

1 A. Yes, and then you have to go look for the death
2 certificate as best you can find it.

3 Q. And that was done?

4 A. Yes.

5 Q. By Judy Zack?

6 A. Yes, and Jan Young working with her.

7 Q. So they went and got death certificate.

8 Q. Where would they have to go, to the various
9 counties in West Virginia where those people had lived, or
10 what, could they just go to the State and get them?

11 A. They may have been out of state. All of them
12 didn't live in the state. They are right on the state line,
13 so they can, or close to the state line, and they could be
14 living out of the state, but they do follow up, of the 31
15 deaths I think in that population they were able to find
16 every single death certificate from those that had died.
17 That was remarkable. Usually in a study of this type, they
18 are quite satisfied if they were able to pick up 95 percent
19 of the deaths, and the death certificates.

20 MR. HEINEMAN: Your Honor, I see it's about four
21 o'clock.

22 THE COURT: Okay. Ladies and gentlemen, we will
23 adjourn for the day at this time. We will resume again
24 Monday morning, as I stated earlier, at nine o'clock. And I

1 would remind you on this overnight break, as I do on the
2 others, that you are not to read, listen to, or watch
3 anything about this case in particular or subject matter in
4 general in any of the media. Thank you for your attention
5 and cooperation, and your patience this week. I'll see you
6 Monday, Court is adjourned. Have a good weekend.

7 COURT ADJOURNED:
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1 right?

2 A. Yes, sir.

3 Q. As a matter of fact, it was as high as 1.8 parts
4 per billion in her fat, isn't that right?

5 A. Yes, sir.

6 Q. Put down as 1840 parts per trillion, but that would
7 be 1.8 ppt, wouldn't it?

8 A. Yes, sir.

9 Q. And the lowest concentration that they said they
10 found was in her blood, is that correct?

11 A. Yes, sir.

12 Q. At 6 parts per trillion?

13 A. Yes, sir.

14 Q. Do you know what they mean when they say values
15 obtained at a resolution of 10,000, do you know what that
16 means?

17 A. No, I don't.

18 Q. Now, is there such a thing, sir, as body burden
19 with respect to a dose being absorbed by a living animal or
20 man or child?

21 A. For dioxin?

22 Q. Yes, sir?

23 A. Yes, there is.

24 Q. And, one of the things they measure when they do

1 testing of rats and mice and that sort of thing is they
2 determine what the total body burden is?

3 A. They approximate it.

4 Q. And they measure the dose and the body burden by
5 virtue of telling you how much of the material, as in, for
6 example, micrograms was given per gram or kilogram of body
7 weight?

8 A. Yes, sir.

9 Q. And that tells you how much they are really getting
10 in them for each gram or kilogram that they weight, is that a
11 way of addressing the body burden question?

12 A. Well, the body burden simply means the amount of
13 that material, foreign substance, that you find in the body.
14 And, the way that is done is either if it was -- if it's
15 something that can't be burned, as you destroy the tissue, we
16 are talking about an element. If you want to measure
17 calcium, you burn up the tissue and then measure the calcium
18 or the lead or the thorium or whatever, so that you are
19 really trying to find the total in the body. If I have a
20 substance that is found in just certain tissues, you take the
21 amount, concentration in that tissue and multiply the amount
22 of that tissue. And, if you have, if you want to do many
23 tissues, you've got to measure each one of those tissues and
24 multiply the amount of that tissue, and you add up all those

1 and that gives you the body burden.

2 Q. Now, does the body burden have anything to do with
3 whether a person, whether one person may have a toxic effect
4 and another person may not, from an exposure to the same
5 amount of material?

6 A. Yes, sir.

7 Q. So that a child might get a certain amount, and
8 have a greater reaction than that very same amount would have
9 in the system of an adult, because the adult's body is larger
10 and the, and its ability to handle the material might be
11 better, is that correct?

12 A. The amount that the two different people absorb
13 will have a number of independent variables in terms of
14 whether the adult has less absorptive surface in his
15 gastrointestinal tract than a child as relative to his makes,
16 so that less will be absorbed in an adult than it will be in
17 the child porportionately, so he will get more absorbed.
18 Then we are talking about dioxin as a child has less fat and
19 so he won't store it the same as an adult. The adult with a
20 large fat store will store it more than the child will, so
21 there are a number of factors determining whether -- but
22 that's more important, the dose, than is the variability in
23 the response.

24 Q. You were questioned by Mr. Carr with respect to

1 differences in susceptibility between people?

2 A. Yes, sir.

3 Q. And, that was the next step I wanted to get to.
4 Which is more important in determining whether a toxic effect
5 will occur, is it the dose response relationship, or the
6 susceptibility aspect?

7 A. The susceptibility and the variability between
8 individuals is established by the dose response curve. The
9 sharper the dose response curve, the less variability of
10 effect between those who are less sensitive and those who are
11 very sensitive, where the acute response that we talk about
12 related to dioxin, that's relatively steep. If the effect is
13 very slow in effect, then the susceptibility becomes of a
14 greater importance.

15 Q. Of greater importance than it would be in the acute
16 response?

17 A. That's right.

18 Q. But it's still -- the dose response relationship,
19 that predominates?

20 A. That's right.

21 MR. HEINEMAN: Your Honor, it's two minutes to
22 twelve, I don't know if -- this would be a good place to
23 break for me.

24 THE COURT: Fine, if it's a good place to break, we

1 will do it at this time. We will recess at this time for
2 lunch. We will start again at one o'clock. I would remind
3 you that the admonishments, excuse me, that I gave you
4 earlier will apply during this lunch break. The Court is in
5 recess for lunch.

6 (Following a recess for the lunch hour, these proceedings
7 were had outside the presence of the Jury.)

8 MR. HEINEMAN: We were putting on the record the
9 fact that we have requested the opportunity to take the
10 deposition of Mrs. Diane --

11 MR. CARR: Nicks.

12 MR. HEINEMAN: N-i-c-k-s, who is the next witness
13 to be called by Mr. Carr, on Monday afternoon at 1:30, at Mr.
14 Carr's office in Belleville. He has agreed, and we came in
15 to get the permission of the Court for that discovery.

16 THE COURT: Fine. She is the person who --

17 MR. CARR: Prepared the Exhibit 1507.

18 THE COURT: All right, fine. We are scheduled to
19 be off for another reason Monday afternoon. I have no
20 problem with that. It's by agreement of counsel. I'll be
21 happy to concur in the agreement.

22 (The following proceedings were had in open court.)

23 THE COURT: Okay.

24 Q. (by Mr. Heineman) Doctor, let me hand you, sir,

1 what's been previously marked as Plaintiff's trial Exhibit
2 1255. I don't have the official copy of it, Your Honor, I
3 just have my own copy. Do you have it locally? Here's 1255,
4 Doctor. And would you tell us what that is, please?

5 A. This is a report by Dr. Kimbrough and Dr. Falk and
6 Dr. Stare of the Center for Disease Control. And by George
7 Friess or Friess from the Department of Agriculture, and it's
8 a report titled health implications of
9 2,3,7,8-tetrachlorodibenzo-dioxin, TCDD, Contamination of
10 Residential Soil. And it was published in the Journal of
11 Toxicology and Environmental Health, Volume 14, Page 47,
12 1984. Now, sir, this is the CDC study that we were talking
13 about before, is it not?

14 A. Yes, sir.

15 Q. Now, I'd like to direct your attention, please, to
16 Page 48, which is the second page of the exhibit, do you see
17 that, sir?

18 A. Yes, sir.

19 Q. And I'd like to direct your attention to the
20 sentence beginning in the middle of the second paragraph,
21 begins with the word in consideration, you see that?

22 A. Yes, sir.

23 Q. Would you read that aloud, please?

24 A. "In consideration of the range of the estimated

1 VSD, that means virtual safe dose, and because of the
2 unlikelihood of all of the conservative exposure assessment
3 assumptions will be realized on a continuous or lifetime
4 basis, we have concluded that residential soil levels greater
5 than one part per billion TCDD pose a level of concern."

6 Q. Would you go on, sir?

7 A. "The appropriate degree of concern for which
8 management decisions should be made also consider an
9 evaluation of the specific circumstances of shall
10 contaminated site."

11 Q. Now, would you read the next paragraph that goes
12 over onto the next page, please?

13 A. "Exposure in contaminated residential areas would
14 be greater than in only occasionally frequented commercial
15 areas. In residential areas, levels at or above 1 ppb in
16 soil cannot be considered safe and represent a level of
17 concern. In certain commercial areas, higher levels may be
18 may present --

19 MR. CARR: May present.

20 A. "May present an acceptable risk to
21 nonoccupationally exposed individuals. On ranges and
22 pastures, however, lower soil levels may still be of concern,
23 since TCDD accumulates in the tissues of grazing cattle and
24 rooting swine."

1 Q. Thank you, sir. Now, Doctor, now I'd like to
2 redirect your attention to Plaintiff's Exhibit 1507, that's
3 the summary that Mr. Carr had prepared of the Krummrich plant
4 health study, is it not, sir?

5 A. Yes, sir.

6 Q. And, yesterday we talked about the Chloracne and
7 the symptoms and the porphyrins and today I'd like to deal
8 with the other abnormal lab reports. Direct your attention
9 if I may, sir, first to the report that you have before you
10 with respect to Mr. James Bady.

11 A. Yes, sir.

12 Q. Now, sir, if I can direct your attention to the
13 last couple of pages which contain the METPATH lab results?

14 A. Yes, sir.

15 Q. And, you see a report there for globulin?

16 A. My copy is very faint on --

17 Q. I think it's on the last page.

18 A. Yes, sir.

19 Q. You see that that's reported at 4.40?

20 A. Yes, sir.

21 Q. And that would be beyond the reference range and
22 that would be high, would it not?

23 A. Yes, sir.

24 Q. And if you look at alkaline phosphatase?

1 A. I think I see it.

2 Q. It is there right below it?

3 A. Right.

4 Q. See that? And that's at a level of 60?

5 A. Yes.

6 Q. And that's beyond the reference range?

7 A. Yes, sir.

8 Q. And there -- so there are two that are listed as
9 high, there are two that are on there as high, is that
10 correct?

11 A. Yes, sir.

12 Q. Now, can you read the level reported for the
13 albumin globulin ratio?

14 A. I can't be sur, but it's something less than one, I
15 think.

16 Q. You think that's -- that would be below the
17 reference range?

18 A. Yes.

19 Q. Can you read the one for total protein?

20 A. No, I cannot.

21 Q. So on the copy you have, you can't tell whether
22 that's within the reference range or not?

23 A. No, sir.

24 Q. So there are three that you read that are within,

1 that are outside the reference range, and one that you are
2 unable to read, so you can't tell one way or the other?

3 A. That's right.

4 Q. Are there any other items in that laboratory report
5 that you can find that are outside the reference range?

6 A. Triglycerides are listed as being outside.

7 Q. They have an asterisk next to them, do they not,
8 sir?

9 A. Yes, they do.

10 Q. What does that asterisk -- that refers to an 04,
11 footnote four?

12 A. Yes, sir.

13 Q. What does footnote four tell you?

14 A. "Results greater than 300 milligrams per hundred
15 ml. on a fasting sample, I think. May -- I'm saying that
16 implies or something hyperlipidemia.

17 Q. All right. So there are four abnormal items that
18 you found there, is that correct?

19 A. Yes, sir.

20 Q. And, indeed if you look at 1507, there are four
21 abnormals checked, are there not?

22 A. No, there are five checked.

23 MR. CARR: You overlooked the lipids, counsel.

24 Q. I'm sorry.

1 A. You included the lipids.

2 Q. All right. So triglycerides would be the one
3 lipid, correct?

4 A. Yes.

5 Q. And then there are four other than lipids checked?

6 A. Yes.

7 Q. Is that right?

8 A. Yes, sir.

9 Q. You found three other than lipids and one that you
10 couldn't read, and that may be abnormal?

11 A. That's right.

12 Q. You can't tell by looking at it. So that -- all
13 right, sir. Would you pull -- the next one would be Mr.
14 Herman Bellm, B-e-l-l-m?

15 A. Yes, sir.

16 Q. Would you turn to the last page, sir?

17 A. Yes, sir.

18 Q. There is a value of 9.60 listed for uric acid, is
19 there not?

20 A. Yes, sir.

21 Q. And that's beyond the reference range?

22 A. Yes, sir.

23 Q. And are there any others listed that are beyond the
24 reference range?

1 A. No, sir.

2 Q. If you look at Plaintiff's Exhibit 1507, you see

3 that there are two checks for other?

4 A. Yes, sir.

5 Q. Abnormal lab results, and you only see one on the

6 report?

7 A. Yes, sir.

8 Q. Is that correct, sir?

9 A. Yes, sir.

10 Q. Would you look at Mr. Gregory Begs, please.

11 Q. Beys, Beys, I guess that is, not Begs?

12 A. Yes, sir.

13 Q. Turn to the last page, you'll see that there is an

14 abnormal.

15 MR. HEINEMAN: Excuse me, Your Honor.

16 Q. For Mr. Beys or Beys you see a BUN that's high?

17 A. Yes, sir.

18 Q. And a total protein that's high?

19 A. Yes, sir.

20 Q. And the cholesterol is high?

21 A. Yes, sir.

22 Q. And there are three listed?

23 A. Yes, sir.

24 Q. On the report, is that right?

1 A. Yes, sir.

2 Q. Now, would you look at Mr. Charles Boeckman.

3 B-o-e-c-k-m-a-n?

4 A. Yes, sir.

5 Q. Now, you look at the last page of that, you see a
6 total serum lipids as being high, correct?

7 A. Yes, sir.

8 Q. And there is one in the box for lipids, correct?

9 A. Yes, sir.

10 Q. And you see total iron as high?

11 A. Yes, sir.

12 Q. So there is one other type of lab report that's
13 abnormal, correct?

14 A. Yes, sir.

15 Q. And if you look at Mr. Boeckman on Plaintiff's 1507
16 they have two checkmarks for other abnormalities rather than one?

17 A. Yes, sir.

18 Q. Isn't that right?

19 A. Yes, sir.

20 Q. Let's look at Mr. Carter, Gaylord Carter, G.
21 Carter?

22 A. Yes, sir.

23 Q. And you see abnormalities listed for the lipids, do you
24 not, sir?

1 A. Yes, sir.

2 Q. And there are two checkmarks under Gaylord Carter?

3 A. Yes, sir.

4 Q. For abnormal lipids on 1507, correct?

5 A. Yes, sir.

6 Q. There is also a checkmark on 1507 for other

7 abnormal lab reports, correct?

8 A. Yes, sir.

9 Q. Is there another non-lipid, other abnormal lab

10 report listed there, sir?

11 A. No, sir.

12 Q. All right. Let's look at Louis Conte, please.

13 A. What was the name?

14 Q. Conte, C-o-n-t-e.

15 Q. We need to look at the next to last page on my

16 copy.

17 A. Yes, sir.

18 Q. You have a high triglyceride listed there, correct?

19 A. Yes, sir.

20 Q. And that would be a lipid?

21 A. Yes, sir.

22 Q. And there is a checkmark for high lipid for Mr.

23 Conte, correct, on 1507?

24 A. Yes, sir.

1 Q. And you have two other high results there?
2 A. Yes, sir.
3 Q. Protein and globulin, correct?
4 A. Right.
5 Q. Mr. Conte, 1507, lists three?
6 A. Yes, sir.
7 Q. When there are two?
8 A. Yes, sir.
9 Q. How about Joseph Crame, please, C-r-a-m-e?
10 A. Is that 007?
11 Q. Yes.
12 Q. Sir, I see from Mr. Crame on 1507 that there are
13 two lipids checked as abnormal?
14 A. Yes, sir.
15 Q. Two checkmarks in lipids?
16 A. Yes, sir.
17 Q. Do you see any abnormal lipids in the laboratory
18 result?
19 A. Yes, sir.
20 Q. You do?
21 A. Yes, sir.
22 Q. Where are they, down at the bottom there?
23 A. Yes.
24 Q. Those are abnormal lipids? How many do you see,

1 sir?

2 A. They list four, but the -- only two of them are
3 outside of the range as listed.

4 Q. Which two are outside the range, sir?

5 A. Cholesterol and the LDL.

6 Q. Isn't cholesterol 260, sir?

7 A. On my page it's 301. There is two ways of looking
8 at those elements, one is by chemical analysis, one is by he
9 electrophoresis. Yes, I read it from here.

10 Q. Oh, there is one over there, okay.

11 MR. CARR: Another page, counsel.

12 A. One is chemical method, the other is
13 electrophoresis?

14 A. So has an upper range of 300 and it's 301?

15 A. Right.

16 MR. CARR: On the same page it's also 311 counsel,
17 if you look a little lower.

18 A. Yes.

19 Q. All right. So there are two lipids that are
20 abnormal, is that correct?

21 A. Yes, sir.

22 Q. And there are two lipids checked on 1507?

23 A. Yes, sir.

24 Q. Now, what about the other abnormalities, sir?

1 A. That's all.

2 Q. You don't see any other abnormalities?

3 A. No, sir.

4 Q. And there is a check in the other column for Mr.

5 Crame?

6 A. Yes, sir.

7 Q. What about Glen Davis, sir?

8 A. Yes, sir.

9 Q. We see for Mr. Davis some lipids that are abnormal

10 and there are lipids checked as abnormal?

11 A. Yes, sir.

12 Q. Are there any other abnormalities listed for Mr. Davis

13 other than lipids, sir?

14 A. No, sir.

15 Q. 1507 has two checkmarks under others, correct?

16 A. Yes, sir.

17 Q. The others as listed on 1507 are under the category

18 of abnormal lab reports, are they not, sir?

19 A. Yes, sir.

20 Q. Now, could we look at Frances Esmon, please?

21 A. Yes, sir.

22 Q. Do you see any abnormal, other abnormal lab report?

23 A. No, sir.

24 Q. Listed on his lab sheet?

1 A. No, sir.

2 Q. And yet 1507 has two checks under other, correct?

3 A. No.

4 MR. CARR: Who are we talking about now, counsel?

5 MR. NASSIF: Esmon.

6 Q. I'm sorry, one?

7 MR. CARR: Who are we talking about now?

8 MR. HEINEMAN: Esmon.

9 Q. There are two, there are two checks for other
10 abnormal lab reports on Exhibit 1507, are there not?

11 A. For Esmon.

12 Q. E-s-m-o-n?

13 A. I don't think so.

14 Q. Well, my copy has two checks.

15 Q. Does the jury's copy show two checks or none?

16 (Jury panel indicates one)

17 MR. CARR: Counsel, you want to be told why yours
18 has two checks or do you want to just speculate?

19 MR. HEINEMAN: Why does mine have two checks?

20 MR. CARR: Because yours is not the exhibit that
21 was put in evidence. Your is another one. Yours is the one
22 that was received during the course of -- and yours was
23 revised, so you are using one that was not an exhibit in this
24 case, although you marked an exhibit in this case. It's not

1 the exhibit. You are using material that you received from
2 outside this courtroom. At an earlier time. It is not the
3 final exhibit that was marked and offered and introduced and
4 put into evidence. Mr. Nassif has a copy of the one that was
5 put in evidence. You are using an earlier copy that your
6 office received from --

7 MR. HEINEMAN: From you?

8 MR. CARR: Prior to the time that Nassif and
9 Snively and Roush went to see Suskind.

10 MR. HEINEMAN: Is this the one you sent the union?

11 MR. CARR: Yes.

12 MR. HEINEMAN: I've got the one you sent the
13 union?

14 MR. CARR: You've got the one that was filed in the
15 Supreme Court, as you know.

16 MR. HEINEMAN: This is the one you sent to the
17 union?

18 MR. CARR: This is the one I sent to the union and
19 you took to Cincinnati with Roush, Snively, Nassif. It is
20 not the exhibit that was put into evidence in this case.
21 You've been using all the time the wrong exhibit. You've
22 been using a non-existing exhibit.

23 MR. HEINEMAN: First time it disagreed with his.

24 MR. CARR: You'll find other times, counsel.

1 MR. HEINEMAN: Fine, let's pull the other one. All
2 right, sir, can I have a moment, Your Honor, and compare my
3 two documents, since I've got apparently two different ones.

4 THE COURT: Go ahead.

5 MR. HEINEMAN: I think I'm ready now Judge, thank
6 you.

7 THE COURT: Okay.

8 Q. (by Mr. Heineman) Can we look at Elizabeth Fay,
9 please?

10 A. Yes, sir.

11 Q. You find any abnormal, other abnormal lab results
12 listed on her chart?

13 A. No, sir.

14 Q. And on 1507 there is one checked, correct?

15 A. Yes, sir.

16 Q. We look at William -- I'm sorry, Randy Gary?

17 A. I can't read the first name. Is there more than
18 one? Is it 109?

19 Q. 109, sir, yes.

20 A. Yes, sir.

21 Q. You have any abnormalities there other than lipids?

22 A. No, sir.

23 Q. And there is a check for an abnormal on 1507, is
24 there not?

1 A. Yes, sir.

2 Q. Now, how about Lawrence Harper, sir?

3 A. Harper?

4 Q. Harper, yes, sir.

5 A. Harper. Yes, sir.

6 Q. Do you have any abnormalities there listed other than

7 lipids?

8 A. No, sir.

9 Q. And there is one checked for other on 1507?

10 A. Yes, sir.

11 Q. Dwayne Hergenroeder, please?

12 A. Yes, sir.

13 Q. I see four, I see a checkmark under Hergenroeder

14 for lipids?

15 A. Yes, sir.

16 Q. Do you see any of the lipids as being abnormal,

17 sir?

18 A. No, sir.

19 Q. I also see a checkmark on 1507 for Mr. Hergenroeder

20 under other laboratory abnormalities you see any other?

21 A. No, sir.

22 Q. All right. Will you look at Leonard Herman,

23 please.

24 A. Yes, sir.

1 Q. Can you tell me how many abnormal lipids you see
2 for Leonard Herman?

3 A. Two.

4 Q. But he has three checkmarks, correct?

5 A. Yes, sir.

6 Q. Under lipids?

7 A. Yes, sir.

8 Q. How about Joseph Heumann?

9 A. Yes, sir.

10 Q. How many other abnormal lab results are there on
11 Mr. Heumann's record?

12 A. One.

13 Q. How many checkmarks on 1507 for other?

14 A. Two.

15 Q. Next would be Clarence Hornbeck, please.

16 A. Yes, sir.

17 Q. How many abnormal lipids do you see for Mr.
18 Hornbeck?

19 A. Two.

20 Q. And how many checkmarks are there under lipids on
21 the Exhibit 1507?

22 A. Four.

23 Q. How about Richard Huntley, sir?

24 A. Yes, sir.

1 Q. How many other abnormal findings do you have for
2 Mr. Huntley, sir?

3 A. Besides lipids, including lipids?

4 Q. No, the others?

5 A. None.

6 Q. And how many are listed on 1507, sir?

7 A. Two.

8 Q. Let me point one thing out to you, sir, on the
9 Richard Huntley lab report itself, is his lymphocyte count
10 high?

11 A. Yes, it is.

12 Q. Okay, so there is one, but 1507 lists two?

13 A. Yes.

14 Q. All right, sir. Now, for Adrian Isaac, please?

15 A. Yes, sir.

16 Q. Now, with respect to the lipids on Mr. Isaac, he
17 has two lipids that are low, does he not?

18 A. No, sir. Wait a minute.

19 Q. Just one?

20 A. One.

21 Q. Just one that's low?

22 A. Yes.

23 Q. And he's got two checkmarks for lipids on 1507?

24 A. Yes.

1 Q. Now, the one that's low, is total cholesterol, is
2 that right, sir?

3 A. Yes, sir.

4 Q. Is it normally thought to be harmful to have your
5 cholesterol be a little low?

6 A. No, sir.

7 Q. Normally when cholesterol is high that it's thought
8 to be a problem, isn't it, sir?

9 A. Yes, sir.

10 Q. Now, how many abnormal other findings do you see
11 for Mr. Isaac, he's got a lot of things listed there, I
12 know.

13 A. His BUN, his albumin, his globulin, and his AG
14 ratio, and his bilirubin, and his SGOT.

15 Q. How about calcium, sir?

16 A. His calcium as well.

17 Q. Is that a total of eight?

18 A. I didn't keep track.

19 Q. Well, they are listed right there on the bottom of
20 that page?

21 A. Right.

22 Q. There are a total of eight, are there not, sir?

23 A. Eight.

24 Q. And how many are listed on Exhibit 1507 checked for

1 other?

2 A. Ten.

3 Q. How about Henry Jenkins, sir.

4 A. Yes, sir.

5 Q. How many other abnormal lab reports do you see in
6 the METPATH lab results?

7 A. One.

8 Q. And how many are listed on Exhibit 1507, sir?

9 A. Two.

10 Q. Next would be Jan Karsteter?

11 A. Yes, sir.

12 Q. How many are listed as being other abnormalities, sir,
13 on her actual METPATH lab results?

14 A. None.

15 Q. How many are on the Exhibit 1507?

16 A. One.

17 Q. How about Delbert Kirk?

18 A. Yes, sir.

19 Q. Now there are a number of lipids listed as
20 abnormal, are there not, sir?

21 A. Yes.

22 Q. How many of them are high, sir?

23 A. Three. I'm sorry, I didn't get them all, I just
24 took them as they were listed there.

1 Q. Aren't there four, sir, triglycerides listed at the
2 bottom?

3 A. Yes, four.

4 Q. Now, how many other abnormal lab reports are there,
5 sir?

6 A. Other than lipids? One.

7 Q. One?

8 A. Yes.

9 Q. That's the uric acid there, sir?

10 A. Yes.

11 Q. How many, sir, are listed on Exhibit 1507?

12 A. Four for lipids and three for other.

13 Q. And you found one other?

14 A. Yes.

15 Q. What about Lorraine Koehler, sir?

16 A. Yes, sir.

17 Q. How many other abnormal lab reports do you see
18 there, other than lipids?

19 A. None.

20 Q. And how many does Exhibit 1507 list?

21 A. One.

22 Q. Now, how about James Labanosky, sir?

23 A. Yes, sir.

24 Q. How many other abnormal lab reports are on the

1 METPATH report?

2 A. None.

3 Q. And how many are on 1507?

4 A. One.

5 Q. All right, sir, how about Joseph Lepp?

6 A. Yes, sir.

7 Q. How many abnormal other values are found on the
8 METPATH report?

9 A. None.

10 Q. How many on 1507?

11 A. One.

12 Q. Charles Lewallen, sir?

13 A. Yes, sir.

14 Q. How many other abnormal lab reports are listed on
15 the METPATH report, sir?

16 A. One.

17 Q. And how many on the Exhibit 1507?

18 A. Two.

19 Q. How about Pete McClellan, sir? I'm sorry, that's
20 the wrong one, it's Richard Moore.

21 A. Yes, sir.

22 Q. How many other abnormal lab reports are listed on
23 the METPATH report?

24 A. One.

1 Q. And how many are on 1507, sir?

2 A. Two.

3 Q. And Michael Picarella, how many abnormal other lab

4 results are listed on the METPATH report?

5 A. One.

6 Q. And how many are on Exhibit 1507?

7 A. Two.

8 Q. Next would be Ray Purkey, sir?

9 A. Yes, sir.

10 Q. How many other abnormal lab reports are listed on

11 the METPATH report?

12 A. None.

13 Q. And how many are on 1507?

14 A. One.

15 Q. Next would be Ray Reid, or Roy Reid, I'm sorry.

16 A. Yes, sir.

17 Q. How many other abnormal lab reports are set forth

18 on the METPATH results?

19 A. Two?

20 A. I guess that's three, I didn't count -- let's see.

21 Two.

22 Q. His white blood cells, his polys and his iron,

23 right, sir?

24 A. Yes.

1 Q. That's three?

2 A. Right.

3 Q. How many are listed on Exhibit 1507?

4 A. Four.

5 Q. How about Mark Rensing, sir, how many abnormal lab

6 reports are in the METPATH report?

7 A. None.

8 Q. 1507?

9 A. One.

10 Q. How about Ivan Richardson, sir?

11 A. Yes, sir.

12 Q. How many are on the METPATH report as other

13 abnormal lab reports?

14 A. One.

15 Q. And how many are on 1507?

16 A. Two.

17 Q. Next one would be Charles Sumoski?

18 A. Sumoski?

19 Q. Sumoski?

20 A. Yes, sir.

21 Q. How many other abnormal lab reports are listed on

22 the METPATH results?

23 A. Five -- four.

24 Q. Uric acid, total protein, STPT and magnesium,

1 correct?

2 A. Right.

3 Q. There were four, and how many are listed in Exhibit
4 1507, sir?

5 A. Five.

6 Q. Next would be Clinton Turner.

7 A. Yes, sir.

8 Q. How many abnormal other lab reports are in the
9 METPATH results?

10 A. One.

11 Q. And how many are listed in 1507, sir?

12 A. Two.

13 Q. The next would be Harvey Turner, sir.

14 A. Yes, sir.

15 Q. How many other abnormal lab reports are in the
16 METPATH results?

17 A. Two.

18 Q. And how many are listed on 1507?

19 A. Three.

20 Q. How about James Turner, sir?

21 A. Yes, sir.

22 Q. How many are listed in the METPATH results for
23 other abnormal lab reports?

24 A. One.

1 Q. How many are listed in 1507, sir?

2 A. Two.

3 Q. Next would be Fred Weber, sir.

4 A. Yes, sir.

5 Q. How many abnormal laboratory reports are listed in
6 the METPATH results?

7 A. None.

8 Q. And how many are listed in 1507?

9 A. One.

10 Q. And how about Kenneth Wilcox, sir?

11 A. Yes, sir.

12 Q. How many other abnormal laboratory reports are
13 listed in the METPATH results?

14 A. Five.

15 Q. And how many are listed on Exhibit 1507, sir?

16 A. Six.

17 Q. Now, sir --

18 THE COURT: Before you go into your next question,
19 is this a good point for a short break?

20 MR. HEINEMAN: It would be fine, Judge.

21 THE COURT: Ladies and gentlemen, we will take a
22 break at this time. The admonishments that I've given you
23 earlier will apply during this break also. Court is in
24 recess.

1 (Following a recess, these proceedings were had in open
2 court.)

3 Q. (by Mr. Heineman) Dr. Roush, in his examination of
4 you, Mr. Carr made reference to this blow-up which is 1267 A,
5 you recall that, sir?

6 A. Yes, sir.

7 Q. And you and he discussed whether or not this was
8 Northwestern University listing what the toxic effects are in
9 man or whether on the other hand they were just reciting what
10 had been repeated in another source, you recall that?

11 A. Yes, sir.

12 Q. Now, the source listed here, is Huff, Moore,
13 Saracci and Tomatis, 1980, correct?

14 A. Yes, sir.

15 Q. Let me hand you, sir, what's been marked as
16 Defendant's Exhibit number 909 and ask you if that isn't the
17 paper by J. E. Huff, J. A. Moore, R. Saracci, and L. Tomatis,
18 dated November 1980?

19 A. Yes, sir.

20 Q. And what this document does, this is a paper
21 printed in environmental health perspectives in Volume 36 in
22 1980?

23 A. Yes, sir.

24 Q. Now, I'd like to direct your attention, if I may,

1 to Table 6 on page 229.. You see that, sir?

2 A. Yes, sir.

3 Q. Does that look familiar?

4 A. Yes, sir.

5 Q. You have listed there, do you not, the same items
6 that are listed here on Exhibit 1267 A, do you not, sir?

7 A. Yes, sir.

8 Q. And even so far as to show the footnote after liver
9 damage, you see that?

10 A. Yes, sir.

11 Q. There is a footnote in this Table 6, that is marked
12 by an asterisk, correct?

13 A. Yes, sir.

14 Q. And the same footnote is stated here as is stated
15 in this Smith, or Huff-Moore paper, correct?

16 A. Yes, sir.

17 Q. Now, one thing that is in Table 6 is not contained
18 here, is it in Exhibit 1267, and that is the reference list,
19 isn't that right?

20 A. That's right.

21 Q. Now, in Table 6, of the Huff-Moore paper, there is
22 across from each one of those effects a reference or a series
23 of references, is there not?

24 A. Yes, sir.

1 Q. And those references refer to, by number, to the
2 references that are listed at the back of the paper, do they
3 not, sir? As sources for that material?

4 A. Yes, sir.

5 Q. So that with respect to porphyria cutanea tarda
6 there is a reference to paper number 27, which is the
7 Bleiberg paper published in 1964, correct?

8 A. Right.

9 Q. There is also a reference to paper number 104,
10 which is the Jirasek paper published in 1973, correct?

11 A. Yes, sir.

12 Q. Also referenced is paper number 105, which is
13 another Jirasek paper published in 1974, and the last is
14 reference number 109 which is another Jirasek paper published
15 in 1976, correct?

16 A. Yes, sir.

17 Q. Now, the author of the Huff-Moore paper, those
18 authors, who were relied upon by the authors of Exhibit 1267
19 are themselves listing information from other authors?

20 A. That's right.

21 Q. Are they not?

22 A. Yes, sir.

23 Q. Now, the reference in the text of this paper, the
24 Table 6, is found, excuse me, on page 227 in the righthand

1 column, is it not, sir?

2 A. Yes, sir.

3 Q. And it is part of a portion of the paper entitled
4 toxic effects in humans, correct?

5 A. Yes.

6 Q. And the beginning of this portion of the paper
7 states, does it not, "Toxicity due to 2,3,7,8-tetra-CDD has
8 been reported after occupational exposure during the
9 industrial synthesis of 2,4,5-trichlorophenol, (TCP) and
10 2,4,5-T after exposure in factories and in the surrounding
11 environment due to accidents occurring during the synthesis
12 of TCP and after exposure to herbicides and other materials
13 containing 2,3,7,8-tetra-CDD." Correct?

14 A. Yes, sir.

15 Q. Says, "Exposed subjects have been found to develop
16 a wide variety of lesions and symptoms." And then it says
17 Table 6 in parenthesis, is that correct?

18 A. Yes, sir.

19 Q. And so what this document, this paper is saying, is
20 that those effects have been reported after occupational
21 exposure, correct?

22 A. Yes, sir.

23 Q. And if you go down to the next paragraph, it
24 states, does it not, "Other than the consistently found

1 clinical feature of acne, other findings in humans may
2 include neuromuscular symptoms, (weakness and pain with nerve
3 conduction abnormalities), porphyria cutanea tarda, hepatic
4 dysfunctions, hyperlipidemia, cutaneous hyperpigmentation and
5 hirsutism, chronic eye irritation, emotional disorders and
6 neuropsychiatric syndromes." Correct?

7 A. Yes, sir.

8 Q. Those are all things that may be included when
9 Chloracne is found, correct?

10 A. Yes, sir.

11 Q. Now, and the source of that information from,
12 obviously from Table 6 is a series of articles written by
13 people who were reporting on various incidents?

14 MR. CARR: Excuse me, did you read something that
15 says that those things are found when you find Chloracne,
16 maybe you were putting something in there, but I thought you
17 said that those things are found when you find Chloracne, did
18 you say that, counsel?

19 MR. HEINEMAN: It says sir --

20 MR. CARR: Excuse me, I don't see anyplace that
21 says that, and I ask unless counsel can find that quote for
22 me that the jury be instructed that this is counsel's
23 interpretation and not what the exhibit says.

24 MR. HEINEMAN: I'll be happy to read exactly what

1 the exhibit says, Your Honor.

2 THE COURT: Bring it to the bench I'd like to see
3 it, gentlemen.

4 (The following Side Bar conversation was had outside the
5 hearing of the jury.)

6 THE COURT: What paragraph are you reading from?

7 MR. HEINEMAN: Right here.

8 THE COURT: Okay.

9 MR. HEINEMAN: Clearly demonstrates to me, Your
10 Honor, that this paper is saying that when this symptom is
11 found those others may be found.

12 THE COURT: It's not saying that at all.

13 MR. CARR: Doesn't say that.

14 MR. HEINEMAN: I think it does.

15 MR. CARR: My objection is to interpreting, I don't
16 object to you reading it. My objection is you reading and at
17 the same time interpreting under the guise of reading it. It
18 doesn't say that.

19 MR. HEINEMAN: I think it does.

20 THE COURT: It does not say that, it says that this
21 is a consistent finding. The others are findings that can be
22 found and they are inclusive of the following list. It does
23 not link the one with the other as you interpreted. I will
24 so instruct the jury as per your -- as per your objection --

1 MR. HEINEMAN: It does say --

2 THE COURT: Does not say that.

3 MR. HEINEMAN: I'm sorry. Says may include the
4 others, does it not, sir?

5 THE COURT: It says other than the consistently
6 found if feature acne, others may include. The two are not
7 linked. They are in fact separated by the grammar of the
8 sentence. Stating first in the first clause that the one is
9 a consistent finding, the others are other possible
10 findings. It does not in anyway link the two, except as
11 possible findings in exposed human beings. Mr. Carr, your
12 interpretation is correct. I will so instruct the jury.
13 (The following proceedings were had in open court.)

14 THE COURT: Mr. Carr as per your objection, the
15 jury is so instructed that that remark of counsel was
16 counsel's interpretation of the document.

17 Q. Would you read that paragraph into the record,
18 Doctor, the one beginning other?

19 A. "Other than the consistently found clinical
20 features of acne, other findings in humans may include
21 neuromuscular symptoms, weakness and pain with nerve
22 conduction abnormalities, porphyria cutanea tarda, hepatic
23 dysfunctions, hyperlipidemia, cutaneous hyperpigmentation and
24 hirsutism, chronic eye irritation, emotional disorders, and

1 neuropsychiatric syndromes."

2 Q. According to the authors of this paper, Doctor, do
3 you agree that Chloracne is?

4 MR. CARR: Object to counsel leading the witness
5 and the witness should make his own statement. This is going
6 to be a suggestion from counsel and not going to be the
7 witness'.

8 THE COURT: Objection sustained.

9 Q. Doctor, would you read the beginning of the next
10 paragraph where it describes what Chloracne is?

11 A. "Chloracne, one of the most constant and prominent
12 features of 2,3,7,8-tetra-CDD exposure had been described as
13 a refractory acne characterized by inclusion cysts, comedones
14 and pustules with eventual scarring of the skin more
15 frequently originating on the face and sometimes spreading to
16 other parts of the body."

17 Q. All right, sir. Now, this Chloracne that is
18 described in the paragraph you just read, how does that
19 relate to the variations in acne which you described to the
20 jury yesterday?

21 A. Well, the Chloracne as described here with 2,3,7,8
22 includes, inclusion cysts, that's the gathering of the skin
23 inside of the cyst, comedones and pustules, which means the
24 accumulation of the sebaceous fluid that hadn't stopped being

1 produced. With eventual scarring of the skin, which means
2 it's more severe in that it produces the scarring such as you
3 see in juvenile acne when it's bad. And, originating in the
4 face. And if it's mild it will be associated with the face,
5 with heavier exposure, then the same reaction with bumps, big
6 bumps, one centimeter bumps or more are found on the other
7 parts of the body primarily over the back and sometimes down
8 into the chest, but sometimes down into the groin area as
9 well.

10 Q. So would the acne that's being described in this
11 paper as being associated with 2,3,7,8-TCDD, would you
12 characterize that acne as being described there as mild,
13 moderate, or severe?

14 A. Severe.

15 Q. Now, sir, you still have before you Exhibit 908,
16 Defendant's 908 which is the Marion Moses study that we
17 referred to yesterday?

18 A. Yes, sir.

19 Q. All right. Now, this was a study that was
20 commissioned by the United Steel Workers Union?

21 A. Yes, sir.

22 Q. In April of 1979?

23 A. Yes, sir.

24 Q. And, they went to Marion Moses and Irving Selicoff

1 at the Mount Sinai Hospital in New York City, is that
2 correct?

3 A. Yes, sir. Yes, sir.

4 Q. Now, the examinations -- well, tell me this, what
5 was it that Dr. Moses did in order to carry out this study?

6 A. She, the first thing is she had to contact all of
7 those who might possibly have been exposed to the
8 2,4,5-trichlorophenoxyacetic acid and therefore probably
9 exposed to 2,3,7,8 tetrachlorodibenzo-dioxin, so she
10 contacted them and she contacted them through the union, and
11 once she got that group together, she had to decide then how
12 best to characterize those who had exposure and those who did
13 not. And, in the process of doing that, trying to decide
14 what kind of dose. She fell back on the way to do it is to
15 compare those with Chloracne with those who did not have
16 Chloracne.

17 Q. That is the method as we read earlier that she used
18 to decide to characterize what?

19 A. The degree of exposure that they had.

20 Q. Because she couldn't determine it from other
21 records?

22 A. That's right.

23 Q. Now, indeed as a part of her paper, if you look at
24 page -- well, the fourth page of the exhibit, it's actually

1 164, page 164, she has the beginning of Table 1 that goes on
2 for some three pages, does she not?

3 A. I'm sorry?

4 Q. Beginning on page 164, sir, is Table 1, which goes
5 on for some three pages?

6 A. Right.

7 Q. And what is Table 1?

8 A. Table 1 is a listing of the reported episodes of
9 those people who have been working with those materials, the
10 same phenoxyacetic acid or with trichlorophenol, and develop
11 some kind of a symptom complex that was thought to be related
12 to that exposure.

13 Q. So those are industrial exposures?

14 A. Yes, sir.

15 Q. Either by accident or process?

16 A. Or just by chronic exposure.

17 Q. Just by chronic exposure through the process?

18 A. Yes.

19 Q. Industrial incidents, the first begins in 1936 and
20 the last one referenced is in 1978, correct?

21 A. Yes, sir.

22 Q. And with respect to each of those, she states the
23 chemicals that were involved, the place where the incident
24 occurred, the type of exposure, and the number of cases of

1 exposure in each one, does she not?

2 A. Yes, sir.

3 Q. She talks about the effects on the skin, and then
4 she lists various other effects that are reported with
5 respect to each of those incidents?

6 A. Yes, sir.

7 Q. And the righthand column is what?

8 A. References.

9 Q. That's the source of her information?

10 A. That's right.

11 Q. Now, what is the effect on the skin that is found
12 in every single one of those reported occupational exposures?

13 A. Chloracne.

14 Q. That's found in every one, sir?

15 A. Yes, sir.

16 Q. Now, if we look -- if I can direct your attention
17 briefly to page 176, I'm going to go back to more of it later
18 on, but I just want to talk briefly about this portion she
19 makes an effort in the discussion section, does she not, sir,
20 to assess the degree of contamination of the product to which
21 the subjects of this study were exposed?

22 A. Yes, sir.

23 Q. And what does she, what does she find?

24 A. That first of all, she got a sample of 2,4,5-T and

1 had it analyzed for 2,3,7,8-TCDD.

2 Q. And how much did she find, sir?

3 A. 6 parts per million of the 2,3,7,8 isomer.

4 Q. And that was found in -- from a sample in 1969?

5 A. Yes, sir.

6 Q. Took a 1969 sample, had it analyzed. Now, she
7 cites for that 6 parts per million somebody named Nordstrom
8 et. al. in 1980?

9 A. Yes, sir.

10 Q. Doesn't she? Now, it could be, could it not, that
11 indeed in 1980, Nordstrom was able to be isomer specific and
12 pick out 2,3,7,8-TCDD as a specific isomer?

13 A. It's possible.

14 Q. Now, she goes on to say that for comparison current
15 commercial grade of 2,4,5-T is claimed to have less than
16 .1 ppm TCDD?

17 A. Yes, sir.

18 Q. Correct?

19 A. Yes, sir.

20 Q. You note that she -- that's .1 would be a hundred
21 parts per billion?

22 A. Yes, sir.

23 Q. And she uses TCDD instead of 2,3,7,8-TCDD, does she
24 not?

1 A. Yes, sir.

2 Q. Now, if I can direct your attention back, sir, to
3 page 168, and to the middle of the -- I should say the last
4 part of the second paragraph on the page, where she is
5 talking about the tests that were done?

6 A. Yes, sir.

7 Q. What does she say with respect to the analyses
8 recited in the last two sentences of that paragraph?

9 A. When analysis of liver function test triglycerides
10 and urinary porphyrins, subjects whose weakly alcohol
11 consumption was equivalent to 24 beers or more, or who were
12 current or past problem drinkers were excluded. In addition,
13 diabetics and those subjects on medication known to induce
14 GGT were excluded from the analysis of GTT and triglycerides.

15 Q. Now, it says that with respect to anybody who was a
16 current or past problem drinker, or who had a weakly alcohol
17 consumption equivalent to 24 beers or more, which would be a
18 little over three a day, right?

19 A. Yes.

20 Q. She took them out with respect to making any
21 determination of liver function tests, triglycerides, and
22 urinary porphyrins?

23 A. Yes, sir.

24 Q. Correct. Do you know why she did that?

1 A. Yes, sir.

2 Q. Why is that?

3 A. Well, it's well recognized that alcohol will
4 influence the liver function test. It will influence the
5 triglycerides, and is well recognized to influence porphyrin
6 metabolism. 90 percent of people who have abnormality of
7 uroporphyrins without genetic disease are alcoholics. In
8 other words, those with the porphyria cutanea tarda, 90
9 percent of them will be heavy drinkers. Now, when we go onto
10 other subjects, the diabetics, of course, will have
11 abnormalities of triglycerides regularly, and depending on
12 the state of their diabetes and how well it's under control
13 will effects the liver profile as well. And those on
14 medication as well, those on alcohol will certainly effect
15 the GGT, so they want to get rid of the possible other
16 factors that could be influencing those analyses that were
17 going to be run.

18 Q. Now, when you do a test of this type, sir, don't
19 you just take your people as you find them, I mean, do those
20 substances have a sufficient effect on those functions or
21 those test results to mask or prevent an accurate
22 determination of them?

23 A. No, they will cause abnormalities, and since
24 abnormalities are caused by something we know, we want to

1 eliminate them as confounding factors and interpretation of
2 the results that will be obtained.

3 Q. So what they want to do is eliminate those people
4 who have those problems, alcohol consumption, or who may be
5 diabetic, or be on other medications so that they can find
6 out whether or not whatever function test they have is due to
7 something they are looking for as opposed to any other
8 confounding factor?

9 A. They just used that for those specific tests, they
10 didn't apply it generally.

11 Q. Okay. So that they left the people in for the
12 study in other respects?

13 A. Yes, sir.

14 Q. But took their results out when making decisions
15 about liver function triglycerides, urinary porphyrins, and
16 GGT?

17 A. Right.

18 Q. All right. So in all other respects, those people
19 are included in the study?

20 A. That's right.

21 Q. Now, what is GGT?

22 A. It's an enzyme that is found in many tissues
23 including skin, and when you find it in the blood, it has
24 escaped from the tissues in which it's found and it's a very

1 early indicator of liver effects, because we take in so many
2 foods and medicines that can influence the GGT, it's a very
3 sensitive liver index test.

4 Q. Now, if I can direct your attention, sir, to page
5 169.

6 A. Yes, sir.

7 Q. There at that page she describes the people that
8 did not participate.

9 A. Yes, sir.

10 Q. Now, those are Nitro workers?

11 A. Yes, sir.

12 Q. From the same plant that Dr. Suskind examined in
13 his morbidity study?

14 A. Yes, sir.

15 Q. And, she describes the 190 people who did not
16 participate in her test, and what does she say about them,
17 sir?

18 A. Those who did not decide to take part in the test,
19 35 of the 133, 18 percent indicated they just didn't want to
20 do it, didn't want to take the test. 22 of them, 11.6
21 percent indicated they wished to participate but then when
22 the test came, they failed to keep their appointment. A
23 systematic sample of 35 individuals, they didn't do the whole
24 190, were contacted by phone to determine why they didn't

1 participate. 19 were actively employed by the company, 16
2 were retirees, and two had recently died. The reason for
3 non-participation, seven said they were sick, five said they
4 had no health problems, four had no particular reason, three
5 were on vacation, three had to work, three reported that
6 their wife was sick, and three reported they had never worked
7 with 2,4,5-T. And then there were two who said they didn't
8 get the mailing. One said they had no time, another one said
9 I have another commitment, and the other one just said I
10 forgot.

11 Q. So of the 35, no-shows that she contacted, those
12 were the reasons given for not participating?

13 A. Right.

14 Q. And there were a number of other no-shows, of
15 course, whom she did not telephone?

16 A. That's right, just a sample that she checked.

17 Q. Random sample was taken, okay. Now, when she went
18 into the dermatological examination, sir, I take it she had
19 laboratory tests done?

20 A. Yes, sir.

21 Q. She did or had someone do a physical examination of
22 each of the people?

23 A. Yes, sir.

24 Q. And is that the same thing that Dr. Suskind did?

1 A. Almost the same.

2 Q. All right. How was it different?

3 A. I'm not sure -- I'm saying -- I can't say if it's
4 identical, but it apparently was about the same.

5 Q. Suskind did physical examinations and had
6 laboratory test, didn't he?

7 A. Yes, sir.

8 Q. Now, if I can direct your attention to Page 171
9 where she talks about her dermatological examination, she
10 says, does she not, there was no association between
11 Chloracne and other diseases of the skin, including skin
12 cancer, correct?

13 A. I don't know where you are reading.

14 Q. I'm sorry, let me show it to you, right down here.

15 A. I see. Yes, sir.

16 Q. Now, she did find, however, certain other
17 statistically significant differences between those with and
18 without Chloracne, did she not?

19 A. Yes, sir.

20 Q. If you look at Page 173, she says statistically
21 significant differences between those with and without
22 Chloracne were found for reported symptoms of muscle pain,
23 insomnia, decreased libido, sexual dysfunction, which she
24 defines as difficulty with erection or ejaculation, and

1 eyelid cysts, correct?

2 A. Yes, sir.

3 Q. And she reports that in a table?

4 A. Yes, sir.

5 Q. The next paragraph says, no significant differences
6 were found between those with and without Chloracne for the
7 following symptoms: Joint paint, abdominal pain, nausea,
8 vomitting, diarrhea, constipation, weakness, fatigue,
9 irritability, nervousness, depression, numbness, vertigo,
10 lightheadedness, or personality change. Correct?

11 A. Yes, sir.

12 Q. Now, what is the meaning of finding a significant
13 difference between those with an without Chloracne for
14 certain things, and not finding a significant difference
15 between those with and without Chloracne for other things?

16 A. Take the no significant difference first. What she
17 is saying or they are saying is that when she compared those
18 with Chloracne and those without Chloracne, that there was no
19 difference between those who got a bigger dose, and had
20 Chloracne for joint pain, abdominal pain, nausea, vomitting,
21 diarrhea, constipation, weakness, fatigue, irritability
22 nervousness, depression, numbness, vertigo, lightheadedness
23 and personality disorder?

24 A. In other words, those two groups had almost the

1 same number of people with those complaints, doesn't mean
2 they had none, but the ones who had Chloracne had no more of
3 those complaints than those who did not have Chloracne. Now,
4 going back to the first part, but when she did look at muscle
5 pain, insomnia, libido, sexual dysfunction and eyelid cysts
6 there was a difference. In other words, those who had
7 Chloracne had more of those complaints than did those without
8 Chloracne. That doesn't mean that it is real. It means when
9 she looked at this population of this size, just looking at
10 the numbers, those who had no Chloracne and those who do have
11 Chloracne, it was a difference, and statistics said it was
12 significantly different. That doesn't mean if they did it
13 again, that may go away, but if they did it again on another
14 population, it may confirm it. So, if it's confirmed the
15 next time, then it means it's real. If the next time they
16 did it and it doesn't turn out to the same, then it means
17 that there is no correlation, so it can still happen by
18 chance if it's statistically significant. But you have to be
19 very careful, do it again and see if it is.

20 Q. Now, with respect to reproductive history, she says
21 that since 2,4,5-T production began in 1948, reproductive
22 outcome prior to that year was analyzed separately. In other
23 words, she analyzed reproductive outcome occurring before the
24 production of 2,4,5-T started, as compared to that which

1 occurred afterwards, right?

2 A. Yes, sir.

3 Q. She said that all but 19 of the study subjects had
4 been responsible for at least one pregnancy, 107 of those
5 with Chloracne, and 91 of those without, correct?

6 A. Yes, sir.

7 Q. Of the 717 total pregnancies reported, 435 or 60
8 percent had occurred during or after 1948. 54 percent of
9 them in those with Chloracne, and 46 percent in those
10 without. So, those with Chloracne fathered more children
11 than those without?

12 A. Yes, sir.

13 Q. She follows that by saying, no significant
14 differences between the two groups were found in rates of
15 birth defects, still births, or spontaneous abortion?

16 A. Yes, sir.

17 Q. Correct. Now, she further goes on to describe the
18 physical examination results, does she not?

19 A. Yes, sir.

20 Q. Now, what does she say with respect to that,
21 Doctor?

22 A. She analyzed the two groups, those with Chloracne
23 and those without. And there was no clinical difference.
24 That means what they looked at, there was no difference --

1 Q. Excuse me, no clinically significant --

2 A. No clinically significant difference between the
3 two groups on physical examination. That includes liver
4 size, and they talk about liver size, palpation of thyroid
5 gland, lymph nodes, examination of extremities,
6 musculoskeletal and cardiovascular system. She went on they
7 said, and did an extensive neurologic examination on 94
8 volunteers. The neurology found a decreased sensation to pin
9 prick and in 11 of the 60 with current or past Chloracne and
10 none in the 34 who never had Chloracne. That difference, 11
11 and 60 vs. none in 34 was very significant. In other words,
12 the chance of that happening just by chance is less than one
13 in a hundred. In other words, that makes it quite real.
14 Now, whether that's so doesn't prove it but that's a very
15 strong association. No other neurologic findings of
16 significant were found between the two groups. Should I go
17 on?

18 Q. Yes, sir, please.

19 A. There was one worker who had severe Chloracne and
20 multiple systemic manifestations in the past related to heavy
21 exposure, as a part of an accident that occurred in 1949.
22 And he had severe peripheral neuropathy. In him, the deep
23 tendon reflexes were absent. That's when they hit the arm at
24 the elbow, and at the knee, and his -- those reflexes were

1 absent and he had decreased sensation to pain and vibration
2 and he also had motor weakness, that means you just check to
3 see how strong the arm is. He was weak as compared to what
4 they thought it should be. So there is one man who had
5 severe effects, and whether it was related or not they
6 certainly couldn't -- but it seemed give --

7 Q. He was a man who had had severe Chloracne and
8 multiple systemic manifestations in the past related to what
9 she refers to as heavy exposure as part of the accident
10 clean-up crew in 1949?

11 A. Yes, sir.

12 Q. So he was involved in the '49 incident?

13 A. Yes, sir.

14 Q. Now, what does she say about the laboratory
15 findings, sir?

16 A. She said that, "Except for the gamma glutamyl
17 transpeptidase, which we have been calling GGT, there was no
18 statistical difference found between those with and without
19 Chloracne for any of the biochemical --

20 MR. CARR: Dr. Roush, you left out the word
21 significant. I think you ought to put that in.

22 Q. Yes, you did overlook that, no statistically
23 significant differences?

24 A. "Was found between those with and without Chloracne

1 for any of the biochemical or hematologic variables."

2 Q. All right. If you turn to Page 178 and you look at
3 the first full paragraph on that page, the first sentence in
4 that paragraph states. "It is not established that the GGT
5 abnormalities are due to induction by TCDD." Is that right,
6 sir, maybe I've lost you here, Page 178?

7 A. I was reading 177.

8 Q. I'm sorry.

9 A. My fault.

10 Q. 178, right here.

11 A. Right.

12 Q. It says it's not established that the GGT
13 abnormalities are due to induction by TCDD. Now, what does
14 that mean?

15 A. It means that the fact that they found those
16 abnormalities, doesn't mean that they have established that
17 they are related to the TCDD exposure that had taken place.

18 Q. Now, she goes on to say that in all cases it had
19 been ten years since the last occupational exposure, and in
20 the majority twenty years or more. Nor is cholestasis. What
21 is that, sir?

22 A. That's bile, not flowing and being held up in the
23 liver.

24 Q. All right. Nor is cholestasis or hepatic disease,

1 a likely explanation, since alkaline phosphatase,
2 transaminase and bilirubin were not elevated. It is possible
3 that the GGT and triglyceride abnormalities are a reflection
4 of a change in enzymes from exposures that occurred many
5 years before, just as changes in the skin persist although
6 TCDD is no longer present or present in amounts below the
7 limits of detection, and exposure ceased many years prior.
8 The failure to find TCDD in skin lipids or contents of
9 Chloracne cysts is of interest in this regard and she cites
10 another author, is that right?

11 A. Yes, sir.

12 Q. Now, she goes on to say in the next paragraph,
13 excuse me, the paragraph following that, where she talks
14 about a mortality study, does she not?

15 A. Yes, sir.

16 Q. Now, what mortality study is she referring to
17 there, sir?

18 A. That is the Zack-Gaffey study.

19 Q. All right. She says about the Zack-Gaffey study,
20 "A mortality study has been conducted by the company at this
21 plant. It was stated that of 163 deaths in '80 and '84,
22 workers at the plant from 1955 to 1977, a sub-group of 58
23 workers with 2,4,5-T exposure documented by company records
24 had a higher observed rate of coronary heart disease

1 mortality than expected from United States general population
2 death rates, although the difference was not statistically
3 significant." Correct?

4 A. Yes, sir.

5 Q. So she is reading the Zack-Gaffey study as
6 describing a cohort of workers who had 2,4,5-T exposure
7 documented by company records, correct?

8 A. Yes, sir.

9 Q. Now, she goes on to say, does she not, "Mortality
10 from cardiovascular disease is known to be higher than
11 national rates, in the Kanawha Valley of West Virginia where
12 the plant is located." Citing information from the State of
13 Virginia, correct?

14 A. Yes, sir.

15 Q. Now, Dr. Moses is an expert, is she not?

16 A. Yes, she is.

17 Q. She is a respected scientist?

18 A. Yes, sir.

19 Q. And she states what the Gaffey, Zack-Gaffey study
20 demonstrates, does she not?

21 A. Yes, sir.

22 Q. She also describes the Kanawha Valley mortality
23 from cardiovascular disease as being higher than the national
24 rate, does she not?

1 A. Yes, sir.

2 Q. Now, she was in West Virginia, she was there at the
3 plant to do those examinations?

4 A. Yes, sir.

5 Q. All you got to do is drive down the road there and
6 see all the chemical plants along the Kanawha River Valley
7 there?

8 A. Yes, sir.

9 Q. And she says that the mortality from cardiovascular
10 disease is known to be higher than national rates, right
11 after she recites what the Zack-Gaffey study finds with
12 respect to cardiovascular mortality being higher than
13 expected, correct?

14 A. Yes, sir.

15 Q. Now, do you know why she put those two statements,
16 one following the other, in her paper?

17 A. Because she thought they were related, I would
18 assume.

19 Q. Now, she further states that she found no
20 significant differences -- well, let me read it to you.
21 "Important negative findings in this study were the absence
22 of any significant differences between those with and without
23 Chloracne in serum cholesterol, total urinary porphyrins, or
24 in reproductive outcome." Correct?

1 A. Yes, sir.

2 Q. In regard to the latter, the cross sectional nature
3 of the survey, the small number of pregnancies and the fact
4 that information was obtained from the males only should be
5 recognized. However, with those limitations there is no
6 evidence that TCDD is a potent teratogen acting through the
7 male?

8 A. Correct.

9 Q. Now, what's a teratogen?

10 A. A teratogen is a substance, doesn't necessarily
11 have to be a chemical, can be a complex that is given to the
12 -- that is given to the female while she is pregnant. In
13 other words, the fetus is forming, and you give the chemical
14 or the substance during the time that that fetus is growing,
15 and the fetus will develop some abnormality, and the classic
16 one is Lytamide, that caused the absence of portions of the
17 arm and leg at that time.

18 Q. Now, she discusses a potent teratogen acting
19 through the male, how does a teratogen act through the male?

20 A. With difficulty.

21 Q. And she says there is no evidence that TCDD is a
22 potent teratogen acting through the male, does she not?

23 A. Right.

24 Q. She also says a recent study in which a larger

1 number of pregnancies were reported and spouses were
2 interviewed as well, also showed no differences in
3 reproductive outcome related to 2,4,5-T production exposure,
4 correct?

5 A. Yes, sir.

6 Q. That's a 1982 article that she cites?

7 A. Yes, sir.

8 Q. She goes on to say, "More other recent studies in
9 which male mice were exposed to phenoxy herbicides and TCDD
10 reported no significant dose related effects on sperm or
11 fertility, nor any teratogenic effects in offspring of
12 treated males."

13 A. Yes, sir.

14 Q. Now, this paper was published in 1984 and Dr.
15 Suskind's paper was published in 1984 after this one?

16 A. Yes, sir.

17 Q. She began this study in 1979, Dr. Suskind began his
18 study in 1979 shortly after she began hers, I gather, or was
19 it before?

20 A. After.

21 Q. Now, would you tell us, sir, how the Zack-Suskind
22 study was begun, what gave rise to it, how did it start?

23 A. Dr. Suskind was a part of the advisory group in the
24 Seveso episode. And when they got together to talk over the

1 implication, the possibility of an adverse effect from the
2 two kilograms of dioxin that was spread over the town of
3 Seveso, they were looking desperately for something they
4 could use to advise the people in Seveso what's going to
5 happen to them. And they listed almost like Moses did here,
6 the episode that had happened as well as how many people were
7 exposed, as well as a time in which the exposure took place,
8 and right at the top was the 1949 accident that happened at
9 Monsanto when there was a spill and a number of people
10 developed Chloracne. Since that was the longest, the oldest
11 study, it was thought that that was the biggest, the best,
12 and the oldest group of people who had been exposed and could
13 they look at that population to see whether there had been
14 any adverse effects of their being involved in that accident
15 and their mortality experience. And that's the basis for
16 them coming back. (Suskind came back and said I've almost
17 promised them that I would do the mortality study on that
18 population involved in the accident in 1949.

19 Q. So Dr. Suskind came to you or came to Monsanto and
20 asked to be aloud to do the study?

21 A. Yes, sir.

22 Q. And what year was that, sir?

23 A. I think it was 1977.

24 Q. The Seveso incident occurred in '76?

1 A. Yes.

2 Q. And in '77 he came to you with his proposal?

3 A. Yes.

4 Q. What did you do with it?

5 A. We went to Nitro, not permanently, but we asked
6 them to find the cohort of those who were working at that
7 time, and to find who was exposed in the process of that
8 accident either in working there at the time of the accident
9 or participating in the clean-up of that accident, and as we
10 said before, we had no records before 1955. It was
11 impossible for us to define who had actually participated in
12 that clean-up or had been there at that time. The only thing
13 we could do reasonably was to look at that who had Chloracne
14 because that's obvious that they had it, and the reason we
15 could do that is because we had workman's compensation of
16 taking care of the men with their rash, and those workman's
17 compensation records were filed with the State of West
18 Virginia. In addition to that, we had the safety reports of
19 those who had developed Chloracne and we had the medical
20 records. We could pick out who had Chloracne. Ideally we
21 should have looked at those who didn't have Chloracne and
22 worked there, but we couldn't define that population. So
23 what we did, is we pulled out of those records, and pulling
24 out of those records mean they went to all those different

1 places. In addition, there was some records that had been
2 put away because they were not medical reports of those who
3 had had the accident. So between those three or four
4 different sources, they put together the population as best
5 they could, might have missed one or two, but they got the
6 best number of the total who had developed Chloracne from
7 that accident in 1949, and that group defined, just as I
8 said, those who had Chloracne as best we could with those who
9 were going to look and see what the mortality experience was.

10 Q. Now, what was Dr. Suskind's participation in that
11 process?

12 A. That participation when he called me and says can I
13 do that, I called down to Nitro and said can you define it
14 and those who are responsible could, in 1977, 1977, those
15 were not the same ones who were involved in that 1949
16 accident, and so they -- we couldn't -- I said I can't get
17 the data, so he then sent me those that he knew had been in
18 that accident. That was the basis for something like 50 of
19 them, I think were the records of those with Chloracne that
20 he had seen. I think he saw 53 of them. So we had that
21 list.

22 Q. He being whom, sir, Dr. Suskind?

23 A. Dr. Suskind.

24 Q. Because back in that period of time when the

1 accident occurred, he had treated those people?

2 A. He had come to because of the Chloracne was a
3 terrible problem, because as I described for you, some of
4 them had almost every single pore on their face with a little
5 tiny papule, those little tiny inclusion cysts, not big ones,
6 one millimeter fat, and so, it was a terrible problem because
7 those people where disfigured in their face for a long period
8 of time. So he came down to question us what can you do
9 about them. And the other one was is we had this Chloracne,
10 said what caused it? We weren't sure what it was. And, Dr.
11 Suskind took some of those different materials back to
12 Cincinnati and put some of the material on his own skin as
13 well as others in the Kettering laboratory to see if he could
14 reproduce the Chloracne, so he was a participate, and that's
15 how we got started. We had that base, I suppose that if we
16 had kept a persistent look we'd have gradually found it
17 without him, but that was a substantial, almost half of those
18 became the population of study.

19 Q. Now, so you didn't have any work records before
20 1955?

21 A. That's right.

22 Q. Dr. Suskind had records of the people whom he had
23 treated? Or had seen and examined?

24 A. Right some of those he didn't have to treat because

1 they were relatively moderate.

2 Q. But, between all of those sources including the
3 worker's compensation records of the state, with the State of
4 West Virginia, they were able to put together the group that
5 had Chloracne?

6 A. As best they could define, they were able to pick
7 up 122 that they quite well documented had Chloracne, whether
8 they missed several of them who had so minor acne that they
9 didn't become workman's compensation or something else is
10 they could have missed a couple of them, but as best they
11 could tell, they found all of those who did develop
12 Chloracne.

13 Q. So what we would get would be a list of names,
14 correct?

15 A. Yes.

16 Q. And since they were doing a mortality study, what
17 would they do next?

18 A. Well, the first thing they do is they now have that
19 defined cohort. And, they will then contact the social
20 security service and find out of those that are not still
21 working how many of them are dead. And you can get an answer
22 on that whether they are dead or not.

23 Q. And then you would go and get the copy of the death
24 certificate?

1 STATE OF ILLINOIS)
)
2 TWENTIETH JUDICIAL CIRCUIT) SS
)
3 COUNTY OF ST. CLAIR)

4

5 I, DEBRA M. MUSIELAK, certify the foregoing to be a
6 true and accurate transcript of the testimony and proceedings
7 in the above-entitled cause.

8 Dated this 22 day of July, 1985.

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Debra M. Musielak

1 STATE OF ILLINOIS)
)
2 TWENTIETH JUDICIAL CIRCUIT) SS
)
3 COUNTY OF ST. CLAIR)
4

5 I, RICHARD P. GOLDENHERSH, one of the Judges in and
6 for the Twentieth Judicial Circuit, do hereby certify that I
7 have examined the aforesaid transcript of proceedings, and
8 certify the foregoing to be a true and accurate transcript of
9 the testimony and proceedings in the above-styled cause.

10 Dated this _____ day of July, 1985.

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HON. RICHARD P. GOLDENHERSH

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