

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.)

No. 81-2098

MONSANTO COMPANY, a Delaware)
Corporation,)

Defendant.)

Deposition of
GEORGE J. LEVINSKAS
taken on behalf of the
Plaintiffs.

Reporter: M. Joy Springer

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APPEARANCES:

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

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

IT IS STIPULATED AND AGREED by and between
counsel for the plaintiffs and counsel for the defen-
dant that the deposition of GEORGE J. LEVINSKAS may
be taken pursuant to Rule 26(a) of the Federal Rules of
Civil Procedure, on July 14, 1983, at the Radisson
Hotel, Room 215, 9th Street and Convention Plaza, St.
Louis, Missouri, before M. JOY SPRINGER, a Notary Pub-
lic within and for the County of Madison, State of

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

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

11 * * * * *

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17 GEORGE J. LEVINSKAS

18 produced, sworn and examined on behalf of the plaintiffs,
19 deposes and says as follows:

20 EXAMINATION

21 BY MR. CALWELL:

22 (Whereupon the reporter marked Plain-
23 tiffs' Deposition Exhibit #337 (Monsanto
24 #8324400 and #8324401) consisting of 2
25 pages, for the purposes of identification.)

1 Q (By Mr. Calwell) Doctor, would you
2 state your full name for the record, please.
3 A It's George J. Levinskas.
4 Q You have a Ph. D., is that right?
5 A Yes, Ph. D.
6 Q You still live at 517 Fairview Circle?
7 A Fairways Circle.
8 Q How do you pronounce it, Creve --
9 A It's Creve Coeur.
10 Q And what is your age, sir?
11 A I have to stop and think. 59. My
12 birthday just happened last week.
13 Q And you graduated from Wesleyan
14 University in Middletown, Connecticut?
15 A That's correct.
16 Q That was your undergraduate work?
17 A Right.
18 Q Was that in Chemistry?
19 A Major in Chemistry, minor in Mathematics.
20 Q Then you went in the Coast Guard?
21 A No. I was in the Army in between
22 time at Wesleyan. I started at Wesleyan and at the
23 outbreak of World War II I left to go in the service,
24 returned and got my Degree.
25 Q And you got a Ph. D. at the University

1 of Rochester in 1949?

2 A '53.

3 Q And that was in Chemistry, right?

4 A No. That was in Pharmacology with

5 a minor in Biochemistry.

6 Q That Degree was conferred on you in

7 1953?

8 A 1953.

9 Q What did you do following being

10 awarded the Ph. D.?

11 A I joined the faculty at the Grivas

12 School of Public Health in the Department of Occupa-

13 tional Health at the University of Pittsburgh.

14 Q And what did you do for the University

15 of Pittsburgh?

16 A Combination of teaching and research.

17 Q Did you teach Toxicology?

18 A Yes, I taught a course in Toxicology.

19 Q Industrial Toxicology?

20 A The title was Industrial Toxicology, yes.

21 Q What else did you teach there?

22 A I gave seminars and I lectured in a

23 variety of other classes or courses for other members

24 of the faculty, but I had only the one course which was

25 my particular course.

1 Q And that being Industrial Toxicology?
2 A Industrial Toxicology.
3 Q Now, what is Industrial Toxicology?
4 A I'm not sure there's a formal definition
5 for it, but I would say that it's a study of the effects
6 of chemicals which were used, handled and encountered
7 in industry.
8 Q Now, that bears some strong relation-
9 ship to your Ph. D. in Pharmacology?
10 A It's essentially a facet of Pharma-
11 cology, if you want to call it such.
12 Q What is Pharmacology?
13 A Well, Pharmacology in its broadest
14 sense would be the science of drugs. Then it would
15 have several subdivisions ranging from the knowledge
16 of plants from which drugs or medicinal drugs could be
17 extracted on the compound, prescribing of treatments,
18 to the treatment of drugs, medical conditions as well
19 as studying the actions of drugs, including their ad-
20 verse or toxic reactions.
21 Q Now, sounds like a pretty broad
22 discipline.
23 A Yes.
24 Q On what did you do your dissertation?
25 Did you single out some specific area that you were

1 particularly interested in?

2 A Actually, I studied the characteris-
3 tics of the bone mineral.

4 Q Now, how long did you teach at the
5 University of Pittsburgh?

6 A Five years, until 1958.

7 Q And then what did you do?

8 A Then I joined the American Cyanamide
9 Company at their Stamford, Connecticut, laboratory.

10 Q They had Ledderle Laboratories there,
11 did they not?

12 A No. Ledderle was a division of
13 American Cyanamide, but I was in the Corporate Medical
14 Department, which is separate from the Ledderle Division.

15 Q Now, being in the Corporate Medical
16 Department, was that related to this area you had been
17 teaching in Industrial Toxicology?

18 A Yes. They combined two laboratories,
19 one from Toxicology, one from Industrial Hygiene, to
20 form a so-called Environmental Health Laboratory, and
21 I joined them to head up that laboratory.

22 Q So did you have some experience or
23 training in Industrial Hygiene?

24 A I had some while I was in the graduate
25 school and I have been a member of the Industrial Hygiene

1 Association, I guess, since about '54, '55.

2 Q Now, how does Industrial Hygiene
3 as a discipline, and I assume that it is, relate to
4 Industrial Toxicology? Are they pretty close, they
5 go hand-in-glove?

6 A They are quite close, and from thirty
7 years ago I dare say that most people probably wore
8 both hats, that they were not as separate as they are
9 today.

10 Q Could you briefly tell me what the
11 discipline of Industrial Hygiene involves as you did
12 when you explained --

13 A Well, primarily Industrial Hygiene
14 is concerned with the -- I guess, the definition would
15 be monitoring of stresses as they occur in the workplace.

16 Q Now, when you say stresses as they
17 occur in the workplace, that's a term of art, obviously.
18 What's it mean to you?

19 A Well, stresses to me covers a variety
20 of stresses. It can range from noise to radiation to
21 heat. Whatever physiological stresses may exist in the
22 workplace.

23 Q So if I understand what you're saying,
24 then, Industrial Hygiene is the study of the contact
25 between human action and whatever might be in the workplace

1 that would cause stress?

2 A His work environment, yes.

3 Q And the purpose for studying that
4 is to do what?

5 A Protect the health and welfare of
6 the employees.

7 Q So out of examining these points of
8 stress you, I guess, develop principles or rules --

9 A One would hope to control them within
10 tolerable limits.

11 Q I'd like to explore that just a little
12 bit more. Once you identify a stress point, are you
13 responsible as the Industrial Hygienist for designing
14 different ways of, let's say, if it's a toxic substance,
15 different ways of handling the materials or different
16 ways of processing the materials; or if it's connected
17 with a production of some substance, for example, would
18 the Industrial Hygienist be responsible for maybe al-
19 tering the means of production to increase the safety
20 of the worker? Is that the kind of thing you do as an
21 Industrial Hygienist?

22 MR. LOVE: Stuart, I would object to
23 the form of your question on the basis you
24 haven't established he is an Industrial
25 Hygienist. Go ahead and answer.

1 A I'm not the Industrial Hygienist.

2 Q (By Mr. Calwell) I wasn't asking you
3 to testify as one, but you belong to the Industrial
4 Hygiene Association for thirty years and it's very
5 closely related, and I'm simply asking you if you know
6 if that is a function that the Industrial Hygienist would
7 perform.

8 A Having said I have been a member of
9 the society for thirty years and I tried to indicate
10 there is an overlap, if you will, between Toxicology
11 and Industrial Hygiene, and so on that basis and thirty
12 years ago there were no separate professional societies
13 for toxicologists, so most of us belonged to that society.
14 I would have to conjecture that probably that's the
15 function of the Industrial Hygienist, but I'm not an
16 Industrial Hygienist and I can't speak with conviction
17 on that point.

18 Q I understand that. But that would
19 generally be a role that you would expect an Industrial
20 Hygienist to play a significant part in?

21 A Oh, there would be a variety of people
22 involved in safety who would participate in that de-
23 cision, and I can assume the Industrial Hygienist would
24 have a role in it.

25 Q Now, in relation to the Industrial

1 Hygienist, again, referring to that little hypothetical
2 situation that I described, who would you expect to
3 be playing a role?

4 A It would depend on the structure of
5 the organization, but it would be a variety of people
6 starting with the managerial people, the engineering
7 people, process people, chemists, medical personnel.
8 I would think there would be a variety of people in-
9 volved in that decision.

10 Q Now, you worked for American Cyanamide
11 in the Corporate Medical Department. Now, what
12 specifically did you do for them?

13 A We had a laboratory that was con-
14 cerned with the toxicology of all products of the
15 company except the drugs which were handled by the
16 Ledderle Division.

17 Q Was that company involved in any
18 chlorinated phenols?

19 A I do not recall that they were in-
20 volved in the manufacture of them. They may have used
21 them.

22 Q Did you have occasion to -- Is test-
23 ing the right word for what you would do?

24 A (Nods head affirmatively.)

25 Q When you were working for American

1 Cyanamide, did you have occasion to test chlorinated
2 phenols for toxicity?

3 A No, I did not.

4 Q When you were doing your course work,
5 did you have any studies that involved chlorinated
6 phenols of any kind?

7 A I don't recall that I did any work
8 on those.

9 Q I would assume that you're at least
10 now familiar with a group of substances that have been
11 generally identified as dioxins?

12 A I've heard of them.

13 Q During your course work when you were
14 working on your Ph. D. or during your course work did
15 you have occasion to become acquainted with any of the
16 dioxins, know of their existence?

17 A No, and I don't believe anybody else
18 knew of their existence at that time.

19 Q And that would have been in the late
20 '40's and early '50's, right?

21 A Yes.

22 Q Did you study about chloracne during
23 your course work?

24 A Yes. Chloracne is a condition that's
25 fairly well described in the medical literature.

1 Q Even in the late 1900's there was some --

2 A I think the term was probably coined
3 about that time.

4 Q And during your course work did
5 you have occasion to know of some of the causes of
6 chloracne, substances that might cause it?

7 A The classic one would be the chlori-
8 nated naphthalenes which is cited in virtually all
9 textbooks in which it's referred to.

10 Q Do you now know if a chlorinated
11 naphthalene has the potential for creating a dioxin
12 in some step of its use?

13 A I don't know. Not knowing how they
14 manufacture chlorinated naphthalenes, I don't know if
15 that is a chemical possibility. I don't recall of
16 reading about dioxins in chlorinated naphthalenes.

17 Q Does the name chlorinated naphthalene
18 indicate to you -- I guess, you're a toxicologist, right?

19 A Yes.

20 Q -- as a toxicologist that there are
21 sufficient structures there, molecular structures that
22 might set up a situation where you could get a dioxin
23 of some kind under circumstances?

24 A As conjecture, I don't believe that a
25 naphthalene would form a dioxin. Chemically it's a

1 double ring, unlike the dioxin that's formed from
2 single benzene rings.

3 Q When did you first become acquainted
4 with these substances identified as dioxins?

5 A I'm not sure I could put a particular
6 time frame on it, but I would say probably somewhere
7 into the early, mid'70's, perhaps.

8 Q O.K. How long did you stay with
9 the American Cyanamide Company?

10 A Until 1971.

11 Q And then you went to work for Monsanto?

12 A Yes.

13 Q And were you Manager of Product
14 Assessment when you first went there?

15 A That was the position I held. I
16 think the first title they gave me was Manager of
17 Product Development and they decided that was a rather
18 non-descript term for my position, so they changed it
19 to Manager of Environmental Assessment and Toxicology.

20 Q Where did you go to work for Monsanto?
21 Was that in the St. Louis area?

22 A St. Louis area.

23 Q Was there a specific plant you went to?

24 A Well, corporate headquarters.

25 Q And what is your present position with

1 the company?

2 A I'm the Director of Environmental
3 Assessment and Toxicology.

4 Q Have your duties changed or respon-
5 sibilities changed much since 1971 with the company?

6 A Not substantially. There's been
7 somewhat of an enlargement and intensification, but
8 essentially unchanged.

9 Q So essentially you're doing the same
10 work in the same area that you always have for Monsanto?

11 A That's correct.

12 Q I would imagine you probably have
13 a little more administrative responsibility and that
14 sort of thing?

15 A That's correct.

16 Q When you first went to work for
17 Monsanto, was there a specific project that you went to
18 work on, or what did you start doing for them?

19 A The primary emphasis was in the area
20 of what we call environmental assessment. They were
21 starting a program to review what was known as its
22 products to determine what additional testing should
23 be done, and to get that program underway is why I
24 joined the company.

25 Q Was that a new undertaking for the

1 company?

2 A I don't think it was new in the sense
3 of de novo, but it was a redirection and renewed em-
4 phasis on it.

5 Q So there had been some program, by
6 whatever name, that had sought to do essentially what
7 you came to the company to do?

8 A I believe most of what I was doing
9 was being done before I came there.

10 Q And you simply, perhaps, redirected
11 it, and, perhaps, improved on it.

12 A Refocused and reintensification.

13 Q O.K. And what did that involve?
14 Were there specific substances you were looking at at
15 that time?

16 A It started off as a general idea,
17 and what we started to do was to look at new products,
18 proposed new uses for existing products or where we
19 were instituting, proposing to institute changes in
20 manufacturing procedures, that we would take a look at
21 those operations of those products to review them and
22 from our perspective see whether there was additional
23 information that ought to be developed in light of
24 concerns, questions or lack of knowledge regarding
25 materials involved.

1 Q O.K. And did any of those products
2 include chlorinated phenols that Monsanto might have
3 been using or producing?

4 A We do have a material which is a
5 substitute of chlorophenol used as a germicide. I
6 think we looked at that one. That's about the only one.

7 Q Did it have a name?

8 A Santophen.

9 Q Was that at the Krummrich Plant?

10 A It was Krummrich or Queeny. I really
11 couldn't tell you for sure.

12 Q And what were you looking for?

13 A Well, this is a germicide that was
14 registered with the Environmental Protection Agency,
15 and so we took sort of a general look at it to see if
16 there was something more we should do. Probably my
17 general recollection would be was since it was registered
18 with the EPA and met the registration requirements, we
19 probably didn't do much with it.

20 Q And this would have been in 1970, '72,
21 that time frame, somewhere in there?

22 A Somewhere in the early to mid '70's,
23 probably.

24 Q Were you looking for a contaminant
25 in Santophen?

1 A No. It was just to look at the product
2 as it was being sold.

3 Q Did you look at any, like, penta-
4 chlorophenol or trichlorophenol, orthochlorophenol
5 during that period?

6 A We probably did some acute toxicity
7 testing on one or two of the chlorophenols. We did do --
8 This would be getting into the mid 1970's probably --
9 some testing of either pentachlorophenol or penta-
10 chlorophenol byproducts, waste products, for chloracne
11 in the rabbit ear test for the chick edema factor.

12 Q You were looking for a dioxin then,
13 is that right?

14 A I wasn't specifically looking for a
15 material. We were testing to see if they caused the
16 biological effects. Dioxin might cause them or dibenzo-
17 furans might cause them.

18 Q At least those two substances were
19 on your mind, so to speak, when these matters were being
20 looked at and tested for acute toxicity?

21 A If I could recall my state of mind,
22 I don't think I had in mind a particular substance that
23 I was looking for. My concern from a biological test-
24 ing standpoint was if it produces this biological res-
25 ponse in animals, whatever produces it, then there are

1 certain precautions we'd have to take in advising
2 people about handling these residues. What the causa-
3 tive agent is in most cases is of secondary importance
4 to me.

5 Q But you knew at that time that out
6 of that, say, the pentachlorophenol or trichlorophenol,
7 that if chloracne was produced, the possible causative
8 agent would be one of the dioxins or dibenzofurans?

9 A Having a general awareness of that, yes,
10 but not any specific dioxin.

11 Q But you were at least aware of that
12 at the time, right?

13 A Right.

14 Q Do you know if any dioxins were
15 identified during this period of time in those substances?

16 A I don't recall that they were, but
17 then my group is not involved in chemical analysis of
18 materials.

19 Q Were you working in conjunction with
20 the group that was involved in the chemical analysis
21 at the same time on the same substances for the same goal?

22 A We do all of our work in conjunction
23 with the unit who has responsibility for the product.
24 I can't say that I actually knew what they were doing
25 or was aware of what they were doing in terms of chemical

1 analysis. As a matter of fact, it probably -- We
2 probably could detect things in the biological system
3 at levels lower than the chemists could detect them
4 at that time. So I really don't know whether they
5 were attempting to analyze and unable to analyze.

6 Q You were working with animal testing,
7 I suppose?

8 A Yes, sir.

9 Q How do you detect these substances
10 through animal tests? Is it through observation of
11 effects on the animals and then you deduce from that
12 what they were exposed to?

13 A Well, we generally know what we are
14 giving the animal, and the attempt is made to intro-
15 duce the chemical to the animal in a manner analogous
16 to that which a worker or customer would encounter the
17 chemical. Then we observe the effect on the animal.
18 Now, we don't know whether the material we administered
19 or some byproduct or some metabolic end product pro-
20 duces some end effect. The first stage is merely a
21 bringing together the animal, chemical and observation.
22 The attempt to decipher what specifically produced
23 which observation is another saga that takes a con-
24 siderably longer time.

25 Q So if I understand it, the first phase

1 or this aspect of your testing involves inducing a
2 Monsanto product or a known substance in an animal
3 and then recording the results or effects, if any?

4 A That's correct.

5 Q From a toxicological standpoint and
6 related industrial hygiene standpoint, if a worker was
7 being exposed to this product that gave you some un-
8 desirable results in your animal testing, is it
9 important for you to carry it one step further to find
10 out specifically what the toxic substance is before
11 you take some action regarding, say, worker exposure?

12 A I don't think it's necessary and
13 I dare say in most cases that's not done. If you
14 know something in that package, if you will, that
15 you administered to that animal is producing an ad-
16 verse effect, the primary concern and emphasis should
17 be on controlling, limiting or eliminating exposure so
18 that the effect is not seen. To delay action until
19 you found out what the cause was I think just is not
20 done, that's not the practice. One can control a risk
21 without knowing what's involved.

22 Q And is that in fact Monsanto's policy?

23 A Yes, that's the practice in the
24 chemical industry, as far as I know it.

25 Q Now, as a toxicologist and in the

1 related industrial hygiene area, how do you determine
2 that worker in the workplace is suffering some dele-
3 terious exposure that would require the Medical De-
4 partment, the toxicologist and the industrial hy-
5 gienist to take a look at the situation? How do you
6 come to know that sort of thing?

7 A I'm not sure there is a specific
8 answer that would answer all things. In some cases,
9 perhaps, in most cases, one would start looking at a
10 material before there were complaints. This is really
11 the rationale of doing the toxicity tests is to have
12 foreknowledge of what may occur so as to avoid diffi-
13 culty --

14 Q There is a preventative philosophy in
15 this --

16 A It's a subhealth concept almost in
17 the sense of preventative medicine. If there are
18 worker complaints, these would merit investigation, if
19 a physician has a question that he encounters. There
20 could be a variety of reasons. It could be the appear-
21 ance of information in the literature or elsewhere that
22 a chemical produced an effect and one would wonder whether
23 chemicals somewhat similar or reasonably similar might
24 be producing a similar effect. But there could be a
25 variety of trigger points.

1 Q In connection with the preventative
2 concept in toxicology and industrial hygiene, does
3 that require people, such as yourself, to stay
4 abreast of the literature in order to try to see if
5 there are going to be problems that you might be
6 able to prevent in the workplace?

7 A This is one of the things we would
8 hope to try to do.

9 Q And does Monsanto maintain some
10 kind of a library that you have access to for this
11 kind of research?

12 A We have a variety of laboratories.
13 We have one in the Corporate Medical Department and
14 we also have close by our Central Research Laboratories.

15 Q I said library.

16 A It should be libraries. One is
17 actually in the Department of Medicine and Environ-
18 mental Health. We have a Corporate Research Center
19 which has laboratories connected to which are exten-
20 sive actual library facilities.

21 Q Is that Corporate Research Center?

22 A Yes. And then in the last decade
23 mostly there's been a proliferation of online computer
24 services that will give you access to abstracts in
25 literature, and we subscribe to several of these.

1 Q And, if you know, prior to about
2 ten years ago when you had access to these computer
3 data bases, I suppose --

4 A They have really grown only about
5 the last ten years.

6 Q Did the Monsanto libraries, were
7 they on, did they prescribe -- Is there literature that
8 you subscribe to or if some scientist somewhere writes
9 a paper, how do you get it as a toxicologist?

10 A Again, there's no fixed answer. There
11 are numerous abstract services. Chemical abstracts,
12 biological abstracts are the largest, but there are
13 also various subspecialties in subject disciplines.
14 There are services, one of which is the table of
15 contents in which they simply reproduce the table of
16 contents of various journals and they come out in little
17 Reader's Digest magazine-size form. There are journals
18 which individuals subscribe to or get as part of their
19 membership in these societies. So each person has his
20 own way of trying to cope with this.

21 Q So it looks like a combination of
22 things. I guess, the Monsanto libraries would be on
23 one or more of these chemical abstract services?

24 A That's correct.

25 Q And these table of content services,

1 and in addition, would the Monsanto research libraries
2 also subscribe to various publications, I suppose?

3 A Yes.

4 Q And then in addition to that, in-
5 dividual toxicologists, like yourself, may, perhaps,
6 subscribe to professional publications?

7 A Yes.

8 Q Do you know how long the Monsanto
9 libraries that you have been talking about have been
10 in existence? Is this something that's been a long-
11 time thing with the company?

12 A I don't know, but I would conjecture
13 that they probably have almost the same life span as
14 the research laboratories themselves. With respect
15 to the Medical Department library, it probably goes
16 back to about the time of the Medical Department simply
17 because it would be impractical to operate without a
18 library resource.

19 Q So I would conclude from this that you
20 wouldn't have had a company without those kinds of
21 facilities, probably?

22 A Every place I have been associated
23 with has had a library, and I don't see how one could
24 possibly hope to even trail a pack without a library.
25 You couldn't even hope to trail a pack without a library,

1 A Yes.

2 Q And anybody involved in industrial
3 hygiene?

4 A Yes.

5 Q And also people involved in the Medi-
6 cal Department?

7 A That's correct.

8 Q These are like tools of the trade,
9 I suppose?

10 A That's correct.

11 Q Now, one project that you remembered
12 spending some time on in the early to mid '70's was an
13 examination of Santophen R, and at that time there
14 were probably other substances you were looking at in
15 this evaluation process that was going on?

16 A That's correct.

17 Q Would you undertake to do some research
18 on that in connection with the actual laboratory tests
19 and experiments you were doing, look at the literature
20 and that kind of thing?

21 A What we would attempt to do would
22 be to attempt to look at the information in our files,
23 a look at the literature to see what information may be
24 there that was not in our files. We would attempt to
25 get information with respect to who was using it and

1 how or what it was being used for so that from that
2 combination of information we could reach some judg-
3 ments as to whether the product was reasonably accept-
4 able for its intended use, could be used safely, whether
5 there were questions which would arise and we felt that
6 we could develop additional information to answer those
7 questions. That's the perspective which we take those.

8 Q And that kind of inquiry may lead
9 you to the resource library and a literature search?
10 It may lead you in many different directions to collect
11 this information?

12 A Yes.

13 Q Now, did that evaluation project
14 that you were generally involved in in the early to mid
15 '70's, did that have an end, at some point in time
16 did that process come to an end?

17 A That's a never-ending process. It
18 continues to this day, and periodically we go back
19 and we review things that we have reviewed because
20 of something that triggers a desirability of going
21 back and looking at it.

22 Q So when we were talking earlier about
23 your job beginning in '71 and continuing essentially
24 unchanged through today, this evaluation project really
25 is your job, that's what we have been talking about?

1 A That's the primary aspect of it.

2 Q Now, during this period 1971 through
3 today have you had occasion to take a look at and
4 evaluate an end product that was manufactured at the
5 Nitro facility identified as 2,4,5-T?

6 A I don't recall that I ever did anything
7 with 2,4,5-T.

8 Q Have you done any work with one or
9 more of the dioxins?

10 A I've never done testing with a dioxin.

11 Q Have you done any reading about dioxin
12 in connection with your job?

13 A I've read of dioxins, I've read about
14 dioxins, and in my comment about 2,4,5-T, I've read
15 on 2,4,5-T.

16 Q Now, would you have been relying on
17 the Monsanto libraries for those readings?

18 A Yes, we would do a search through
19 the library to gather the information.

20 Q And you have done that on 2,4,5-T?

21 A To some extent.

22 Q And you've also done that on one or
23 more of the dioxins?

24 A Yes.

25 Q Which of the dioxins, if you can

1 remember, have you done that kind of research on through
2 the Monsanto Research Library?

3 A I've read something or other on
4 probably twenty different isomers because there are
5 tables in which they have listed acute toxicity of
6 a series of them, and I'd say probably twenty items
7 may appear in some of those tables.

8 Q One of the more popular of the dioxins
9 appears to be tetrochlorodibenzo-para-dioxin. Have
10 you done some reading on that?

11 A Yes, I have.

12 Q Do you recall when you started this
13 inquiry through the literature in the research library
14 on 2,3,7,8-TCDD?

15 A Again, I'd say probably casually.
16 When I say casually, I mean just sort of as a general
17 interest and hearing discussions at scientific meetings
18 probably through the mid '70's and towards the end of
19 the '70's and the present more intense.

20 Q So we could generally say you began
21 some general reading in the mid '70's and as we approach
22 today it gets a little more intense, right?

23 A That's correct.

24 Q Now, I assume you did this reading
25 on company time, is that right?

1 A Since I work for the company twenty-
2 four hours a day, seven days a week, the answer is yes.

3 Q Give you an opportunity to make a
4 selfserving statement.

5 A I do a large amount at home, I do
6 some at work, so it's all company time.

7 Q And was there some particular reason
8 why you began to take a look at these dioxins in the mid
9 '70's?

10 A Well, in the mid '70's just as general
11 interest in toxicology, that they are unique chemicals,
12 people were beginning to develop toxicology data and
13 they are of general interest of toxicologists, so you
14 start talking to people at meetings and people start
15 publishing articles and you read them.

16 Q Did you read about dioxins in connec-
17 tion with chloracne in the mid '70's?

18 A I don't recall where the chloracne
19 crept in. It was not initially a chloracne question
20 that I recall.

21 Q What initially was the question --
22 My understanding is that your interest in a substance
23 like that would be, number one, of course, in its
24 existence, but what it may do to organisms, what it
25 may do to human beings as a toxicologist?

1 A That's correct.

2 Q And I assume you were reading the
3 literature in that fashion in the mid '70's for that
4 reason because that was your field?

5 A The intent of toxicology is ulti-
6 mately to protect people. In the '70's when we are
7 reading about it, it was predominantly from a stand-
8 point of, you might almost say, intellectual curiosity.
9 This is a fascinating compound. Information is being
10 developed and appearing in the literature. It poses
11 some rather unique properties, so it's a general pro-
12 fessional interest that was where the initial readings
13 in dioxin began.

14 Q And when you began your initial
15 reading, did you read anything about its toxicity or
16 observed effects on human beings?

17 A As far as I can recall, the effects
18 on human beings came in much later.

19 Q When you were reading in the mid '70's,
20 were temporal connections being made between symptoms,
21 physical effects on humans, and exposure to dioxin?

22 MR. LOVE: Can I ask you what you
23 mean by "temporal"?

24 Q (By Mr. Calwell) In time. In other
25 words, a fellow has been working for a plant and got

1 into something that may carry a dioxin isomer and all
2 of a sudden he breaks out in chloracne or complains
3 about being tired and that kind of thing. In other
4 words, what you have there is merely a fact of a time
5 relationship. Did you start to read about that in the
6 mid '70's?

7 A Somewhere along the line the associa-
8 tion came in. My general recollection -- and I will
9 have to back up to sort of put it in context -- in the
10 1960's thalidomide, I have no interest in thalidomide,
11 I never worked with it, but it's a unique thing that
12 burst on the toxicological scene and was manifested
13 in the malformation of infants. This being of great
14 interest to toxicologists. Perhaps not as dramatically
15 or analogous, dioxins appear on the scene, highly potent,
16 impurities in products, is the effect the product or
17 is it the impurity and can impurities be gotten out
18 and the product kept. So from that analogy with
19 thalidomide, that's when my interest in dioxins appeared.
20 It was that point of view from a toxicology standpoint
21 an interesting subject. I was not reading with any
22 consciousness I was going to get any direct involvement
23 with the material.

24 Q And did the materials you were reading
25 make observations about the physical effects of the

1 dioxins on humans or suspected effects?

2 A The earliest readings I did in the
3 toxicology journals was describing animal experiments,
4 and other than, perhaps, a casual mention in the in-
5 troduction someone might have made they were not con-
6 cerned with equating effects with humans.

7 Q In the readings you began to do in
8 the context we have been talking about in the mid '70's,
9 did you read about the toxic effect of dioxins on certain
10 animals?

11 A Yes, these were described in results of.

12 Q And do you recall what those were?

13 A Well, the two --

14 MR. LOVE: What the articles were?

15 Q (By Mr. Caldwell) I'm sorry. The
16 effects on these animal studies.

17 A Well, the two ones we are dealing with,
18 potential carcinogenicity and the possible reproductive
19 effects, those were the two areas that most of that
20 initial work was being done.

21 Q How about the skin irritation, rabbit
22 ear test and that kind of thing? That was included in
23 your readings, too, wasn't it, in the mid '70's?

24 A I suspect it was, but those articles
25 don't stand out. As I said, most of the ones I recall

1 were dealing with teratologic effects and the cancer issue.

2 Q And did you rely on the Monsanto
3 libraries as your source for readings?

4 A Well, all of them, including scientific
5 discussions and the meetings with others.

6 Q And including the Monsanto libraries?

7 A Yes.

8 Q During the same time period we have
9 been talking about, your kind of introduction to the
10 dioxins in the mid '70's, do you remember reading a
11 study by a gentleman named Hoffman entitled "Recent
12 experiments with Highly Toxic Naphthalenes," dated 1957?

13 A I don't particularly recall the article.

14 Q Would you know one by Kimmig and
15 Schulz, "Chlorinated Aromatic Cyclic Esters as Substances
16 Responsible for the So-called Chloracne," dated 1957?

17 A I don't recall that paper specifically.

18 Q Have you heard the authors' names before?

19 A Kimmig I've heard, and I believe he
20 wrote a review on chloracne.

21 Q And do you know whether you've read
22 his review or not?

23 A I did read his review on chloracne.

24 Q Do you recall when you might have done
25 that?

1 A Within the last year or two or three.
2 Q And you got that out of the Monsanto
3 library?
4 A Right.
5 Q Are you familiar with an author, and
6 I think I'm pronouncing this wrong, Oetel? I think it's
7 O-e-t-e-l.
8 A Oetel.
9 Q You must have had German, right?
10 A I also knew Oetel.
11 Q Did you study German, incidentally?
12 A I once considered German when I was
13 in college.
14 Q So you can read studies written in
15 German, right?
16 A I have read them.
17 Q Are you familiar with or have you
18 read a study by Oetel, "Results of Tests on Animals and
19 Clinical Experiences with Highly Toxic Chlorinated
20 Naphthalene, a Contribution to the Perna Problem," in 1955?
21 MR. LOVE: Let me place an objection
22 on the record. Stuart, if you can relate
23 your questions as to time, it will be very
24 helpful if you can ask him when he read
25 something. The reason being simply by virtue

1 of his title, obviously, I spent a great
2 deal of time with this gentleman in terms
3 of this case since several years ago, and
4 he's done a great deal of work in my regard
5 at my request which would be attorney work
6 product or things prepared in anticipation
7 of or for litigation. I have no problem
8 with your inquiring of him as to what he
9 did prior to that time or as to what he
10 did after that time that was not related
11 to the matter which we are involved, but
12 I want you to be able to get as much as
13 you can from the witness, but I want you
14 to be sensitive to what we are talking about.

15 Q (By Mr. Caldwell) On these studies
16 I have been talking about, and I'm referring to this time
17 frame we have been talking about, this mid '70's period
18 of time when you started your readings, and then we'll
19 advance in time until we get to the point that distresses
20 Mr. Love. Do you remember the study just mentioned by
21 Oetel in that time frame?

22 A I'm sure I did not read it in that
23 time frame. I'm not sure that I ever read it.

24 Q How did you happen to know Oetel or
25 meet him? Was this in connection with your work at

1 Monsanto?

2 A This was in connection with work at
3 Cyanamide, with BASF, his employer, and Cyanamide had a
4 common interest in some chemicals. Actually, I think
5 I met him earlier at scientific meetings in his country,
6 but that cemented the relationship.

7 Q Again, during this time period were
8 you familiar with or did you read a study by, is it
9 Padder, P-a-d-d-e-r, and Bauer, "Industrial Intoxica-
10 tion Due to Pentachlorophenol," dated 1951? Had to do
11 with liver disease and peripheral nervous system, lungs,
12 skin.

13 A I don't recall reading that article.

14 Q Do you recall during that time period
15 reading any studies or reports of studies conducted at
16 the BASF Plant in Germany regarding a 1953 incident
17 when an autoclave reaction ran away?

18 A I've read of that study, at least,
19 in some abbreviated sessions. I don't recall specifically
20 when. It may have been relatively recently.

21 Q And likewise, did you get that out of
22 the Monsanto library?

23 A Yes, sir.

24 Q Which Monsanto library we talking
25 about? I think you said there were several.

1 A My primary contact would be the
2 library in the Department of Medicine and Environmental
3 Health, which is the department that I'm in. That facility
4 has access to all other Monsanto libraries as backups
5 plus outside services.

6 Q Do you have a librarian in there that's
7 in charge of that place?

8 A Yes.

9 Q What is that person's name?

10 A Miss Mary Davis.

11 Q How long has she been with the company,
12 if you know?

13 A She has been in the department some-
14 where six or eight years. She has been with the company
15 much longer than that, but I'm not sure how much longer.

16 Q She's a librarian, so I assume her
17 work with the company has been as a librarian, as far as
18 you know?

19 A As far as I know.

20 Q Do you know her approximate age?

21 A She became a grandmother Saturday.
22 We have been kidding her on that.

23 Q You understand she's been with the
24 company for some period of time, then?

25 A Yes.

1 Q Now, is she in charge of the library
2 as the librarian, is she the head person in the library
3 in the Monsanto scheme of things?

4 A Yes.

5 Q Is there some study or group of studies
6 on the dioxins that you consider to be authoritative?

7 A There are several reviews on dioxin.
8 All claim to be authoritative. I guess just as beauty
9 is in the eye of the beholder, the authoritativeness of
10 them depends on the reviewer.

11 Q O.K. In your judgment who do you
12 rely on?

13 A None of them and all of them. Most
14 of them are good compilations of what's in the literature,
15 they are a means of locating what other people have said.
16 Most of them are at best a recital of the portion that
17 the reviewer, that particular writer, reviewer, felt
18 was important. Since we all may put different assess-
19 ments on things, one has to go back, in my opinion, look
20 at the things and see what the original author actually
21 said, how justified his statements were in terms of his
22 information, try to sort out the opinion from the fact
23 and then superimpose one's own opinions to make it
24 authoritative.

25 Q Are there any individuals that you

1 have identified through that process you have just des-
2 cribed that you rely on and consider to be authoritative?

3 A Can I break the question in two pieces?

4 Q Sure.

5 A I rely on the published literature.

6 That would include Symposium Volumes. The National
7 Institutes of Health has symposium. There is the Mono-
8 graph edited by Rinata Kimbrough, there are books by
9 Young, all of which are useful for getting at informa-
10 tion. There is a two-volume set put out by the VA on
11 the hearings, and there is a two-volume set put out by
12 the counterpart of the National Research League in
13 Canada. All of those are good sources for locating
14 the literature. Perhaps, the most objective, and I
15 would consider authoritative, would be the two docu-
16 ments by the Canadian National Research Council. It's
17 not quite the National Research Council, but it's the
18 equivalent of that in Canada. I would think that's
19 probably the most, in my judgment, that's the most
20 authoritative.

21 Q How did you reach that conclusion?

22 A It's a reading of documents, their
23 description of the way they treat the subject. I think
24 they are objective, I think they look at it from all
25 issues and reach conclusions which are defensible. It's

1 a judgment.

2 Q In your reading of that Canadian
3 National Research League, or whatever it is, have you
4 read reports or studies or views of any animal studies
5 connected with one or more of the dioxins?

6 A All of the sources I mentioned have
7 animal studies described in them.

8 Q Again, referring to the Canadian
9 National, what toxic effects on animals have you read
10 about related to 2,3,7,8-TCDD?

11 A It has been shown to be highly toxic
12 to certain animal species in single doses, considerably
13 less toxic to others. It has a wide variability on
14 toxicity in short-term exposure to a variety of animals.
15 It has been fed for extended periods of time to rats.
16 There's some disagreement as to the conclusions of the
17 studies that were done. They produce cancer in long-
18 term feeding studies in rats. Some people claim there
19 is a higher level that has not produced cancer and some
20 people dispute that. At relatively low doses it pro-
21 duces malformations in pups and rats. Again, the ques-
22 tion of whether or not there is an effect level, low
23 effect level. So the interpretation of the findings is
24 quite variable.

25 Q Any evidence of liver damage?

1 A Yes, they produced liver damage.

2 Q Any evidence of some deleterious
3 effects on the enzyme systems of animals?

4 A There are effects on enzyme systems.
5 I'm not sure they are deleterious.

6 Q And how about the immune system, you
7 read about any effects in this Canadian National Research
8 League?

9 A There have been effects reported to
10 the immune system.

11 Q And what effects were those that you
12 have read about in this Canadian National Research?

13 A The susceptibility of animals infec-
14 tions with other organisms appears to be increased on
15 occasion.

16 Q In this same reading put out by the
17 Canadian National Research League, anything there about
18 human action and the 2,3,7,8-TCDD?

19 A There are references to some of the
20 studies reported on people industrially exposed to
21 accidents of one sort or another where in retrospect
22 it's believed that 2,3,7,8 or some dioxins may have been
23 involved.

24 Q What kinds of physical effects are
25 suspected in those?

1 A The only consistent finding is the
2 report of chloracne.

3 Q Are there any inconsistent findings?

4 A Well, when we say inconsistent findings,
5 the term I use, 'consistent,' if you look at the different
6 reports, virtually all of them will discuss chloracne.
7 One may say something was observed and some other report
8 doesn't mention that or find something different. The
9 common thread is the chloracne. There are individual
10 things reported in different studies, and how valid
11 or reproducible they are is highly questionable.

12 Q And has there been some liver damage
13 reported in humans?

14 A I'm not sure on that subject. I
15 believe there may have been some transient liver damage
16 shortly after exposure.

17 Q And lipid metabolism?

18 A There have been analyses done on
19 lipid metabolism, but I can't recall specifically right
20 now which way they went.

21 Q How about any effect on enzyme systems,
22 endoplasmic reticulum?

23 A I don't think those measurements have
24 been done in humans.

25 Q How about the immune system?

1 A There was a newspaper account recently
2 of effects on immune systems.

3 Q I'm talking about the Canadian Research
4 League.

5 A In humans, I don't believe I recall
6 reading of the effect on immune systems in humans.

7 Q What about anything relative to cancer
8 in these papers?

9 A In terms of consistency, there's no
10 report of cancer. There may be one or two instances
11 where there is a statement where a cancer or two may
12 have occurred. There are some newspaper accounts, again,
13 of cancers, but they are not quite the same league as
14 the scientific literature, at least, I don't think it is.

15 MR. LOVE: Stuart, you want to take
16 a break. We have been at this a little over
17 an hour.

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

21 Q (By Mr. Calwell) Continuing on about
22 the Canadian National Research documents, do you recall
23 any symptoms that you read about that have some temporal
24 connection with the dioxin exposure in humans?

25 MR. LOVE: Stuart, I want to ask you

1 again about the word "temporal." I know
2 generally what it means, but are you speak-
3 ing of acute as opposed to long-term.
4 Everything would have some temporal rela-
5 tionship to everything else.

6 Q (By Mr. Calwell) Well, as I under-
7 stand it, if you're looking at, as a toxicologist, you
8 have someone who may be symptomfree or at least giving
9 no complaints, he's exposed to some substance, following
10 that exposure you have some complaints. Now, there may
11 or may not be a true causal connection between the ex-
12 posure and the complaints, but nevertheless, you have
13 to look at that time relationship as a factor in that
14 inquiry, that's accurate, isn't it?

15 A That would be reasonably accurate.

16 Q So my question to you is in the
17 Canadian National Research papers, have you been made
18 aware of symptoms that humans exhibit that may have such
19 a relationship to exposure to a substance that's sus-
20 pected of being one of the dioxins, specifically, 2,3,7,8?

21 A With the exception of chloracne, the
22 individuals after the episodes have had some complaints.
23 I don't recall the specific details of the complaints.
24 They are rather generalized complaints. Going back to
25 your earlier statement, though, to assess those properly,

1 I think one would have to take note of were those com-
2 plaints or similar type of general complaints evident
3 among these people or have they voiced them prior to
4 the episode, the frequency and variety of them, are
5 they similar to the kinds of complaints a group of that
6 size would have had prior to the episode. So that if
7 one was looking for things to tie together, I don't
8 recall nor do I believe that there are any complaints
9 related to phenoxyacetic.

10 Q Other than the chloracne?

11 A Other than the chloracne.

12 Q But you have read of reported complaints,
13 have you not?

14 A Yes.

15 Q Aches and pains in the extremities?

16 A Aches and pains, tiredness.

17 Q Irritability?

18 A (Nods head affirmatively.)

19 Q Sleep disorders?

20 A Yes. All of which are evidenced by
21 any population at any time or other.

22 Q Loss of libido?

23 A One of the hardest things to get from
24 people is an accurate sex history. There is a tendency
25 to over- or underexaggerate.

1 Q And how did you have occasion to become
2 aware of it?

3 A He was making the study at the request
4 of the Medical Department.

5 Q And were you involved in that request?

6 A No, I was not.

7 Q Did you have any connection with the
8 study?

9 A No, I did not.

10 Q Did you do any work with the literature
11 on 2,4,5-T in connection with that study?

12 A I did nothing in connection with that
13 study.

14 Q Did you do anything in connection
15 with the work force at Nitro pertaining to 2,4,5-T?

16 A I've never dealt with the work force
17 at Nitro on any issue.

18 Q Are you familiar with a study that
19 has been described in the documents, Monsanto documents,
20 as the DMEH Study?

21 A I would have to know which DMEH study
22 because DMEH is an acronym for Department of Medicine
23 and Environmental Health.

24 Q A DMEH study on the Nitro population,
25 Nitro Plant population?

1 A I don't believe I've ever seen the
2 actual study.

3 Q Are you aware that a study was under-
4 taken?

5 A Yes. I just said so earlier.

6 Q Now, is that the Suskind study?

7 A That's the Suskind study, insofar as
8 I know.

9 Q And how do you know that?

10 A Because it was a general discussion
11 topic in the Medical Department.

12 Q That would be Dr. Roush?

13 A Dr. Roush is our Medical Director and
14 head of the department.

15 Q And he told you that the DMEH study
16 is in fact the Suskind study as it pertains to Nitro?

17 A I'm not sure he made that statement
18 directly, but we did have periodic staff meetings, and
19 the discussion of what's happening is made at one of
20 those departmental meetings, I presume. So I have an
21 awareness of it, but I've not been involved in it and
22 I'm not aware of the specific details of the study.

23 Q And if I understand your testimony,
24 you've never done any research into the 2,4,5-T product
25 or any tests on the Nitro 2,4,5-T product looking at the

1 literature or the Monsanto files, anything like that?

2 MR. LOVE: I'm not sure I understand
3 the question. If you do understand the
4 question, you can answer it. I didn't
5 understand it.

6 Q (By Mr. Calwell) Did you understand
7 what I'm asking?

8 A I gathered there are two parts to
9 the question. One is I did not do any testing on 2,4,5-T.

10 Q O.K.

11 A The other one, which I've said earlier,
12 I'm aware of but I've not been involved in the Nitro
13 study or the Suskind study.

14 Q Did you ever search Monsanto files
15 for any test results or lab results on 2,4,5-T produced
16 at the Nitro Plant?

17 MR. LOVE: I'm going to object to
18 the question unless you relate it to a
19 specific time period on the grounds that I
20 mentioned earlier.

21 Q (By Mr. Calwell) During the period
22 of time that you were employed at Monsanto.

23 MR. LOVE: You want it up to and in-
24 cluding today?

25 MR. CALWELL: Uh huh (yes).

1 MR. LOVE: I'm going to instruct the
2 witness not to answer unless it relates to
3 information prior to March of 1981. Now,
4 with regard to the time period subsequent
5 to that, I would instruct him not to answer
6 that question on the basis of attorney-client
7 privilege and work product.

8 Q (By Mr. Calwell) O.K. You understand
9 what your lawyer's done there?

10 A (Nods head affirmatively.)

11 Q Do you agree not to answer? You agree
12 to take his instruction and not answer the question?

13 A Can I go off the record a minute?

14 MR. LOVE: I'm instructing you not
15 to answer with regard to the matters I
16 mentioned specifically. As to things you've
17 done for me at my request with regard to
18 this litigation, I'm instructing you not
19 to answer his question. As to things you
20 have done prior to that for the company, I
21 would instruct you to answer his question.

22 MR. CALWELL: Now, you're using '81
23 as the cutoff?

24 MR. LOVE: I'm using the date of the
25 filing.

1 MR. CALLWELL: March of '81?

2 MR. LOVE: March of 1981, as I recall.

3 If I'm wrong, correct me.

4 MR. CALWELL: I think it was about
5 March.

6 MR. LOVE: That was the date of the
7 first of these filings of these lawsuits in
8 Nitro.

9 MR. CALWELL: So if I understand your
10 objection, you're instructing him not to
11 answer questions with regard to anything
12 he has done for you in connection with this
13 lawsuit, which would have been on or after
14 the filing date which we agree was about
15 March of '81?

16 MR. LOVE: That's correct.

17 Q (By Mr. Calwell) You understand what
18 the deal is there, Doctor?

19 A I've not looked for or gone into the
20 medical files on the Nitro case. That's a human health
21 situation which is not my province.

22 Q O.K. Now, when you say on the Nitro
23 case, you mean this litigation, is that right?

24 A When I say Nitro case, I'm talking
25 about your question where you said the Nitro study.

1 Q So as of March, 1981, you never made
2 any inquiry into the company files or literature for
3 anything pertaining to the Nitro Plant, is that right?

4 A That's correct.

5 Q And the 2,4,5-T product?

6 A That's correct.

7 Q Since 1981 has the company instructed
8 you to do that?

9 MR. LOVE: Let me once again interpose
10 an objection so there won't be any misunder-
11 standing. If you're asking about matters
12 other than for a purpose other than the
13 Nitro litigation --

14 MR. CALWELL: Uh huh (yes).

15 MR. LOVE: -- I have no objection
16 to the question.

17 MR. CALWELL: That's the question.

18 MR. LOVE: If he's been instructed by
19 the company pursuant to the Nitro litigation,
20 I would tell you not to answer the question.
21 If you have been into the matter that Mr.
22 Calwell's asked you about for any purpose
23 other than any litigation, then I would
24 instruct you to answer the question.

25 A I elect not to answer the question.

1 MR. LOVE: Either you have or you
2 haven't. I think it does require an answer.

3 If you're satisfied, that's fine.

4 A Well, other than with respect to
5 litigation, I have not looked at the literature for
6 2,4,5-T.

7 Q (By Mr. Calwell) Now, have you been
8 made aware -- This is prior to '81 -- in your job as
9 a toxicologist with your company -- Let me ask you some
10 preparatory questions about that. We have been calling
11 you the toxicologist and you got this job with the com-
12 pany as a toxicologist. In an organizational sense,
13 how do you get your work? Does it all funnel into
14 you from these various operating units? Do you have
15 a responsibility for a particular, like, Industrial
16 Chemicals or some particular area, or is that a company-
17 wide problem?

18 A We have responsibility for all of
19 the companies' toxicology.

20 Q So if there is a toxicological in-
21 quiry or problem of sufficient magnitude, it will
22 eventually get to your office, then, right?

23 A That's generally true.

24 Q Now, prior to '81 had your office
25 been made aware of any worker complaints that Nitro

1 workers may have had in the '50's, '60's and '70's
2 pertaining to chloracne?

3 A In my time at Monsanto starting in
4 1971 I've not had a complaint addressed specifically to
5 chloracne. Whether there were complaints registered
6 with the company in the '40's or '50's or prior to that
7 I do not know.

8 Q But what you're telling me is your
9 department, your Toxicology Department -- Does it have
10 an official name? You may have already told me and
11 I've forgotten.

12 A It's the Department of Medicine
13 and Environmental Health, which consists of several
14 units, one of which I would call a section on toxicology
15 is a part of the Department of Medicine and Environmental
16 Health.

17 Q So if we call it the section on
18 toxicology, we'll know what we are talking about?

19 A That's a good term.

20 Q Has anyone in your department in
21 this section on toxicology, that you know of, performed
22 any work or inquired into, examined or investigated
23 any worker complaints related to the 2,4,5-T product at
24 the Nitro Plant and any health complaints, chloracne and
25 those other general symptoms and complaints we talked about

1 earlier, fatigue, aches and pains?

2 A I do not recall that we have had
3 a complaint of that nature referred to my section at
4 the time I have been with the company.

5 Q Are you aware that there were complaints
6 prior to the time that you got there?

7 MR. LOVE: Complaints to the section
8 on toxicology?

9 MR. CALWELL: Yes.

10 Q (By Mr. Calwell) Any writings or
11 memoranda, whatever, that might appear in your records?

12 A Well, I'm not aware that any complaints
13 were made to the section on toxicology at any time. Now,
14 whether there were complaints made to the Medical De-
15 partment or to the physicians prior to my time, that
16 would be conjecture on my part.

17 Q I just want to know what you know.

18 A I don't have any knowledge that this
19 was done.

20 Q And I want to make sure we understand,
21 when I say complaints, I don't mean it's a worker who
22 wrote you a letter or called you up, but a problem or an
23 issue relating to chloracne or some other complaints that
24 might relate to the 2,4,5-T product or the Nitro Plant
25 about chloracne and those general symptoms that we talked

1 about.

2 A I don't recall that's directed to
3 my group or people working for me, a complaint of the
4 nature that you're saying the Nitro people have had or
5 are complaining this, this, that or the other thing.

6 Q Did you learn that complaints of that
7 nature were made to the Medical Department when you had
8 these briefings with Dr. Roush and so forth?

9 MR. LOVE: Once again, can you relate
10 your question to a specific time?

11 Q (By Mr. Calwell) Prior to '81.

12 A I don't recall that complaints of
13 chloracne or some of the other symptoms we are talking
14 about have been discussed as related to the Nitro workers
15 in the time that I have been in the Medical Department.

16 Q So as far as you know, then, the first
17 time this chloracne, 2,4,5-T, dioxin-related issue came
18 up in your department was after '81, then, or in the
19 Medical Department?

20 A In 1949 -- here I'm talking partly
21 from, I guess, almost hearsay evidence, but discussions
22 that go around -- In 1949 Dr. Suskind looked at the
23 chloracne workers. That was, quote, past history, in a
24 sense. Then he was commissioned to look at those workers
25 again about thirty years later. So that from the initial

1 episode in '49 until the question surfaced as is going
2 down more recently for that second look, I don't recall
3 that there was any discussion about the Nitro episode
4 or chloracne or such at Nitro.

5 Q It was just a non-problem, as far as
6 you know, in the Medical Department or your department?

7 A I was not aware of any issue involving
8 that subject at that time.

9 Q Is that the kind of thing that the
10 Toxicology Department would be called in on if there
11 had been?

12 A If I were to go back to '49 and, say,
13 the reactor blew up now, we would have been involved.
14 We probably would not have physically visited the scene
15 or looked at people, but we probably would have been
16 involved in discussions and whatever other actions we
17 might have taken. We probably would have participated.

18 Q You knew there was a chloracne problem
19 at Nitro throughout the period of time that they manu-
20 factured 2,4,5-T, did you not?

21 A I was not at Monsanto during the
22 time, as far as I know -- I'm not sure when they stopped
23 manufacturing, but I think they stopped manufacturing
24 in the company, so it was much later in time than I even
25 realized they had even manufactured 2,4,5-T. So I'd

1 have to say no, I was not aware of the problems they
2 had during the manufacture of 2,4,5-T.

3 Q If you accept as true that there were
4 reported chloracne cases and other complaints involving
5 fatigue and aches and pains and sleep disorders from
6 the workers who were involved in the 2,4,5-T process
7 at Nitro, is that the kind of problem that the Toxi-
8 cology Department would be called in on?

9 A We would be asked to contribute to
10 the resolution of the issue, yes.

11 Q And does Monsanto have a policy where
12 a worker who has been exposed to a substance, such as
13 2,4,5-T, and then begins to exhibit physical symptoms
14 and complains about continued exposure, is it the policy
15 to remove them from exposure or to leave them there, or
16 is there a policy at all?

17 MR. LOW: You speaking of the policy
18 today, in 1949 or at some period in between?

19 Q (By Mr. DeLoach) Well, today first.

20 A When you say policy, I'm not sure,
21 policy or practice?

22 Q Well, practice.

23 A It's the commitment of the company,
24 it's the policy of the company to provide a healthy, safe
25 workplace. Now, how that's implemented in terms of

1 specifics I really don't know and it probably does
2 vary in its application in different parts of the company.
3 But my function in the toxicology end is to assist in
4 that goal of providing a healthy, safe workplace for em-
5 ployees.

6 Q Is it a principle of the field of
7 toxicology and its related industrial hygiene field not
8 to reexpose someone who has been exposed to a harmful
9 substance if at all possible?

10 A I'll go back. The substance per se
11 isn't harmful. It's the conditions of exposure that may
12 be harmful. And if you're cognizant of a harmful ex-
13 posure condition, then the effort, the goal would be
14 to mitigate, modify, alter, to eliminate the harm
15 associated with the exposure.

16 Q You testified earlier, I believe,
17 that one of the ways that you as a toxicologist can
18 become aware of a problem is a worker complaint, the
19 literature and there were a couple of others that you
20 would look at in deciding whether you have a toxicological
21 problem. Is there some standard that you have to determine
22 when a suspected health risk, even though it may not be
23 proven absolutely, reaches such proportions that you must
24 as a toxicologist advise no further exposure? Is there
25 some balancing that goes on there? Is there some

1 principle that you as a toxicologist follow to get at
2 that issue?

3 MR. LOVE: Once again, I'd ask you
4 to clarify if you're speaking in terms of
5 today or 1949.

6 MR. CALWELL: I'm speaking in terms
7 of his field generally.

8 Q (By Mr. Calwell) Is that the kind
9 of a judgment that a toxicologist has to make?

10 A Your question's kind of vague and
11 broad. If you're asking are there clearly defined
12 principle standards that one applies and says, stop,
13 this has gone too far, I'm not cognizant of any. Be-
14 cause of the variety of the multiplicity of issues,
15 questions and including seriousness of effects, there
16 is a host of factors that go in. If there was a clear
17 human hazard, you know, if a man spilled a chemical on
18 his fingertips and dropped dead, you would obviously
19 take tremendously stringent precautions thereafter.
20 But when you're not dealing with such dramatic events
21 and, you know, what points do you use to decide this,
22 that and the other thing. So there's many hosts of things
23 in there. It's almost impossible to get a simple or
24 definitive answer to a question of that nature.

25 Q So if I understand what you're saying,

1 then, it's part of the toxicological discipline for you
2 to look at those separate factors and at some point
3 in time make a judgment in a given case, "We are at a
4 point where the risk is no longer acceptable and we
5 must get these people out of there"?

6 A Right. You hit two words. One is
7 it's a judgmental science to a large extent. And when
8 you say the risk is acceptable, we can go through a long
9 recourse of what's acceptable risk, but those elements
10 do get strongly intertwined in every decision of that
11 nature.

12 Q And in the course of your employment
13 at Monsanto have you had occasion to make such judgments?

14 A Again, you mean with respect to risks?

15 Q Yes. A substance that you decide,
16 perhaps, people are being exposed to by whatever means
17 and you have had to make a judgment and say that the
18 risk is no longer acceptable.

19 A No. In my capacity from the environ-
20 mental assessment scheme we have stopped before we pro-
21 duced or entertained making materials that we felt would
22 present unacceptable risks.

23 Q But you have not done that retro-
24 spectively in the sense that you may --

25 A I'm not cognizant that we have a

1 situation or we had a situation that we felt the risks
2 were such we had to discontinue the situation during
3 my time with the company.

4 Q Are you familiar with PAB, para-amino-
5 biphenyl?

6 A That's why I said my time at the company.

7 Q So you are familiar with the PAB --

8 A I have some knowledge of it, yes.

9 Q And would that be an example?

10 A I'm not aware of the details, but I
11 would have to say that is an example of the risks were
12 sufficiently great where they decided to discontinue
13 manufacture.

14 Q Now, in making those kinds of judg-
15 ments, what are the things that you as a toxicologist
16 look at?

17 A It would cover every scrap of infor-
18 mation I could get on the situation. It would include
19 the nature of the effect, the likelihood or practicality
20 or probability of controlling exposure, assessment as
21 to whether the result and the exposure after controls
22 was, quote, acceptable or unacceptable in terms of risk.
23 It would include a series of decisions. The utility of
24 the product, its worth or the value. Obviously, the
25 dramatic example is something that might go into a suntan

1 lotion or a hair color. Does it warrant a degree of
2 risk that a drug to save a life-threatening disease
3 might be. So there is a variety of factors, and to
4 properly make the judgment one would want to get all
5 the information of whatever nature that might bear on
6 this and see how all this fits together and what ul-
7 timate conclusion there would be.

8 Q Would you undertake that kind of in-
9 quiry and procedure, or rather, what kind of a problem
10 would warrant that kind of undertaking procedure that
11 you have just talked about? I mean, you wouldn't do
12 that in every case if a guy gets a pimple here and there,
13 but is there some qualitative assessment you make on
14 these kind of problems that might be presented to you?

15 MR. LOVE: Stuart, I'm going to ob-
16 ject to your question simply because I don't
17 understand it. I don't know whether you're
18 asking him to say six people have to die
19 before it becomes a problem. If Dr. Levinskas
20 understands the question, I'd ask him to
21 answer it, but I don't.

22 A My great puzzlement is when you say
23 when this situation is presented to you. As I said
24 earlier, there are so many nuances in terms of the
25 chemical and effect. So when you say this problem, if

1 it's not a concrete example or more concrete example,
2 it's difficult to answer.

3 Q (By Mr. Calwell) One of your manu-
4 facturing facilities has over 200 people who have come
5 down with chloracne, a great number of them complained
6 of aches and pains, shortness of breath, sleep disorders,
7 loss of libido and there is a consistent pattern of
8 those kinds of complaints, over 200 workmen's compen-
9 sation claims are filed by the company in connection
10 with that somewhat consistent symptom complaint. Is
11 that the kind of a problem from a toxicological situation
12 that would warrant the kind of inquiry you described?

13 A I would ask you how long did it take
14 those 200 workmen's compensation claims to be filed?

15 Q About eighteen months.

16 A Is the eighteen-month time span during
17 which these complaints occurred and this happened?

18 Q That's right.

19 A Then I would say at the beginning of
20 that somewhere someone should start pondering what the
21 issues are and is this a problem. In other words, one
22 would not wait for 200 cases. One would start at an
23 earlier stage.

24 Q Would that hypothetical situation
25 warrant the all-out effort that you just described to me

1 about looking at every scrap of evidence?

2 A I think it would.

3 Q And the idea of that inquiry would
4 lead you to the point of being able to make the judg-
5 ment call about whether the risk is acceptable or
6 unacceptable in terms of further exposure?

7 A I wouldn't say that a risk is accept-
8 able or unacceptable. I think one would go to resolve
9 the issue to resolve the problem. Perhaps, the best
10 example is about smoking and lung cancer. We know
11 that a certain number of lung cancers are going to
12 occur, so if we had a chemical and there was one in
13 a different industry some time back where you get a
14 lung cancer case and you say, well, we expect to find
15 a couple lung cancers in a group of workers. Some time
16 later you get another lung cancer and they say, we
17 expect a couple more, then you get three, four and
18 five. Somewhere you say, my God, we have more lung
19 cancers than we should statistically have. Now you
20 have a cognizance of a problem. Now if someone were
21 to say, when did you first become aware of this lung
22 cancer problem, so you go back to that first case which
23 was a year, five years earlier and you say, you mean
24 you have known about it for five years and haven't
25 done anything. I said, well, the recognition of it

1 wasn't until it exceeded some boundaries, you had to
2 get more than you expected. I think this is one of
3 the difficulties of all occupational medicine. I
4 have had every complaint that the dioxin people have
5 had except I won't comment on impotence. I feel tired,
6 I get irritable, I forget things, I haven't had chlor-
7 acne; and how do you disassociate the non-specific
8 complaint from the daily pains of living and where
9 does it get to the point where you say, my God, some-
10 body recognizes that this situation is larger than it
11 should be. So the recognition of the problem and then
12 the resolution of the problem -- There are no clearcut
13 touchstones. It's not like a traffic light that goes
14 from green to red in a matter of a second. We can
15 talk and sort of hypothesize in generalities, but it's
16 very difficult to be very specific or to try to give
17 you examples without getting down to the concrete de-
18 tails plus the information that's known plus the fact
19 that over the thirty years, having gotten out of gradu-
20 ate school just last month thirty years ago, that the
21 standards, the concept of safety has changed. It
22 isn't the definition of what we are trying to do has
23 changed. It's been greatly expanded. The concept of
24 safety includes such things as aesthetics, not only be
25 clean and healthy, but the smell values. Years ago

1 don't deal with the physical exams of people and we
2 don't contact normally the plant personnel. But some-
3 body has to have cognizance of a problem and then it
4 would be calling in other people for resolution of it.

5 Q The hypothetical I outlined for you
6 you agree was of sufficient magnitude to justify the
7 all-out effort you talked about?

8 A Yes. If you had 200 employees com-
9 plaining of a condition, somebody ought to look at it.

10 Q Now, in addition to, perhaps, decid-
11 ing what ought to be done to correct a stress situation,
12 using your definition of stress, are there followup
13 programs, for example, like, medical monitoring that
14 would come within the purview of the toxicologist or
15 industrial hygienist?

16 A Not in the purview of the toxicologist.
17 One would attempt to set up some procedures or control
18 or monitoring to see whatever the conditions were that
19 those were capable of operating safely under those con-
20 ditions. The nature of the monitoring would depend on
21 the substance and the ability to monitor. One cannot
22 pull off a shelf an analytical method for every chemi-
23 cal and biological fluid of the air, or what have you,
24 but some effort should be made to insure that the new
25 conditions were being met.

1 Q And in conditions that would involve
2 a reexposure to some degree, does that condition carry
3 with it a necessity for some medical monitoring?

4 A I think that would depend on what
5 the reexposure would be. The nature of the reexposure
6 as well as the chemical or the materials to which the
7 reexposure was occurring.

8 Q But that's something that's a recog-
9 nized step to take in your discipline or in the disci-
10 pline of industrial hygiene?

11 A It's one way of approaching the subject.
12 I have a little difficulty with saying a recognized step,
13 as such, because there are, as far as I know, no textbooks
14 and no standards set out that things have to be done
15 this way or that way. There are large elements of
16 judgment that go through all of these steps.

17 MR. CALWELL: Charlie, look at this
18 document here. It's a 1982 document. I
19 assume you want to make the same objection
20 on it.

21 MR. LOVE: Yes. I would make the
22 same objection to it.

23 MR. CALWELL: Let's mark it and I'll
24 introduce it, you make the objection.

25 Q (By Mr. Calwell) Dr. Levinskas, I

1 want to hand you what's been marked Plaintiffs' Exhibit
2 337 (Monsanto #8324400 and #8324401).

3 MR. LOVE: We would object to the
4 introduction and use of what's been marked
5 for evidence as Plaintiffs' Exhibit 337,
6 which bears Monsanto I.D. numbers 8324400
7 and the second page bearing Monsanto I.D.
8 number 8324401, on the basis it was genera-
9 ted pursuant to the incident litigation.

10 MR. CALWELL: I assume you're going
11 to instruct him not to answer any questions
12 about the document.

13 MR. LOVE: Yes, I am.

14 (By Mr. Calwell) Now, one more
15 little area, Boccia, and I think we will be through.
16 We talked earlier about your understanding that Dr.
17 Suskind's studies were one and the same with the DMLH
18 study pertaining to the Nitro population. Do you re-
19 member that?

20 A Insofar as I know, those are identical.

21 Q Now, have you been made aware of any
22 of Dr. Suskind's conclusions or results from those studies?

23 A I have heard general discussion about
24 them. I've not seen nor read the report.

25 Q Do you know if there is in fact --

1 You understand what a morbidity study is?

2 A Yes.

3 Q And was it your understanding that
4 Dr. Suskind was going to do what may be termed a mor-
5 bidity study on the Nitro population?

6 A That's correct.

7 Q And was that in fact the same thing
8 as the DMEH study that we talked about earlier?

9 A As I've said, as far as I know the
10 DMEH study and the Suskind study at the Nitro Plant
11 are the same study.

12 Q Do you know if there is a report
13 from Dr. Suskind on the morbidity study?

14 A I really am not positive that the
15 report is issued. I know there's been considerable
16 discussion over the delay in his issuing his report.
17 Whether it was issued relatively recently I don't know.

18 Q Have you heard that it is or that it
19 isn't or you just don't know?

20 MR. LOVE: If you know, answer the
21 question. If you don't know, tell him you
22 don't know.

23 A I don't know whether the report has
24 been issued.

25 Q (By Mr. Calwell) But you have been

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privy to some discussions about the report?

A I've heard some discussion about the report.

Q O.K. And have you heard any discussions about the report conclusions?

A The recollection I have is that except for the chloroacne, that there was no residual, no evidence of residual injury in any of the employees.

MR. CALWELL: O.K. Thank you, Doctor.
That will do it.

George J. Levinson

COUNTY OF MADISON)

ness; and signature of the witness was not waived.

action.

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IN WITNESS WHEREOF, I have hereunto set
my hand and affixed my notarial seal on this _____
day of July, 1983.

Notary Public within and for the
County of Madison, State of Illinois.

M.C. Tinsdale, DTD

May 2, 1982

W-1-1-

Notes

The block above history has been used as an indicator of possible
photocopyed potential. This material was used for both 2,3,7,8-
tetrachlorodibenzo-p-dioxin and hexachlorodibenzo-p-dioxin. Both materials
were present, and presumably would have photocopyed history. HODD was
present in 1974 and HODD in 1974 and 1980.

George J. Levinson
George J. Levinson

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8324401