the facts that were involved. That would have
23 been strictly Monsanto's province as to what use they can
24 make of the technical study with relationship to informing
25 their employees so they could alleviate concerns on the part

1 of the employees that they are all being exposed to eleven
2 different kinds of cancer when you have data that says what
3 it says, they are or they aren't; so that's what's involved
4 in regard to this paragraph. The overall strategy was just
5 that. Our overall strategy was we wanted an independent
6 study to be made and conducted that Monsanto would not be
7 in a position of being said we biased the study.

8 Q The fact is on the mortality study it was
9 Judy Zack's study, wasn't it?

10 A No.

11 Q She did it, didn't she?

12 A She did the details. Suskind doesn't have
13 people to go down and get the records. We put all the
14 records together, they jointly developed the protocol.
15 When the data was there, she summarized it and went over
16 the data with him carefully from a statistical point of view.
17 Any conclusions for publication, that went into the publi-
18 cation, had Suskind's complete approval. That was a joint
19 effort in terms of -- you can hire a kid to go out and put
20 all the data together, but the conclusions and the analysis
21 of the data and the protocol for the study in which it's
22 put together so it will withstand a statistical, careful
23 statistical analysis, are the important things in epidemiology
24 studies, and that was all done with Suskind's knowledge and
25 approval before anything was published.

1 Q Has the Nitro health study on the live and
2 retired people been completed?

3 A I guess I have to say --

4 Q Was it completed at the time you retired,
5 as far as you know?

6 A The phase of the actual examinations and
7 the collection of the raw data was complete at the time I
8 retired.

9 Q Do you know if there were any conclusions
10 drawn from that phase of it?

11 A You can't really draw a definitive conclu-
12 sion until you get all the data summarized and analyzed and
13 so on.

14 Q Were there preliminary conclusions reached?

15 A I can tell you hearsay.

16 Q Fine.

17 A That Suskind's people were of the opinion
18 that what they found was chloracne and some residual effects
19 of chloracne and nothing else.

20 Q What are residual effects of chloracne?

21 A There was a certain amount of scarring.
22 If you notice a kid with juvenile acne, they leave a certain
23 amount of skin lesions and so on. That was the only thing
24 at the time that was reported in general. That really is
25 meaningless because until all the data is analyzed, you

1 can't draw conclusions from a study of that.

2 Q What was the source of that information?

3 A It came from somebody in Suskind's camp.
4 I don't know who. It might have been some of the people
5 working with him.

6 Q Was it written?

7 A No, I don't know that it was written. I
8 think that was a verbal conclusion. We were curious our-
9 selves, you know, "well, what did you find." He said that
10 he hadn't gotten all the data together but it doesn't look
11 like there is anything that stares you right in the face.
12 Now, as I say, that's a very preliminary conclusion. I
13 don't want to attach anything more to it because that's not
14 the fact of the study. That's just an off-the-top-of-the-
15 head kind of comment.

16 Q Looking at paragraph G, page two, there is a
17 reference made to Phil Interline.

18 A Yes.

19 Q Can you tell me who he is?

20 A Dr. Interline is a very well-known epidemio-
21 logist who used to be with the government. I forgot
22 whether it was with National Institute of Health, but he's
23 been a very well-respected and very well-known at the
24 University of Pittsburgh Public School of Health. He was
25 one of our consultants since we were just getting our feet

1 wet and beginning to build up our capabilities in epidemi-
2 ology. We used the best talents we could find. We had him
3 in about once a month to review our protocol and to criti-
4 cize what we were doing. We sometimes are critical of the
5 way the government agencies do things. We want to be damn
6 sure we had the best people available to critique our own
7 things so we weren't accused of doing the same things.

8 Q How did you get Dr. Interline's name?

9 A Dr. Roush knew him from earlier things.

10 Q Are they contemporaries age-wise?

11 A Probably.

12 Q How old is Dr. Roush?

13 A I could think back and reconstruct it, but
14 offhand I don't know.

15 Q All right, Doctor. Let me have that one
16 back. I'm going to hand you Exhibit 256 (Monsanto's
17 I.D. #8323217 through 8323219, inclusive), and ask you to
18 take a look at that.

19 A Okay.

20 Q Doctor, can you identify that document for
21 the record, please.

22 A Yes.

23 Q Is it a July 9th, 1979, memorandum prepared
24 by you?

25 A As it says on the front, that was part of a

1 DMEH monthly report that I prepared for the department.

2 Q If you'll look at paragraph no. 1 on page
3 two of the exhibit, the next-to-the-last sentence refers to
4 120 people involved in the 1949 accident and over 150 people
5 in the subsequent 1949 to '69 period developed chloracne,
6 including some with additional symptoms.

7 A Uh huh (yes).

8 Q Of the 150 people you wrote about that
9 developed chloracne in the subsequent '49 to '69 period,
10 subsequent to the explosion, what additional symptoms did
11 you know about?

12 A I don't remember which of the other symptoms
13 might have been involved there.

14 Q If I would hand you Exhibit 254 and ask you
15 to look at page eight of that exhibit, would that refresh
16 your recollection?

17 A No, I wouldn't be able to pick out any
18 single one of those because it was probably based upon some
19 statement that was in the health file and might have been
20 somebody reporting into the department easy fatigability or
21 something. I don't remember specifically which ones were
22 involved. I can't with any accuracy pinpoint that.

23 Q Do you know if any of the 150 people
24 involved in the 1949 and 1969 subsequent period were removed
25 from further exposure to 2,4,5 T as a result of the chemical

1 rash they developed?

2 A I don't know from direct memory whether that
3 was the case or not.

4 Q That would have been in keeping with Monsanto
5 policy, would it not?

6 A Some of them may well have been, depending
7 how severe they were and whether it was a problem ongoing
8 with them.

9 Q And sticking with Monsanto's policy, they
10 would have been notified of that option, right?

11 A Yes, I think it was their policy that work
12 in that department was optional.

13 Q And the reason why?

14 A I have to assume that. I don't know. I
15 wasn't involved in the contact.

16 Q Now, if you'll look at paragraph three of
17 page two, the last sentence -- and would you correct me if
18 I'm wrong -- "Thus, the Monsanto population exposed up to
19 thirty years previously to dioxin became of significant
20 worldwide interest in attempting to answer questions about
21 the long-term health effects, if any, of dioxin exposure."
22 I assume the population referred to in that paragraph is the
23 population exposed in the 1949 explosion, is that right?

24 A That would have been the longest, yes, but
25 some will be twenty, some ten. If you're going to develop

1 any carcinogenic effects from a chemical, the usual number
2 people talk about is ten to thirty years. That's a spread.
3 I think PAB's may have shown up in ten years or less, some
4 of them possibly longer, but that's why the statement was
5 made. That was the first accident that happened and we
6 thought it indeed would be of considerable scientific
7 interest to have data on that subject.

8 Q Now, from the period 1949 when the first
9 of these men were examined for this problem up until the
10 Suskind studies of the late '70's and early '80's, I suppose,
11 what monitoring, if any, occurred in this population that
12 was exposed to 2,4,5 T?

13 A What do you mean by monitoring? You mean
14 health?

15 Q Yes.

16 A I think the usual examinations on a periodic
17 basis to define whether any progression or regression of
18 some of the skin lesions was concerned. Of course, Suskind
19 rellooked at some of them in '53, and whether some of them
20 may have been during that period of time sent to local,
21 over the years were sent to local dermatologists, I don't
22 recall. I think there were some of this kind but I don't
23 recall details, so there was monitoring on a continuing
24 basis in that department. Of course, one of these other
25 documents indicates there were considerable attempts to

1 button up, so to speak, the departments best they could to
2 be sure the exposure was as low as possible.

3 Q Was there a health plan, so to speak, for
4 these men who were being exposed to 2,4,5 T in the nature of
5 the PAB plan which appears to be a rather well-developed
6 health monitoring plan?

7 A You mean regular examinations?

8 Q Yes.

9 A Identify it as such, 2,4,5 T people?

10 Q Yes.

11 A I can't answer that. I don't know. Other
12 than the fact they can be looked at on a regular basis in
13 terms of their physical exams, but whether there was a file
14 that says these are PAB people and we are going to do some-
15 thing different with them, I can't answer that.

16 Q As it relates to 2,4,5 T?

17 A Yes.

18 Q Would the plant physician be the person
19 charged with that responsibility, is he the front line guy?

20 A He's the front line guy, but the impetus
21 for that might come from the Medical Department. He might
22 be carrying it out for them or might initiate something for
23 them with their knowledge. I can't say how that might have
24 been handled at the time. Back at that time there was
25 obviously less probably direct inputs from the corporate

1 Medical Department to the operating plants as there were as
2 the company grew, so I don't know what degree that would
3 have been influenced or carried out by the corporate depart-
4 ment versus the plant people.

5 Q All right, sir. I'll hand you Exhibit 257
6 (Monsanto's I.D. #8323177 and 8323178), Dr. Meyer.

7 A I don't know if I have the same exhibit or
8 not.

9 Q Is that the one with Bishop?

10 A Bishop took the chair because Holzapfel was
11 away on vacation.

12 Q Yeah. Quite frankly, I don't know why that's
13 in here. I assume it's a Monsanto document.

14 A Yes.

15 Q And with that I'll ask you to hand it back
16 to me. Exhibit 258 (Monsanto's I.D. #233695) is now being
17 handed to you. Take a minute and look at it. I suspect
18 I'm going to be asking you about a paragraph A2, but you
19 can go ahead and look at the whole document, if you like.

20 A I can't agree with that statement. That's
21 Dan Bishop's statement who is a public relations man.

22 Q Dr. Meyer, this is a Monsanto document, is
23 it not?

24 A Yes, it is.

25 Q And you recognize the form?

1 A Sure.

2 Q And it's dated July 5th, 1979?

3 A Uh huh (yes).

4 Q Over Dan R. Bishop's signature?

5 A Yeah.

6 Q And you're shown as a person who, apparently,

7 got a copy of this document?

8 A Yes.

9 Q If you'll look at paragraph A2, there is a

10 statement that, "We did not recognize that chloracne was

11 related to dioxin exposure until dioxin was chemically

12 identified in 1957." Now, you were about to say you didn't

13 agree with that.

14 A I don't believe we recognized that dioxin

15 was causing chloracne in '57 because there was no data on

16 that. Just because you isolate a chemical doesn't necessar-

17 ily mean that's it. So I don't know that that says anything

18 other than Dan Bishop doesn't know any chemistry. He's a

19 public relations man. I guess what it would say is since

20 it's a highly chlorinated compound, somebody might have

21 inferred that because chlorinated naphthalenes, which are

22 highly chlorinated materials, have been known to cause

23 chloracne. But just the fact you chemically identify this

24 compound wouldn't tell you anything necessarily until some-

25 body tested it in animals or humans. In the absence of that

1 kind of data which I'm not familiar with at this point, that
2 statement is not a correct statement in its inference. Now,
3 I'm just telling you my opinion.

4 Q Now, is there some specific document or
5 study that you based that opinion on?

6 A It's just that you can't predict in advance
7 what chemical is going to cause chloracne. Because you know
8 a chemical structure doesn't tell you anything whether it's
9 going to cause chloracne until you try it and see.

10 Q Do you know what was identified in 1957?

11 A Until dioxin was chemically identified. As
12 I recall, that was a tetrachlorodioxin, and what else is
13 known about it other than its chemical structure I don't
14 know. But you could not conclude just because you said you
15 identified this that it was a chloracnegen until you
16 tested it. You might infer it, you might guess at it.

17 Q If there is a study that was done in 1957
18 that positively linked dioxin in that isomer or that form
19 to chloracne, would that change your opinion?

20 A Yes. It would change my opinion that
21 chloracne was related to dioxin, yes.

22 Q And if that were the case, in keeping with
23 Monsanto's policy, would that information then in light of
24 the ongoing chloracne problem at Nitro have been communi-
25 cated to the workers?

1 MR. LOVE: At what point in time?

2 Q In '57.

3 A Well, it depends on whether it was a defini-
4 tive study that one could document relative to humans.

5 Q Who makes the decision as to what study is
6 definitive or not in Monsanto?

7 A The Medical Department from the scientific
8 point of view. It's their determination whether a study
9 justifies scientific credibility.

10 Q And is that one of the criteria that's used
11 before following Monsanto's policy of informing people in
12 the workplace of hazards?

13 A Is what the criteria?

14 Q That a study is definitive in Monsanto's
15 opinion.

16 A Not always the case, no. If there is pub-
17 lished studies, some opinions will be made as to whether
18 it's a credible study or not.

19 Q All right, Doctor. Let me have that one
20 back. Here is Exhibit 259 (Monsanto's I.D. #8323203 through
21 8323205, inclusive), and I'm interested in paragraph A on
22 page one.

23 A Okay.

24 Q You'll note in the second sentence of
25 paragraph A which reads, "Agreed that we should issue a news

1 release based on this by July 15th, if possible, to beat
2 any possible release by Selikoff," and, of course, the
3 reference is to the analysis of mortality study of those
4 involved in the 1949 incident. Now, is that the same study
5 we have been talking about, the mortality study that Suskind
6 and Zack did?

7 A That's correct.

8 Q And did that study only involve those persons
9 who were involved in the 1949 incident?

10 A Have to let me think a minute. I can't say
11 for certain. I think it involved all of them. It's my
12 recollection of it, but I'd have to see it to be absolutely
13 certain. I think it involved all of them.

14 Q And was releasing the results of this study
15 before Selikoff part of the overall strategy referred to in
16 the earlier document?

17 A If we had data that was meaningful that
18 would alleviate concerns of employees, we wanted to release
19 it as soon as possible.

20 Q Why did you want to release it before
21 Selikoff?

22 A Because we feel Selikoff is a sensationalist
23 who will interpret data any way he sees fit to gain publicity.

24 Q I'm handing you Exhibit 260 (Monsanto's
25 I.D. #8323173, 8323174, 8323176 and 8323175), and I'm

1 interested in the last two paragraphs on page two of that
2 exhibit.

3 A Right.

4 Q What relationship, if any, would the Stamford
5 Research Institute --

6 A Oh, Stamford Research Institute is a con-
7 sulting firm, and they had a team of people that were
8 capable of keypunching plant data and so on into usable
9 form for the computer. Since we had limited in-house capa-
10 bility, we were contracting them to do part of the work for
11 the plant.

12 Q Was that effort undertaken in connection
13 with this overall epidemiological project that you kind of
14 breathed life into when you got to the job of Director of
15 Special Projects in 1977?

16 A Yes. In all of our plants. They were
17 assisting in getting the work done to help us get going
18 faster.

19 Q And was this effort completed by the time
20 you were retired?

21 A Not completed. No. We have fifty plants
22 worldwide and we took those that we felt were the most
23 significant, potential problems in terms of the chemicals
24 we made and the exposures that we had, so on.

25 Q Now, which of those plants -- if I understand

1 what you're saying, you put the plants in some kind of
2 priority order, is that right?

3 A Yeah.

4 Q For purposes of this study?

5 A Not one, two, three, but this group we are
6 going to try to get done and this group we can let go.

7 Q And was Nitro in the first group?

8 A I'm sure it was, yes.

9 Q And was this work on the first group of
10 plants, including Nitro, completed by the time you retired?

11 A I can't honestly say that all of them were.

12 Q What about Nitro?

13 A I'm not even certain that Nitro had been
14 completely all in the computer. We had all the records
15 together and they were keypunched. Whether that had all
16 been put on the computer I can't say for certain.

17 Q Now, what information was put into the com-
18 puter regarding Nitro in connection with this effort by the
19 Stamford Research Institute?

20 A Would you restate your question.

21 Q What information was put into the computer
22 relative to the Nitro Plant?

23 A I don't recall whether we had all of the
24 data in for all of the records at Nitro keypunched. The
25 data relative to the studies for statistical analysis and

1 so on was done by computer analysis. Whether all the basic
2 data had been hand treated to get it into that shape for
3 the computer or whether it had all been keypunched -- you
4 know, that's a horrendous job when you go back and keypunch
5 every piece of data in every department in there. Whether
6 that whole job at Nitro was completed prior to our analysis
7 of the study with the use of the computer for statistical
8 analysis, I can't say for certain. I just don't recall the
9 timing for the various plants, when they were going to be
10 completed. They were done by different groups. Some were
11 done in-plant by the local plant, some were done by some
12 outside outfits, Stamford University did some.

13 Q My question is to you what information --

14 A Ultimately it was to include all of the
15 personnel information relative to who worked where when and
16 all of the data that was available in their health files,
17 all their physical examinations, anything else relating to
18 employee health, and ultimately, then, starting when we were
19 getting good measurements in each plant, and that varies
20 throughout the '70's as to the degree that we were sampling
21 and how quickly we could set up with industrial hygienists
22 and the various analytical techniques on which you monitored
23 on a day-to-day basis, that computer system would include
24 the exposure information and analytical detail, much of
25 which was not available back in the '50's and '60's, plus

1 all of the medical data relating to the employees' health
2 from the past and then it would be keypunched into the com-
3 puter on an ongoing basis for the future so we wouldn't have
4 to do all this over again and the personnel data as far back
5 as we have it, it would locate where people are at a given
6 point in time. It was that kind of a system instead of
7 taking the brute force method that's having to collect all
8 these individually and go through them as we were having to
9 do when we first started this work. We have all the data
10 available and we could monitor and if we saw trends of
11 chemicals that were being released above specs and so on,
12 we could immediately tie that into employee health and what
13 was happening. In other words, we wouldn't be in a posi-
14 tion where we always had to look after the fact to find out
15 whether or not we were having problems with people. We
16 could anticipate where we were going to have problems of a
17 health nature relating to our employees. That was the grand
18 slam, that was the strategy, so to speak, and I think that's
19 pretty well complete now. See, I have been retired for
20 three years. That was a horrendous job. We were one of the
21 first, if not the first, company to have such a system in
22 place. It had a name. I'm trying to think what the name
23 of it was.

24 Q Prior to the implementation of this grand
25 scheme you have detailed for us, was there any policy or

1 plan in the Monsanto Company to look for that signals of
2 health problems in plants among the workforce?

3 A There are various individual plants through-
4 out the various operating plants, but you say is there one
5 overall grand strategy, no, I can't tell you.

6 Q For example, a plant like Nitro may have had
7 one?

8 A Yes.

9 Q And that would have come --

10 A Of some nature.

11 Q Where would that have come from?

12 A From either the plant management safety
13 groups themselves or for those who already had industrial
14 hygienists, were large enough to support their own industry
15 hygienist, would come from that group or from the medical
16 group in that plant; or if there were products that we had
17 reason in the Medical Department to be suspicious of from
18 something published in the literature, the incentive to
19 monitor may come from the Medical Department. I can't say
20 in a specific case that there is a grand plan in place at
21 any point in time.

22 Q Let me hand you what's been marked Exhibit
23 261 (Monsanto's I.D. #8323145 and 8323146). Let's look at
24 paragraph D on page one.

25 A Uh huh (yes).

1 Q All right. Dr. Meyer, you have before you
2 Exhibit 261, and it's a Monsanto document whose form you
3 recognize, is that correct?

4 A Yes.

5 Q And it's dated July 21st, 1979, and, appar-
6 ently, prepared by F. J. Holzapfel, is that correct?

7 A Yes.

8 Q And, once again, appears to be minutes of
9 a meeting of the Nitro Health Study Task Force, and you're
10 indicated as having been present on June 28th, 1979?

11 A Yeah.

12 Q I direct your attention to paragraph D and
13 ask you if you remember what data you were referring to
14 there for the partial response to publication of Selikoff's
15 data.

16 A Well, it says I was referring to data on
17 the personnel in the 1949 incident.

18 Q What data was that?

19 A That would have been a part of the study
20 that involved those people only.

21 Q What specifically was that?

22 A What else can I answer?

23 Q I mean, were they documents?

24 A It would have been mortality data that was
25 in the process of being analyzed.

1 Q But what is that?

2 A Well, that's data involving the people that
3 were identified as being involved in the incident, those
4 that we were able to run down as being deceased and what
5 their cause of death was determined from their death certi-
6 ficate and analysis of whether those ratios of causes of
7 death were different from control groups that would be used
8 to compare them with.

9 Q Did you have some criteria for establishment
10 of ratios as between the group being studied and your con-
11 trol group?

12 A What do you mean by criteria?

13 Q Well, you mentioned the word "ratio" and
14 that there was some ratio that constituted a part of the
15 data you were referring to in paragraph D.

16 A Yeah.

17 Q Well, what is it you were talking about?

18 A That's usual, what percentage of the deaths
19 involved a cancer of the stomach, what percentage involved
20 cancer of the lung, what percentage involved heart attacks,
21 heart failure, what percentage involves respiratory causes,
22 and then those are compared with the percentages of those
23 causes of death in your control group so you can see if they
24 are out of line.

25 Q In this specific instance was the control

1 group the in-plant control or the county group?

2 A I don't recall exactly. I'd have to look
3 at my paper to see. It's been long enough that I don't
4 recall exactly which group was used. I would imagine,
5 perhaps, both were used.

6 Q Okay. I'll hand you what's been marked
7 262 (Monsanto's I.D. #8323065 through 8323070, inclusive).

8 A Uh huh (yes).

9 Q Doctor, you have had an opportunity to look
10 through Exhibit 262, which is a Monsanto form that you
11 recognize, is that correct?

12 A Uh huh (yes).

13 Q And it appears to be a June 21st, 1979,
14 trip report from Jan Yung to you?

15 A Uh huh (yes).

16 Q By the way, who is Jan Yung?

17 A She is an epidemiological data technician.

18 Q The exhibit lists a number of names of
19 employees?

20 A Yeah.

21 Q On various attachments?

22 A Uh huh (yes).

23 Q Who are identified as having participated
24 in some physical examinations?

25 A Uh huh (yes).

1 A Our responsibility was to coordinate with
2 the plant in providing any help we could be in scheduling
3 the exams. We worked with them in providing the facilities
4 that they had to carry out the exams. We arranged to have
5 the actual laboratory clinical work done at a laboratory up
6 East for the test work, those that could be done as routine
7 analysis, because the University of Cincinnati Laboratory
8 did the special exams, but they didn't have the facilities
9 to do all the routine clinical exams. So we were generally
10 in a position of assisting in the exam where we could help
11 paying the bills and expediting their visit down there.

12 Q Were you looking for anything other than
13 long-term effects of dioxin exposure, any other chemicals?

14 A We were looking for the whole plant, as I
15 said before. That's why the whole plant was involved in the
16 study. That was one of the prime reasons was for dioxin
17 and 2,4,5 T because that was also one of Suskind's interests.
18 There were many people interested in the results of such a
19 study.

20 Q What are some of the other interests?

21 A Any other chemicals in the plant that might
22 have come up as being related to defects that would show
23 up in a physical exam. We have mentioned some of those.

24 Q Carbon disulfide, was that one of them?

25 A That's one of the materials that was used

1 as raw material.

2 Q MBT?

3 A Yeah.

4 Q And were these men, as far as you know, told
5 that they were being examined for effects of exposure to
6 MBT or carbon disulfide?

7 A I can't specifically tell you. I wasn't
8 present when the supervisors talked to the men in the plant
9 about the exact objectives of the physical examination, so
10 if you ask me details of that kind, I really can't tell you
11 that.

12 Q Did you tell the supervisors to tell them?

13 A The supervisors told them what Suskind and
14 his people felt they should be told about the examination
15 that was going on. This was Suskind's study.

16 Q Didn't you brief the supervisor?

17 A I personally, no.

18 Q Did you tell someone to brief them?

19 A The Nitro Plant personnel, the plant manager,
20 Bill, I don't recall whether Bill Gaffey was on board yet
21 or not, but Bill Gaffey at one point in time talked to the
22 Nitro supervisor as well. I don't recall the timing of that
23 particular visit. That's the only way I can answer that.

24 Q As Director of Special Projects, wasn't it
25 your responsibility to tell your subordinates what to

1 communicate to the people who would be participating in
2 this study?

3 A Not necessarily.

4 Q Well, was it or wasn't it?

5 A As far as our activities. The plant manager
6 is the conduit through which that kind of information, and
7 we had meetings with the plant manager and industrial
8 hygienist and safety director at the Nitro Plant relative
9 to the purposes and objectives of the epidemiology studies
10 that were going on. From that point forward it was the
11 plant authorities' job to inform their people of the results
12 of those tests.

13 Q Whose responsibility was it to tell the
14 plant manager to tell --

15 A That would have been the Department of Medicine
16 and Environmental Health.

17 Q You had no responsibility about that?

18 A Oh, yes. That was our department.

19 Q Well, what did you tell the plant managers
20 to tell them?

21 A We told the plant manager what was going
22 on. It's his responsibility to tell them. I don't order
23 the plant manager to tell someone anything.

24 Q What did you tell the plant manager what
25 was going on?

1 A The details of the epidemiology study that
2 was going on. In addition to that, when Suskind arrived --
3 I'm not a medical man -- when Suskind arrived, a detailed
4 protocol which he discussed with the plant manager and key
5 people in the plant.

6 Q Were you there?

7 A No, I was not. My people was there.

8 Q Did you see the detailed protocol?

9 A Yes, I'd seen it at some point in time..
10 I have a copy of it.

11 Q Did you tell the plant manager at Nitro that
12 the men participating in the study were being examined for
13 long-term health effects as a result of being exposed to
14 MBT or its component parts?

15 A I wouldn't have singled out every single
16 chemical in the plant. You can ask that about any single
17 chemical in the plant. I can go to Nitro and say your
18 people are being studied with regard to this chemical, this
19 chemical, no. The plant manager knew the overall study was
20 to examine the health of people related to their various
21 exposures to the plants which would show up in their per-
22 sonnel records and for the primary function and the most
23 urgent function because of the great interest in the func-
24 tion was 2,4,5 T; but this was an overall study that applied
25 to other products as well and it wasn't limited or delimited

1 to any one chemical involved. You can ask me that about any
2 single chemical. I didn't go through the list and say, we
3 are going to study all this.

4 Q Did you give a list to the plant manager --

5 A The plant manager knows what he's making.

6 Q Your testimony is you didn't tell the plant
7 manager really what these men were being tested for?

8 A That's not true. The plant manager knew
9 the overall study related to the men in his departments
10 over a period of thirty years. Some of those chemicals
11 possibly weren't even being made at the time the study was
12 done. It's not necessary for me to go down each detailed
13 chemical of which there might be 500 if I go into all the
14 raw materials and say, we are going to study this one and
15 this one and this one. In a general way the health of his
16 plant related to those assignments of his workers that
17 could be pinpointed from their personnel records would be
18 included in the overall physical examination studies that
19 were made.

20 Q In the preliminary reports to you from
21 Dr. Suskind, did he mention anything about adverse health
22 effects or lack thereof as a result of being exposed to
23 MBT, carbon disulfide, H2S in addition to 2,4,5 T and/or
24 dioxin?

25 A I don't remember.

1 Q Was it your understanding that when Dr.
2 Suskind's study was completed, that it would address those
3 issues as well as 2,4,5 T and dioxin?

4 A If abnormalities in health would show up in
5 those studies, they would be related back to whatever
6 department those men might have been exposed to over a
7 period of time. It's my understanding that such a study
8 would have to include those kinds of data.

9 Q Which kind of health problems do you know
10 about that are suspected to be associated with MBT?

11 A I don't remember any offhand.

12 Q Carbon disulfide?

13 A There could well be health studies on either
14 of those. I just don't recall what the toxicologies of
15 those two chemicals are. I haven't been connected with this
16 for three and a half years.

17 Q But you did know at one time, is that right?

18 A I would have known at one time if there were
19 health problems with some of those intermediates. Not all
20 500.

21 Q You did suspect MBT and carbon disulfide,
22 though, didn't you?

23 A I didn't suspect MBT. Carbon disulfide was
24 one I was aware of there might be a problem.

25 Q What kind of problem did you suspect there?

1 A I don't recall.

2 Q Do you recall how you became aware there
3 might be a problem with carbon disulfide?

4 A From something I read about carbon disulfide
5 and its toxicity.

6 Q Do you know when that might have occurred?

7 A No, I don't remember.

8 Q When you became Director of Special Projects?

9 A I might have known that before.

10 Q I see.

11 A I might have had an awareness of carbon
12 disulfide as a solvent before I became associated with DMEH.

13 Q Who at Monsanto would know?

14 A Know what?

15 Q About the problems of carbon disulfide that
16 were suspected.

17 A Well, in the first place, I don't know. I
18 guess if I pick someone that would be most knowledgeable,
19 it would be Director of Toxicology, would be George Levinskas,
20 again. I'm sure there are others, but if you want the most
21 likely one, it would be the Director of Toxicology.

22 Q I gather from what you say it's true that
23 Monsanto doesn't have any kind of a centralized or any real
24 corporate policy or exert any real effort to find out much
25 about these chemicals and these toxicities? You were the

1 Director of Special Projects.

2 A That's absolutely untrue.

3 Q You were the Director of Special Projects.
4 You seem to know very little about these chemicals and
5 problems.

6 A I didn't say I had a long history in toxicology.
7

8 Q From the time you were in school.

9 A Wait a minute. What was your question?

10 Q Well, you don't seem to have much knowledge
11 about these chemicals and their toxicity and don't seem to
12 know the people in Monsanto who would have. It seems like
13 it's a very little knowledge that you have.

14 A That's not true.

15 Q Tell me about carbon disulfide and the
16 problems that you were worried about or that you suspected.

17 A I said I didn't remember specifically what
18 its toxicology details were.

19 Q Well, generally what is it?

20 A There are some fifty thousand organic
21 chemicals produced industrially, and you're asking me do I
22 have detailed knowledge of the toxicity of any one or each
23 of those chemicals.

24 Q I just want to know generally what you know.

25 A Generally what do I know about what?

1 Q The toxicity of carbon disulfide.

2 A I don't know something specific. I have a

3 feeling in my mind there is a toxicity problem.

4 Q What is that feeling?

5 A But I have been retired for three and a half

6 years. I've not been reading about carbon disulfide speci-

7 fically.

8 Q Prior to your retirement what was your

9 general knowledge about it?

10 A I said I don't recall. I wouldn't have

11 recalled something now I didn't recall then. How could I

12 recall it then if I tell you I don't recall it now?

13 Q Let me have 262 back. Here's 263 (Monsanto's

14 I.D. #8323037 and 8323038).

15 A Okay.

16 Q All right. Dr. Meyer, if you would look at,

17 I guess, it's the indented portions there of that second

18 paragraph.

19 A Yes.

20 Q You're reporting by way of this Monsanto

21 document, are you not, you're the author of this document?

22 A Yes.

23 Q It's dated June 18th, 1979?

24 A That's correct.

25 Q And it appears to report the substance of a

1 phone conversation that you had with Dr. Selikoff, is that
2 right?

3 A Uh huh (yes).

4 Q Do you know if Dr. Suskind did porphyrin
5 studies in his test?

6 A I can't recall that detail, but I think he
7 did.

8 Q What are porphyrin studies, if you know?

9 A It has to do with pigments in blood and
10 presumably dioxins have had some reported effect on por-
11 phyrin.

12 Q And immunological studies, were those done
13 by Suskind also?

14 A I think that's the case, yes.

15 Q Clinical chemistries, you know what that
16 refers to?

17 A That refers to all the blood chemistries
18 that were done. Some twenty-four different analyses. They
19 were done in an automated machine.

20 Q Do you know if Suskind did that?

21 A Yes.

22 Q And nerve conduction studies?

23 A He did that.

24 Q And nerve behavioral data?

25 A Yes.

1 Q Neuro-behavioral, is that the same thing?
2 Now, do you recall any additional studies that Suskind did
3 in addition to those listed there?

4 A Well, of course, he did a hands-on physical
5 study: heart, lungs and the usual thing that a physician
6 does. I don't recall others than this group.

7 Q This is 264 (Monsanto's I.D. #231686
8 through 231688, inclusive).

9 A Uh huh (yes).

10 Q Doctor, do you recognize Exhibit 264 as a
11 Monsanto document?

12 A Yes.

13 Q And is a form that you're familiar with,
14 is that right?

15 A Yes.

16 Q And Document 264 appears to be a memo written
17 by Dan Bishop dated June 12th, 1979, addressed to you and,
18 apparently, it enclosed another Monsanto document, which is
19 a letter from Joseph Nolan and dated June 4th, 1979, to
20 Pierre Wilkins, is that accurate?

21 A Yes.

22 Q Who is, if you know, this Joseph Nolan?

23 A He was the corporate head of advertising
24 in P.R., as I recall, at that time at the corporate level.

25 Q And is Pierre Wilkins likewise in the

1 advertising or P.R. business?

2 A I think, as I remember, Pierre Wilkins may
3 have just taken Bishop's place while he was on vacation or
4 something. He was associated, anyway, with Dan Bishop, as
5 I recall. That's the best of my knowledge.

6 Q Let me ask you to turn to page three of the
7 exhibit, which is page two of Mr. Nolan's letter, and ask
8 you to look at the second paragraph on that page where it's
9 stated, "It is important to distinguish between the two
10 studies." I assume the reference is to the Selikoff-
11 Suskind studies -- "Dr. Suskind's will be rigorously con-
12 fined to dioxin and the delayed effects, if any, of worker
13 exposure." Now, is that Suskind study referred to there
14 the one that you and I have been talking about?

15 A Yes, it is.

16 Q Is it true his test was rigorously confined
17 to dioxin and the delayed effects, if any, of worker expo-
18 sure?

19 A No, I don't think it was rigorously confined
20 to that.

21 Q Do you know why this statement is made in
22 Mr. Nolan's letter?

23 A I presume because he didn't know.

24 Q Did you correct him?

25 A I don't know that I corrected him or not.

1 Q Do you know if the Suskind study was adver-
2 tised as being rigorously confined to dioxin?

3 A Its primary emphasis was on dioxin because
4 that was of great concern to us and to others at the time.

5 Q That doesn't alter your testimony that the
6 purpose of the Suskind study was to undertake a broad
7 sweeping test of some, you know, fifty or sixty or a hundred
8 or five hundred products and chemicals used at the Nitro
9 Plant?

10 A To the degree that can be done through a
11 physical exam, that was the intent of the study.

12 Q Only through the physical exams?

13 A No. Through the physical exam and the
14 mortality study.

15 Q When you say physical exams, you're including
16 the clinical workup and everything that was done, is that
17 right?

18 A That's correct.

19 Q All right. Can you tell me who in Monsanto
20 likewise understood and knew that the Suskind study was this
21 broad gauge, broad-based undertaking besides yourself?

22 A Dr. Roush.

23 Q Anybody else?

24 A Well, this is the most likely one.

25 Q Do you know people on the Nitro Health Study

1 Task Force, if they understood that?

2 A I guess I have to believe they did.

3 Q Was there some written protocol describing
4 the study that Suskind was undertaking that described it as
5 this broad-based undertaking that you have described here
6 today?

7 A I think so, but, you know, I don't have it
8 in front of me.

9 Q What would be the name of it?

10 A I don't know. It could be called a protocol
11 for Nitro Health Study.

12 Q Would it be in some contract of Suskind's?

13 A It would be in connection with the contract.
14 Now, whether it was actually a part of it or submitted
15 before we would sign the contract, we'd have to see the
16 protocol, so somewhere along the line it would be a written
17 protocol.

18 Q So if you're accurate in what you're saying,
19 we could find this broad-based description in the protocol?

20 A There would be some protocol of what he was
21 going to do.

22 Q Here's 265 (Monsanto's I.D. #8323147 through
23 8323149, inclusive), Dr. Meyer, if you take a look at that,
24 please.

25 Doctor, on that exhibit I'm interested in paragraph

1 three there. Go ahead and read the entire thing if you
2 choose.

3 A Okay.

4 Q All right. Doctor, you have before you what
5 appears to be a Monsanto document, is that correct?

6 A Yes.

7 Q And it's a form you recognize?

8 A Yes, memo form.

9 Q And it appears to be a June 13th, 1979,
10 memorandum from you to Fred Holzapfel?

11 A Uh huh (yes).

12 Q In paragraph three you talk about having
13 analyzed the 1976, '77 and '78 health examination records
14 for Nitro employees, 2,4,5 T exposed and non-exposed.

15 A Uh huh (yes).

16 Q Did you do the same thing for employees
17 exposed to MBT?

18 A The answer to that is I don't think so.

19 Q Did you collect any data at all about
20 employees exposed to MBT?

21 A We collected all employee data, whether MBT
22 or 2,4,5 T.

23 Q Did you create a group of persons exposed to
24 MBT and a group not exposed to MBT?

25 A Not at this point.

1 Q After this point did you?

2 A I can't answer that, whether that was speci-

3 fically done later in the study, because there was no,

4 during my connection with it, we did not do a separate

5 analysis.

6 Q You state that, "We have analyzed the 1976,

7 '77, '78 health examination records." Is that department,

8 when you say "we" --

9 A Yeah, that's the Medical Health Department.

10 Dr. Roush assisted in that, and those are health examina-

11 tion records. He assisted in that health examination.

12 Q Which health examination records are you

13 referring to?

14 A These are the Nitro employees.

15 Q And where would those records have been?

16 A They were at Nitro but copies of them would

17 have been at St. Louis.

18 Q Were those the employee medical files?

19 A They would have been in the medical files,

20 yes.

21 Q Were there any other records referred to?

22 A These are listed. That's my only recollec-

23 tion, as to what's in the memo.

24 Q The criteria that we earlier talked about

25 for 2,4,5 T Department study as to who was exposed to

1 2,4,5 T and who was not?

2 A I'm trying to reconstruct in my mind the
3 purpose of the particular years that were involved, and I
4 guess the purpose of those particular years was that they
5 were the closest to what would be obtained on a current
6 health study; and we had better data from the recent years
7 than we had in earlier years. So I think what we were
8 trying to do is to see whether we already had information
9 in our records that would give us some clues and preliminary
10 indication of what would be found in a current, as of now,
11 kind of health study.

12 Q And was it your intention to use these pre-
13 liminary results to respond to any Selikoff allegations?

14 A It could be helpful if we had such informa-
15 tion prior to a current study to assist us in commenting on
16 the Selikoff study.

17 Q What if Dr. Suskind's study supported
18 Selikoff's and not your preliminary conclusions?

19 A Then this would be superseded by better data.

20 Q You were pretty sure that wasn't going to
21 be the case, though, weren't you?

22 A No. I had no idea whether it was going to
23 be the case.

24 (Whereupon discussion was had off the
25 record.)

1 Q Doctor, I want to hand you what's been
2 marked Plaintiff's Exhibit No. 256 (Monsanto's I.D. #8330067
3 and 8330068), and ask you to take a look at that. I am
4 primarily interested in the first paragraph.

5 A Yeah.

6 Q All right. Doctor, in the first paragraph
7 there is reference to exposure classifications.

8 A Uh huh (yes).

9 Q You have before you a Monsanto document
10 whose form you recognize, is that correct?

11 A Yes.

12 Q And it appears to be a letter from Raymond
13 Suskind over Judith Zack's signature, does it not?

14 A Yes.

15 Q The date is what, sir?

16 A The date?

17 Q Yes.

18 A April 18th, 1979.

19 Q And you're indicated as having a blind copy
20 of that?

21 A Yes.

22 Q In the first paragraph of that document
23 there is some reference to exposure classification. Could
24 you tell me what that means?

25 A That's elaborated on in the next three items.

1 Q Well, could you, for the record, tell us
2 what that's about?

3 A Well, the exposure was broken down into an
4 intermittent group with other groups, and it could be talked
5 about generally or generally versus the intermittent group.

6 Q The intermittent group would be like the
7 general maintenance people who would not be assigned speci-
8 fically to 2,4,5 T?

9 A That's right.

10 Q Were there any other job classifications
11 included in the intermittent exposure?

12 A For example?

13 Q Well, general maintenance, I think you said,
14 was included in the intermittent exposure?

15 A Yeah.

16 Q Now, were there any other people in the
17 plant that would have been included in the intermittent
18 exposure group?

19 A Others with plant-wide responsibility, that
20 what you're referring to?

21 Q Yeah.

22 A Or, like, people in the Medical Department
23 or in the Safety Department or what have you. I guess that's
24 what that would refer to.

25 Q You know what salary codes, what's referred
to there by salary codes?

1 A Where is that listed? Oh, wage and salary.
2 Oh, that's just an additional indication if it's a wage
3 employee it gives an hourly number. If it's a salaried
4 employee, they are in certain salary grades and that grade
5 is listed. That tells you something about whether they
6 were a supervisor or just a worker and so on.

7 Q Okay. Let me have that back. Here is
8 Exhibit 267 (Monsanto's I.D. #8331208 and 8331209).

9 A Okay.

10 Q Doctor, Exhibit 267 is a Monsanto form that
11 you recognize, is that correct?

12 A Yes.

13 Q And appears to be a memorandum dated
14 April 16th, 1979, over Judy Zack's signature addressed to
15 you, is that correct?

16 A Yes.

17 Q In the first paragraph of that document on
18 page one the last sentence says, "We indicated that we have
19 not identified or traced all of the terminated employees
20 and could not easily do so within a short period of time."
21 Is that all employees who were fired or laid off, or what's
22 that mean?

23 A Yes. That means going all the way back, if
24 you take a given plant, there are people that are in, there
25 are some are students, some employed temporarily on probation

1 that will be terminated over short periods of time and so
2 on. To go back and catch anyone who ever worked at the
3 plant is a horrendous job to trace them down as to where
4 they might be, and to do that you generally have to employ
5 outside people who specialize in, like, detective agencies
6 and so on. They may be living in California and you com-
7 pletely lost trace of them, and that's what she's referring
8 to.

9 Q Did you undertake to do that --

10 A No. As I remember, we undertook to do that
11 only for the people, because of the horrendous nature of
12 the job, we chose to limit that to the 2,4,5 T people
13 exposed in the accident, as I remember.

14 Q Okay.

15 A Because that was a manageable thing in
16 terms of the time that we had available.

17 Q All right. Let me have 267 back.

18 MR. CALWELL: Now, for the record,
19 No. 268 (Monsanto's I.D. #8331208 and 8331209)
20 is identical to 267. I don't know how that
21 happened, but it did. I think we'll pass over
22 268 but leave it there so people will know
23 what happened.

24 Q I want to hand you a document 269 (Monsanto's
25 I.D. #8322384), Dr. Meyer. I'm really only interested in

1 the first paragraph of that exhibit.

2 A Okay.

3 Q Exhibit 269 is on Monsanto letterhead, is it
4 not?

5 A yes.

6 Q And is this a letter that was written by you
7 on or about March 29th, 1979?

8 A That's correct.

9 Q If you'll look at the last two paragraphs,
10 you appear to be advising Dr. Marion Moses of Mount Sinai
11 Medical Center about lists of employees that were supplied
12 to them, I guess, for the Selikoff study, is that correct?

13 A With the upcoming Selikoff study.

14 Q In the last paragraph you state, "Not
15 included in the enclosed lists are other employees with
16 occasional or accidental opportunity for exposure, such as
17 maintenance, control lab, etcetera personnel." Are the
18 lists that you sent to Dr. Moses pertaining to the 2,4,5 T
19 Departmental study the same that were relied on in the
20 Suskind study? What I'm getting at, it appears these lists
21 do not include the general maintenance people.

22 A It's my recollection it was a matter of
23 timing and we had not identified all of this third group
24 yet at the time Selikoff was plowing ahead with his study.
25 So we gave them, it's my recollection, what we had at that

1 time. That was on March 29th.

2 Q So ultimately for the Nitro health study
3 that we earlier talked about and, I guess, kind of a sub-
4 study, the 2,4,5 T Departmental study, the list that Suskind
5 ultimately worked from included the people identified here
6 in the last paragraph of Exhibit 269 to the extent possible?

7 A That's my recollection, that's correct,
8 because they were going to start their study upcoming and
9 she or Dr. Selikoff had called me and asked me if we could
10 cooperate with this list.

11 Q Okay. Doctor, here is Exhibit 270 (Monsanto's
12 I.D. #8330036).

13 A Yeah.

14 Q All right. Doctor, in the last paragraph
15 reference is made to microfilm tapes of the retrospective
16 Nitro work history data to confirm these groups in order to
17 meet the required medical study timing. Now, what documents
18 are on that microfilm referred to there?

19 A That would have included both, in my
20 recollection, both the personnel records and the health
21 records.

22 Q Okay. And we are referring, of course, to
23 a Monsanto memorandum that's, apparently, written over your
24 signature, is that right?

25 A Yes.

1 Q Dated March 9th, 1979?

2 A Uh huh (yes).

3 Q And the work history data that's on the

4 microfilm tapes simply the hard copies of the personnel and

5 medical files?

6 A My recollection is it was all of that data.

7 Q And how is it indexed, if you know?

8 A Probably alphabetically by worker initially

9 and then it could be broken out at any point by department

10 number or what have you since it was punched into the com-

11 puter.

12 Q So it's your understanding that the docu-

13 ments that are on this microfilm have been or are punched

14 into the computer?

15 A I think that's all in a computer. That

16 probably was completed after I was gone, but that certainly

17 should be in the computer by now.

18 Q And so, of course, you have some menu that

19 allows you to access the computer for this?

20 A I think in all probability Suskind has all

21 that on the computer now because he made his own computer

22 file of the data that was sent to him, and that was all of

23 the copies of this material.

24 Q All right. Let me have that one back, if

25 you would, and I'll hand you what's been marked Exhibit 271

1 (Monsanto's I.D. #236066 through 236069, inclusive).

2 A Okay.

3 Q Doctor, Exhibit 271 is a Monsanto document,
4 and it's dated December 5th, 1978, from, I guess, that's
5 Jan Yung, is it?

6 A Yes. She's a data technician.

7 Q Addressed to you and Judy Zack?

8 A Yeah.

9 Q Again, for my information, 271 is a compila-
10 tion of information used in the identification of the group
11 to be studied in the 2,4,5 T Departmental study, is that
12 what that's about?

13 A Yes. It was an attempt to bring that as
14 current as possible, and it was followed up by also identi-
15 fying cross-checking, by identifying all of the people who
16 filed for workmen's compensation in and around the 2,4,5 T
17 Department just to be sure that we didn't miss somebody or
18 plant records were lost and they might have actually filed
19 for workmen's comp and they'd have a record that they'd be
20 involved.

21 Q At the time you were developing this infor-
22 mation for what you and I have been calling the 2,4,5 T
23 Departmental Nitro study, was there work also ongoing on
24 the plant-wide study?

25 A Well, as far as the gathering together and

1 categorizing the personnel and health data, yes, that was
2 under way and there were several visits made to find out --
3 for example, some of the records, they had moved a department
4 out of the Nitro to Akron and some period of years we didn't
5 think there were any records and then we found them in a
6 warehouse somewhere and pulled them out; so that was a sub-
7 stantial time-consuming project over a period of several
8 months to identify all those records.

9 Q What were those records you found down in
10 Akron?

11 A Not in Akron. I say the department moved
12 to Akron. The records were left at Nitro but in a warehouse
13 and they weren't sure they were there. We dug around where
14 they said they may be in the warehouse, and we found the
15 records we thought might have been taken with them.

16 Q Those were records of what?

17 A Some records of certain years from the plant
18 and records of people that were in the Research Department
19 and so on. It was just a source of old records that went
20 back beyond some of the records they had in the current
21 personnel office at the plant.

22 Q Were they medical records?

23 A As I recall, they were primarily personnel
24 records, but there may have been medical records involved
25 in it too.

1 Q Were there any laboratory records or process
2 records involved in that?

3 A No, I don't think so. I think these were
4 primarily related to personnel and/or health records. We
5 just were pleased at the time that we found better records
6 of the older employees in the plant than we thought might
7 be there from the first look in the current department. In
8 other words, they had stored some of the older records in a
9 warehouse down there and, apparently, the current people,
10 the people that had stored them moved on to some other job,
11 and the current people in the Personnel Department hadn't
12 remembered they put them down there. They suggested we go
13 down and look, and we found them.

14 Q But those records weren't in relation to
15 any process that was moved from Nitro to Akron?

16 A No. That was just a Research Department
17 that moved.

18 Q Let me have 271 back and let me hand you
19 what's been marked Plaintiff's Exhibit 272 (Monsanto's I.D.
20 #236065).

21 A Okay.

22 Q Doctor, Exhibit 272 is a memorandum
23 authored by you?

24 A That's correct.

25 Q Dated October 30th, 1978?

1 A Uh huh (yes).

2 Q And, again, this, likewise, refers to the
3 same study we have been talking about, the Nitro health
4 study, the 2,4,5 T Department study, particularly?

5 A I think at this time it would have referred
6 to that, but I think our immediate interest was identifying
7 that accident group that happened thirty years previously,
8 and we wanted to be certain that we had all the records.
9 To be sure, we asked whether he might have made some records
10 that somehow or another had gotten out of our files, so it
11 was a cross-check of people in his medical files to see
12 whether the same people were in our medical files. That
13 was the purpose of that.

14 Q In the last paragraph you indicate that
15 Dr. Suskind suggests that you send him your list of corre-
16 spondence and document exchanges?

17 A Yeah.

18 Q What correspondence and documents is that
19 referring to? Historical documents in '49 and '50?

20 A See, he did this in '49 and '50. I'm not
21 sure he knew whether he could locate all the correspondence.
22 He wanted us to send copies to him we had so he could iden-
23 tify where they were in his files to see if he had them.

24 Q You refer to lists of correspondence. Do
25 you have some filing system that calls for a listing of

1 correspondence received?

2 A No. This would have just been correspondence
3 in connection with -- there probably was a file in the Nitro
4 file relating to the 1949 accident, and there was some
5 correspondence with Suskind in that file and that's what he
6 asked for. That's what we did so we could cross-check to
7 make sure our file is complete. And he was turning around
8 asking us the same thing.

9 Q Did you in fact send that to him? Were you
10 able to identify the files referred to here and send it to
11 him?

12 A I can't say for certain. I'm assuming that
13 we did.

14 Q Okay. Thank you, Doctor.
15 273 (Monsanto's I.D. #8325873, 8325874, 8325872).

16 A Okay.

17 Q Okay. Doctor, Exhibit 273 is a Monsanto
18 form that you recognize?

19 A Yes.

20 Q You'll note that it's undated, but it
21 appears to be over Fred J. Holzadfel's signature?

22 A That's right.

23 Q You're indicated as having received a copy
24 of this memorandum. In the first paragraph on page one
25 there's some reference made to work history data system.

1 Is that the same compilation of information we have been
2 talking about today that Stamford Research was involved in?

3 A That's correct, yes.

4 Q And in the second paragraph there's noted
5 the two skeletons in the Nitro closet.

6 A 2,4,5 T and dioxin.

7 Q Do you have any idea why Mr. Holzapfel
8 referred to those two things that way?

9 A I guess until we had data on it we didn't
10 know what effects they would be on our workers. See, dioxins
11 had been indicated in the literature to cause some tumors in
12 animals. That's not dioxin. That's just a solvent. I
13 think one or more of the processes at Nitro used dioxin as
14 a solvent. Since we had been under intense scrutiny by
15 some people, that's the reason he used that terminology.
16 We had the plants under a lot of pressure at that time being
17 provided with a lot of data, and they had to take this out
18 of their budgets.

19 MR. LOVE: I would note for the purpose
20 of the record there is a word at the bottom of
21 the first page of Exhibit No. 272, which bears
22 Monsanto #8325873, which appears to be the word
23 "exhibit." I would further note that this
24 document doesn't bear a date. I don't know
25 what any of that means. I thought I better say

1 something about it.

2 Q Doctor, here is Exhibit 274 (Monsanto's
3 I.D. #236180 and 236181).

4 A Uh huh (yes).

5 Q All right. Doctor, you have had a chance
6 to look at Exhibit 274, and it's a Monsanto document in a
7 form that you recognize, is that correct?

8 A Yes.

9 Q And it's dated January 24th, 1979?

10 A Yeah.

11 Q Over F. J. Holzapfel's signature. In the
12 third paragraph on the first page there is reference made
13 to the fact, and I quote, "Ours was a dirty process and we
14 were plagued with chloracne problems," referring to the
15 2,4,5 trichlorophenol. What is your understanding of the
16 words, "ours is a dirty process"?

17 A I don't know. You'd have to talk to
18 Holzapfel about that.

19 Q You have no idea what that means?

20 A To the extent we had some chloracne problems,
21 it means there were some exposures. I guess that's what
22 he means by "dirty." We had an earlier accident and we
23 controlled the process very carefully after that because we
24 knew what the effects of overheating were. Somehow or
25 another that accident batch got overheated and developed

1 pressure and blew out a ruptured disc on the vessel. That's
2 the only thing I can conclude, it was dirty because some of
3 our employees were exposed somewhere along the way. We
4 didn't have it completely buttoned up, in other words.

5 Q Assuming you got a copy, since you're on
6 the distribution list, and assuming you glanced through it,
7 that would have been the meaning you took it to mean at the
8 time?

9 A That's the way I interpret it.

10 Q Here is Exhibit 275 (Monsanto's I.D.
11 #8326129 through 8326142, inclusive, and 8326149 through
12 8326160, inclusive), and I'll tell you it's a multi-page
13 exhibit that's introduced by Dan R. Bishop as being the
14 approved copy of Monsanto's official position on the Agent
15 Orange issue. You might want to take a minute to glance
16 through Mr. Bishop's document.

17 Doctor, I've handed you Plaintiff's Exhibit 275,
18 which is a multi-page exhibit dated March 19th, 1980,
19 under cover of a letter by Dan R. Bishop. You recognize
20 the form of that document?

21 A Yes.

22 Q And have you seen -- you're indicated as
23 having received this at some point in time?

24 A Yes.

25 Q Is it fair to say you probably got this and

1 looked at it?

2 A Yes.

3 Q If you'll turn to page eight of the position
4 paper attached to Mr. Bishop's letter, in the middle para-
5 graph on that page, second paragraph, that certain symptoms
6 are identified as associated with exposure to dioxin.

7 A Yeah.

8 Q Chloracne, eye and respiratory tract irri-
9 tation, headache, dizziness, nausea, muscle discomfort and
10 liver disorder. Do you have any disagreement with those
11 observations in that paragraph?

12 A No.

13 Q Do you have any information or do you know
14 what the final sentence in that paragraph is based on where
15 it reads, "All symptoms -- except some cases of residual
16 chloracne -- gradually disappeared"?

17 A I guess it would have to be based on the
18 statements that Suskind made in some of his follow-up
19 studies and other literature statements over the years.

20 Q As far as you know, there were no inter-
21 mediate studies by Suskind or anybody else between 1953 and
22 the late 1970's pertaining to these 121 employees?

23 A I'm not aware of any at this point. As far
24 as organized studies of the group. There may have been
25 studies of individuals during that period of time and there

1 may have been medical reports for individuals that were sent
2 to local dermatologists and that kind of thing, but not an
3 organized study in the sense that you asked the question.

4 Q All right. Let me have 275 back. Doctor,
5 here's Exhibit 276 (Monsanto's I.D. #8331279 and 8331280).

6 A Okay.

7 Q Doctor, Exhibit 276 is a memorandum prepared
8 by you and dated November 21st, 1979?

9 A Yes.

10 Q And you were the author of that exhibit, is
11 that correct?

12 A Yes.

13 Q As far as you know, it's accurate as you
14 prepared it, is that right?

15 A Yes.

16 Q All right. Let me have 276 back. Doctor,
17 here's 277 (Monsanto's I.D. #235680).

18 All right. Exhibit 277 is a memorandum prepared by
19 you?

20 A That's correct.

21 Q In the normal course of your business with
22 Monsanto, is that right?

23 A Yes.

24 Q It's dated October 30th, 1979?

25 A Yes.

1 Q And addressed to, I guess, the file.
2 A Addressed to the people that got copies.
3 Q And that memo is accurate, as far as you
4 know?
5 A Yes.
6 Q Thank you. Let me have that one back.
7 Let me hand you what's been marked 278 (Monsanto's I.D.
8 #236249 through 236252, inclusive).
9 A Yes.
10 Q All right. Doctor, Exhibit 278 is a
11 Monsanto form that you recognize?
12 A Yes.
13 Q And it appears to be the minutes of a Nitro
14 Health Study Task Force meeting of November 16th, 1979, and
15 the letter is dated November 19th, 1979?
16 A Yes, that's correct.
17 Q And you're indicated as having been in
18 attendance at that meeting?
19 A Yes.
20 Q In paragraph seven on page two there is
21 reference made to dioxin content of cysts, and, apparently,
22 three salaried employees who have recurring cysts are
23 willing to participate in some kind of a sampling program?
24 A Yes.
25 Q Do you know if that was ever done?

1 A My recollection is it was, but I don't
2 remember what the results were or when they were obtained.
3 It was the intent, of course, since some of the cysts did
4 have fairly long residual effects as far as the chloracne
5 was concerned, there was an attempt to see whether or not
6 dioxins, if they were the cause, really remained in the hair
7 follicles or skin follicles that long and to be able to
8 analyze for it; and I think an attempt was made to do that,
9 but I don't recall any of the details following this memo.

10 Q Okay. Would the Medical Department be the
11 place to inquire about that?

12 A Yeah. That would have been followed up and,
13 I guess, Bill Gaffey took over the coordination of that
14 program after I left, and I would start there.

15 Q All right. Doctor, here is Exhibit 279
16 (Monsanto's I.D. #8323392 through 8323394, inclusive), and
17 I'm specifically interested in paragraph eight of page
18 three of that exhibit.

19 A Uh huh (yes).

20 Q All right. Doctor, Exhibit 279 is a Monsanto
21 form that you recognize, is that correct?

22 A Yes.

23 Q And it appears to be minutes of a meeting
24 of the Nitro Health Study Task Force, dated October 26th,
25 1979, and the date of the memo is October 29th, 1979?

1 A Uh huh (yes).

2 Q You were shown as having been present at
3 that meeting?

4 A Yes.

5 Q On page three of the exhibit reference is
6 made to some question about birth defects in connection
7 with Suskind's examinations. Which examinations are those?
8 The Nitro health study examinations?

9 A Yes.

10 Q Do you know if this question about birth
11 defects was pursued?

12 A I don't remember. Was this after the study
13 was completed? If it was, it would have had to have been
14 considered at the time of the examinations. I don't recall.
15 I'm sure we must have followed up on it, but I don't recall
16 what the results were.

17 Q Do you know why the question came up about
18 birth defects?

19 A I suspect somewhere in the literature when-
20 ever you have something as toxic as dioxin, that's one of
21 the first areas people look for is that sometimes toxic
22 chemicals in general will. That's why you run this par-
23 ticular toxicology test. You do it on fetal results and
24 often a fetus does not have the metabolic enzymes and
25 metabolic systems in place to deal with the elimination of

1 any types of chemicals it might be exposed to, and so fetal
2 damage is sometimes the first place that you will notice
3 toxicology where it won't affect adults. I suspect this
4 was a general question. Whether or not there had been
5 specific evidence of that in dioxin animal studies I don't
6 recall, but it's a logical question to ask for any material
7 you suspect of having toxicity.

8 Q All right. I hand you Exhibit #280
9 (Monsanto's I.D. #8323370 through 8323372, inclusive), and
10 I'm going to ask you about paragraph two on the first page.

11 Doctor, Exhibit 280 is a Monsanto form that you
12 recognize?

13 A Yeah.

14 Q And it's dated October 1st, 1979?

15 A Yes.

16 Q And is, apparently, a memorandum of the
17 minutes of a September 28th meeting of the Nitro Task Force?

18 A Yeah.

19 Q Paragraph two on the first page makes
20 reference to the following: "Suskind has completed his
21 quibbling and the document has been received by the Journal
22 of Occupational Medicine." Do you know what he's quibbling
23 about?

24 A The same wording we were talking about
25 earlier, the wording of the report that was going to be

1 submitted for publication. He was a very picky individual
2 and liked things stated in a specific way.

3 Q Doctor, Exhibit 281 (Monsanto's I.D.
4 #8323340 through 8323342, inclusive). I don't have any
5 questions about it. But if you'll just identify that as
6 a Monsanto document. Do you recognize that as a Monsanto
7 form, Doctor?

8 A Yes.

9 Q And, again, it appears to be a memorandum
10 of minutes of the Nitro Health Study Task Force on Septem-
11 ber 7th, 1979, is that correct?

12 A Yes.

13 Q And you, of course, are shown as having been
14 in attendance at that meeting?

15 A Yes.

16 Q Doctor, here is Exhibit 288 (Monsanto's
17 I.D. #8331272).

18 A Yeah.

19 Q All right. Doctor, Exhibit 288 is a memo-
20 randum prepared by you, is that correct?

21 A That's correct.

22 Q Dated August 20th, 1979?

23 A Uh huh (yes).

24 Q The last paragraph of that exhibit states
25 in part, "the lists we sent to Selikoff by agreement

1 internally contained only those employees whose records
2 connected them specifically with 2,4,5 T-related departments."
3 Now, again, is this relating to the study that Selikoff was
4 attempting to undertake with Mount Sinai?

5 A That's right.

6 Q And that was a study that Suskind's study
7 was to be in response to, is that right?

8 A Not just in response to Selikoff. Suskind's
9 was a more general study.

10 Q Now, you observe in this document that by
11 agreement internally Selikoff was to get only those employees
12 whose record connected them specifically with 2,4,5 T. What
13 do you mean by "agreement internally"?

14 A Well, because we felt there ought to be
15 specific connections to that group of people and that where
16 there were uncertainties relative to this separate group
17 that may have had intermittent exposure or we weren't sure
18 of the exposure, we didn't want Selikoff arriving at con-
19 clusions that were not well-justified and documented as far
20 as their exposures were concerned to 2,4,5 T.

21 Q But didn't you include those intermittent
22 exposures in the group that Suskind studied?

23 A We did. At a time we had more information
24 than at that time. At that time we didn't have all our
25 cohorts identified and we were trying to run people down.

1 We gave him those we had very clear data on in terms of
2 their exposures.

3 Q Did you ever supplement the list you gave
4 Dr. Selikoff to update him?

5 A Not to my knowledge.

6 Q Dr. Selikoff did not have access to the
7 same information you had access to, is that right?

8 A Not these particular cases, that's right.

9 Q Why was that?

10 A Because at the time he didn't ask for it.

11 Q Why wouldn't you have given Dr. Selikoff
12 free access to the records the way you did Dr. Suskind?

13 A Because we had respect for Dr. Suskind's
14 responsibility and ability to carry out an independent study.
15 We did not have that respect for Selikoff, and we had not
16 the data available at the time he requested it.

17 Q Would the other reason be you would be able
18 to shoot Selikoff's study down if he didn't have the same
19 access as Suskind had?

20 A I guess you could conclude that.

21 Q Let me hand you what's been marked Plain-
22 tiff's Exhibit 282 (Monsanto's I.D. #8331273 and 8331274).

23 A Yeah.

24 Q All right. Doctor, Exhibit 282 is a memo
25 prepared by you on Monsanto letterhead, is that correct?

1 A That's correct.

2 Q On page one of that exhibit, paragraph 2C,
3 there's information there about the results of examinations
4 being sent to the physicians of those examined, is that
5 correct?

6 A That's correct, yes.

7 Q And this is about the Suskind examination
8 for the Nitro health study that we have been talking about?

9 A Yes.

10 Q Were the results of these examinations sent
11 directly to the employees also?

12 A I don't think that was the case. I think
13 in every case the results were sent to their physicians so
14 they could be properly interpreted -- they were in medical
15 terms, and the intent was to have their physician interpret
16 data for them.

17 Q Did Monsanto discuss the results with the
18 employees directly?

19 A Each individual employee?

20 Q Yes.

21 A No. In Suskind's study, that was left to
22 him at this stage of the game.

23 Q Was that part of Suskind's contract?

24 A Was it part of his contract that he was to
25 do this?

1 Q Yes.

2 A I have to assume it was or he wouldn't have
3 done it.

4 Q If an employee did not have a physician,
5 would Monsanto undertake to inform the employee of any
6 results?

7 A My recollection is if the employee had
8 requested it and he had been sent a letter indicating that
9 it was ready, Monsanto's physician would interpret it for
10 him.

11 Q Unless it was asked for, Monsanto wouldn't
12 communicate the results to him?

13 A I don't know that, to tell you the truth.
14 In this case they were all sent letters and given a form as
15 to whether they wanted to see the information directly.
16 Whether that is a routine policy current, I don't remember.
17 Anything in a health file in Monsanto is available to the
18 individual through either interpretation by a Monsanto
19 physician, or at his request, his physician. That was my
20 remembrance of our policy at the time that I was involved
21 there. But we did not send medical reports out to an
22 individual without an accompanying contact through medically
23 trained personnel.

24 Q All right, Doctor. I'm going to hand you
25 what's been marked 283 (Monsanto's I.D. #8330781).

1 A Okay.

2 Q Doctor, Exhibit 283 appears to be a letter
3 by R. Emmet Kelly, M.D., to Mr. Hoffman, dated March 30th,
4 1965, is that correct?

5 A Uh huh (yes).

6 Q Do you know who Mr. Paul Hoffman is?

7 A Let's see, at that time that was in the
8 Agricultural Division in '65 and Paul was one of the
9 commercial development managers, as I recall, related to
10 doing agricultural field tests and following the commercial
11 progress of given pesticides in the field. He later left
12 Monsanto.

13 Q Have you ever seen Exhibit 283?

14 A No, I was not aware of it.

15 Q Were you aware in 1965 that dioxin had been
16 identified as a potent contaminant of 2,4,5 T?

17 A No.

18 Q Were you aware that very conceivably it can
19 be a potent carcinogen at that time?

20 A No.

21 Q Do you know if that information was ever
22 communicated to the workers at Nitro?

23 A I have no idea.

24 Q In keeping with Monsanto's policy of advising
25 affected workers in the workplace, would this be the kind of

1 information that would be communicated to them according to
2 your policies?

3 A At some point in time. As I interpret this,
4 this is a very preliminary type of communication, and at
5 what point -- he talks about a rabbit test. I don't know
6 whether that's an acute test or a 30-day test or 90-day or
7 what. Very probably it would have to be something that had
8 been confirmed by more than one group and would have to be
9 something that would be significant in terms of its poten-
10 tial human activity, and for me to say whether it was policy
11 based on what they have here, I can't say that for sure.
12 I just hadn't seen that previously.

13 Q Let me show you what's been marked 284
14 (Monsanto's I.D. #8300999).

15 Doctor, Exhibit 284 is a letter from Elmer P.
16 Wheeler to W. P. Dunlap, dated 1967, is that correct?

17 A Yes.

18 Q Shows a copy to R. E. Kelly, M.D. Is
19 Dr. Kelly, was he at the time the head of the Medical
20 Department, as far as you know?

21 A Yes.

22 Q Do you know who W. P. Dunlap is?

23 A You know, I don't recall. Dick Dunlop --
24 no, I don't know who Dunlap is. I'm guessing he must have
25 been somebody in Agricultural.

1 Q Ever seen this exhibit before?

2 A No.

3 Q In your position as Director of Special
4 Projects, did you have occasion to communicate with Dow
5 Company regarding toxicity of dioxin?

6 A To the best of my recollection, I don't
7 think I ever did. I'm trying to recall if I ever asked any
8 question, directly myself, whether they had any data on their
9 employees on 2,4,5 T, and if I ever did I never got anything.

10 Q Who would you have asked?

11 A Probably would have been their epidemiologist
12 at that time. I'm trying to recall what his name was. They
13 had a department before we did. They had an M.D. epidemiolo-
14 gist up there, and I can't remember his name, I really
15 can't. But I don't think I directly did. Someone may have
16 and it may not have been me just to determine whether they
17 had data that could be made available, but we got no
18 response in a positive way.

19 Q I'm going to hand you 285 (Monsanto's I.D.
20 #8300998), Doctor. Again, it looks like it has a 1967
21 date on it but it's very faint.

22 A Okay.

23 Q All right. Doctor, Exhibit 285 is a letter,
24 again, it looks like it's dated March, 1967, from Carl D.
25 Bohl, I guess, to Dr. Kelly regarding chloracne. Have you

1 ever seen that document before?

2 A I don't recall seeing it before, although,
3 it was in the Medical Department. Carl Bohl is an industrial
4 hygienist. It's just one I don't recall coming across
5 before.

6 Q In the course of your position as Director
7 of Special Projects at Monsanto, did you have occasion to
8 work with Mr. Bohl?

9 A After I went into the Department of Environ-
10 mental and Health only on an occasional basis.

11 Q Did you discuss with anybody in that depart-
12 ment problems with chloracne and 2,4,5 T with anyone?

13 MR. LOVE: Time period.

14 Q When you moved into that department in,
15 what was it, '77?

16 A I'm trying to think. I don't recall speci-
17 fically doing that, although, that doesn't mean I didn't
18 have some discussion. I just don't recall specifically
19 talking with Bohl about the subject.

20 Q This problem of chloracne and Agent Orange
21 and 2,4,5 T became thoroughly intense at the time period
22 you were in that position as Director of Special Projects,
23 isn't that true?

24 A Yes.

25 Q Seems strange you didn't have some discussion

1 about that. Like, it was the topic of conversation. That's
2 what it was, wasn't it, pretty much?

3 A It was a topic of conversation.

4 Q Didn't it pretty much dominate your time?

5 A I wouldn't say it dominated, but I had
6 several projects.

7 Q It was probably seventy-five, eighty
8 percent of it?

9 A No, no.

10 Q What percentage of your time --

11 A I'd say twenty percent. We also had pro-
12 grams under way in our Springfield plant and a number of
13 other plants related to many other chemical problems in the
14 company in attempts to get our data in position to do
15 epidemiology studies on a broad basis. This was one of a
16 critical nature during a given period of time, but certainly
17 it was not anywhere dominating my time in that sense.

18 Q Didn't you try to find out all you could
19 about it?

20 A Oh, yes. Sure.

21 Q Didn't you talk to people in the department?

22 A That doesn't mean I read every single bit
23 of information that existed.

24 Q Did you talk to Dr. Kelly about it?

25 A Dr. Kelly was retired, and I don't know that

1 I talked to Dr. Kelly about it.

2 Q You knew Dr. Kelly?

3 A Oh, yes, of course, I knew him.

4 Q But it's just something that really didn't
5 come up that much, right?

6 A What's something that didn't come up?

7 Q Chloracne at Nitro. You seem to know so
8 little about it.

9 A I didn't say I knew little about it. I knew
10 a lot about it at some point in time, but you're saying did
11 I know anything that went on back to day one, and the
12 answer to that was I did not scan, and I don't know of
13 any other single individual, who necessarily scanned every
14 piece of information that was ever written in Monsanto about
15 chloracne because there is some thousands of pieces of
16 correspondence over a period of time.

17 Q But in the early 1965, '66, '67 seems as
18 though you would have --

19 A I had no connection with this department,
20 absolutely none. I was off in a completely different area
21 and completely different area of the company.

22 Q But during the critical time in '77, '78
23 and '79 you were intimately involved with that problem,
24 and yet you have no recollection of these earlier documents?

25 A That's correct. I've not seen those

1 particular documents.

2 Q And your curiosity didn't lead you to seek
3 people out or anything like that, is that right?

4 A I'm not saying some of my people may not
5 have been familiar with this particular document you showed
6 me. Judy Zack might have been. I can't say for certain.

7 Q Didn't you ever ask anybody, "When did we
8 first find out, why just now? When did we first find out
9 about it, why didn't somebody tell me"?

10 A In those exact terms --

11 Q Didn't you ever say, "Judy, when did we
12 know about dioxin and this chloracne, what's going on, I
13 just got that job"?

14 A I first knew about it from all the litera-
15 ture I had. It wasn't particularly relevant to the study
16 that I was going to make that I knew a particular document
17 that had been written in 1965.

18 Q You really wouldn't have done anything
19 about it at all unless it was brought up by the Agent Orange
20 and Selikoff?

21 A That's not correct at all. We had ongoing
22 plans through the Nitro study, Springfield study. You have
23 to remember there are lots of plants Monsanto was involved
24 in, and this was one of a number we were involved in.

25 Q When did you first decide to study 2,4,5 T

1 at Nitro?

2 A The precise date which we decided?

3 Q Yes. Your recollection.

4 A My best recollection would be about 1978.

5 Q And why did you just in '78 -- you knew you
6 had a chloracne problem since 1949 and the literature shows
7 that dioxin probably caused it in '68, '69 or '70 and some
8 literature suggests you knew in 1957. Why did you wait
9 until 1978 to all of a sudden decide to get curious about
10 chloracne and dioxin?

11 A We hadn't had a chloracne problem since
12 1969 when we shut the process down in that sense in terms
13 of an active file that would have come to my attention, and
14 I was not connected with any part of that until 1977.

15 Q I know you had no responsibility for it at
16 all.

17 A It came at the time I was asked to undertake
18 setting up an expanded study at the Nitro Plant along with
19 a lot of other plants became important for a variety of
20 reasons.

21 Q What are those reasons?

22 MR. LOVE: Stuart, let me object for
23 just a moment. You have asked this question
24 several times and he's given you an answer
25 several times. I'm going to ask you to give

1 an answer again, but I would appreciate if
2 we could stop going over the same grounds time
3 and time again.

4 Q Why in '78 did you finally decide to study
5 dioxin in such detail?

6 A Well, dioxin is only one of many materials
7 that we decided to study in the period of '76, '77 and '78,
8 and as I indicated to you, we had a number of plants for a
9 variety of materials that were involved that had potential
10 toxicities, and dioxin, 2,4,5 T was one of them. We had a
11 Springfield plant that made many monomers, vinyl chlorides,
12 styrenes, a variety of those. We needed to do work on the
13 Springfield plant. We had acrylonitrile involved in our
14 textile plants, we needed to do studies on that. We had
15 Texas City Plant where different kinds of monomers and
16 chemicals were made. This was a part of the overall studies
17 that were initiated on several plants --

18 Q But, Dr. Meyer --

19 A So we had a lot of ground to make up.

20 Q You're not answering my question.

21 A I'm exactly answering your question. I
22 told you why we started in 1977.

23 Q If in 1978 all of the people had gotten over
24 their chloracne and the problems because they were just
25 transient problems, as you've testified, in 1969 and in the

'60's, why would you undertake to study dioxin, 2,4,5 T if nobody had any problems because everybody got well?

A Well, we undertook it because there were many people interested in the longer-term effects and we had not made a longer-term study other than the individual examinations of individuals over the years. We had not made an organized scientifically sound epidemiological study as to what the long-term effects were. The only residual effects we knew were related to chloracne; and there are residual effects over a period of years, the scarring and a variety of others. That was known.

Q But you knew individually that everybody had gotten over everything with maybe the exception of chloracne?

A That wasn't said that everyone had gotten over everything.

Q Is there one person or two people that you know about that simply didn't get over their exposure to 2,4,5 T and carried with them systemic problems?

A I don't know that. That's what we undertook to study to find out.

Q I'm asking you why --

A Because it became important in a variety of situations.

Q Tell me about those situations.

1 A Where chemicals had been produced over long
2 periods of time or science in general didn't know what the
3 long-term effects were where acute effects might be known,
4 and consequently it became important to a lot of chemical
5 companies to undertake longer-term tests when it was realized
6 the residual times required to bring forth symptoms of
7 cancer and some other conditions required those long terms.
8 Those were not problems that people were aware of back in
9 the '50's and '60's.

10 Q How did you become aware of them in 1978
11 such that you could associate dioxin and 2,4,5 T with those
12 kinds of problems?

13 A I told you that I had a general awareness
14 of the toxicity of chemicals through my general knowledge
15 of the literature.

16 Q Is that what led Monsanto Company in 1978
17 to undertake this study?

18 A That's not only what I understood but a lot
19 of people were becoming aware of. I was just one individual
20 who was asked to head up and develop and organize longer-
21 term epidemiology studies relating to the effects of our pro-
22 ducts so we could have data in a handlable form in all of our
23 plants so we could with some degree of competence and dis-
24 patch achieve levels of the long-term effects of chemicals
25 that have not been available to people in the past.

1 Q Did you undertake to make the study before
2 or after Selikoff announced he was going to?

3 A We undertook to develop the Nitro study at
4 a plant before Selikoff was involved in the study. See,
5 there was a great deal of concern about the dioxins long
6 before Selikoff announced he was going to do a study.

7 Q Doctor, I'm going to hand you what's been
8 marked 286 (Monsanto I.D. #8325604) and 287 (Monsanto's
9 I.D. #8331712), and ask you to look at those and tell me if
10 you've ever seen those two documents before?

11 A This one I've not seen.

12 MR. LOVE: That's 286.

13 Q 286 you've not seen?

14 A I think I've seen this one at some point in
15 time.

16 Q 287?

17 A Yes. After I went into DMEH. I think I've
18 seen this document.

19 Q And where would you have seen this document
20 287?

21 A I presume in a file somewhere in the Medical
22 Department as we were examining literature.

23 Q So you undertook to examine the literature
24 that was available on 2,4,5 T and dioxin?

25 A Yes, at some point we did, sure. This would

1 have been in Kelly's medical files that he would have left
2 and been retired at the time, but I think somewhere I've
3 seen this one.

4 MR. CALWELL: Okay. Thank you, Doctor.
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21 Ferdinand C. Meyer
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2 STATE OF ILLINOIS)
3) SS
4 COUNTY OF MADISON)
5
6

7 I, M. JOY SPRINGER, a Notary Public, duly
8 commissioned and qualified in and for the County of Madison,
9 State of Illinois, do hereby certify that pursuant to notice
10 came before me on the 6th day of July, 1983, at the Radisson
11 Hotel, Room 215, 9th Street and Convention Plaza, St. Louis,
12 Missouri, FERDINAND C. MEYER, who was by me duly sworn to
13 testify to the truth and nothing but the truth of his
14 knowledge touching and concerning the matters in controversy
15 in this case; that he was thereupon carefully examined upon
16 oath, and his examination reduced to writing under my super-
17 vision; that the deposition is a true record of the testi-
18 mony given by the witness; and signature of the witness was
19 not waived by agreement of counsel.

20 I FURTHER CERTIFY that I am neither attorney
21 nor counsel for nor related to nor employed by any of the
22 parties to the action in which this deposition is taken;
23 and further, that I am not a relative or employee of any
24 attorney and counsel employed by the parties hereto, or
25 financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my

hand and affixed my notarial seal on this _____ day of

_____, 1983.

Notary Public within and
for the County of Madison,
in the State of Illinois.