

1 Gaffey Study. The Zack-Gaffey wasn't in a Referee Journal,
2 but was in an EPA and Veteran's Administration Symposium.

3 Q Doctor, you're saying that there is no excess
4 of coronary heart -- you said in this court that there is
5 no excess of coronary heart disease in these exposed employees,
6 that they have the same kind of heart disease, have no
7 connection with exposure at all?

8 A Yes, sir.

9 Q Haven't you?

10 A Yes, sir.

11 Q So you are hiding the fact that these exposed
12 employees have this excess rate, aren't you, sir?

13 A It's not excess --

14 Q You're not saying that it has anything to do
15 with their exposure?

16 A That's right.

17 Q You're saying that it has to do with their
18 lifestyle?

19 A Yes, sir.

20 Q Just like you're saying that everybody in this
21 Valley has this problem because of their lifestyle?

22 A Yes, sir.

23 Q Miss Strauss is suggesting in this statement
24 that your exposed employees have got higher disease rate

1 because of their exposure, is she not?

2 A That's what the question implies.

3 Q Yes. And you don't agree with that?

4 A No, sir.

5 Q And you haven't -- and you've enver stated --
6 you've always stated in public, "Well, that's because of
7 their lifestyle, it's got nothing to do with their exposure."

8 A Yes, sir.

9 Q So you are not warning the workers that exposure
10 to dioxin may cause them to have heart disease, are you, sir?

11 A It would be improper to warn them.

12 Q Well, then what she is saying is that you didn't
13 do anything to warn these employees. She's saying these
14 employees have got excess heart disease because of their
15 exposure to dioxin?

16 A No, she isn't.

17 Q She's saying -- sir?

18 A No, sir.

19 Q You just got through --

20 A I said that's what the sentence --

21 Q -- reading, Dr. Roush, that that's what she is
22 saying.

23 A That's what the sentence is saying.

24 Q That's what I just got through asking you.

1 A That isn't what she says.

2 Q I'm sorry?

3 A She doesn't say that.

4 Q Isn't this her document?

5 A Yes, sir. But these are questions for the
6 Nitro lawsuit.

7 Q These are things that she put on this paper, is
8 it not, Doctor?

9 A Yes, sir.

10 Q She said these things in this document, didn't
11 she, sir?

12 A Yes, she did.

13 Q But, Doctor, you don't agree with what she has
14 said in this document, do you, sir?

15 A No, sir.

16 Q And you have not been telling your employees
17 that they have this risk, do you, sir?

18 A They don't have a risk.

19 Q Doctor, she is saying in this document that they
20 do have a risk, isn't she?

21 A She says there seems to be an excess.

22 Q Yes.

23 A She didn't say there is.

24 Q Now assume that that's true for the moment. All

1 right?

2 A Yes, sir.

3 Q Assume that all the evidence that we have
4 supports the thesis that what she says there is correct. You
5 haven't publicized that in any way, have you, sir?

6 A Yes, sir.

7 Q How have you -- who have you said, in what
8 document have you said that your exposed employees have a
9 higher heart disease rate?

10 A In the Referee Journal when we published the
11 Zack-Suskind Study. And United Steel Workers doctor has
12 seen that, and he's an adviser to them.

13 Q Doctor, the United Steel Workers people are the
14 ones that helped write the Moses-Selikoff Study.

15 A No.

16 Q They used the Zack-Gaffey Mortality Study and
17 suggested that it was a rate similar to what was in the
18 Kanawha Valley.

19 A Yes, sir.

20 Q Now you have not agreed, as I understand it,
21 that this coronary heart disease in the Kanawha Valley has got
22 anything to do with these chemicals, or anything to do with
23 exposure to these chemical, or anything to do with exposure
24 to dioxin --

1 A Yes, sir.

2 Q -- is that right, sir?

3 A Yes, sir.

4 Q Now you haven't said anywhere in the world,
5 anything other than what you're saying here, have you, sir?

6 A That's right.

7 Q All right. Now that is not telling the world
8 what Miss Strauss says is the fact here, is it, sir?

9 A I don't believe that she's established that
10 fact.

11 Q Doctor, I don't want to go through that again.
12 You've already agreed that that is what she has said here.
13 We're not saying that that's an established fact. It is
14 what she is saying as a fact.

15 A Yes, sir.

16 Q Whether you agree with it or not.

17 A Yes, sir.

18 Q The point that I'm trying to make, sir, is that
19 you haven't told your workers that there is a risk of
20 heart disease by being exposed to these chemicals, have you,
21 sir?

22 A NO, sir.

23 Q And you haven't made any attempt to compensate
24 them for this heart disease that they may be getting because

1 of their exposure to these chemicals, including dioxin;
2 isn't that correct?

3 A We compensate every person who has disabilities
4 from cardial vascular disease.

5 Q Doctor, how on earth do you do that?

6 A We have a disability program to take care of
7 people who are disabled.

8 Q Doctor, this is insurance that they pay as part
9 of their employment benefits that their union negotiated.
10 It's not got anything to do with compensation because of
11 their exposure. They would get that whether they had the heart
12 attack at home, or connected with anything, or lifestyle.
13 That's got nothing to do with compensating them for their
14 heart disease that they get because of dioxin. It's what
15 they earn. That's what they work for. That's what they
16 work with their sweat for, that insurance. That's part of
17 their pay, Doctor. Don't you understand that? You're not
18 giving them anything. They're earning that. Don't you
19 understand that, Doctor?

20 A Yes, sir.

21 Q Now, the question is have you done anything to
22 compensate these employees because of this heart disease
23 risk when they're exposed to chemicals?

24 A I don't think there's a risk.

1 Q Doctor, assume that there is a risk as Miss
2 Strauss said there is.

3 A Yes, sir.

4 Q Let's not go through that again.

5 A All right.

6 Q I have asked you to assume this.

7 A All right.

8 Q Now have you done anything to compensate them?

9 A No, sir.

10 Q The next question, Doctor, do you agree that
11 PAB and dioxin acting together make matters worse?

12 A No, sir.

13 Q You don't agree with that?

14 A Well, we just talked about it yesterday. It
15 says it doesn't. As a matter of fact --

16 Q You and Mr. Heineman talked about that. And
17 the clear statement in your -- that we went through earlier,
18 Dr. Roush, if you'll recall, was that these people who have
19 bladder cancer get more of it if they're exposed to dioxin.
20 Don't you recall that in the Zack-Gaffey Study?

21 A No, sir.

22 Q You don't recall that?

23 A Yes, sir, I recall. But, no, sir, I don't think
24 that's what we agreed.

1 Q You don't agree that the Zack-Gaffey Study
2 showed that they had a higher rate of bladder cancer when
3 they were exposed than the people who were unexposed?

4 A Yes, sir, Zack-Gaffey did. Yes, sir.

5 Q Doctor, hold that in your mind --

6 A Right.

7 Q -- that Zack-Gaffey showed that.

8 A Right.

9 Q All right. Now that shows that dioxin and PAB
10 working together can cause more bladder cancer than PAB
11 alone, doesn't it?

12 A No, sir.

13 Q Doctor, didn't you just say that Zack-Gaffey
14 Study showed that? Am I not hearing the words that you're
15 saying? Didn't you just say that, Doctor?

16 A I said in that study they showed an excess of
17 bladder cancer, that's right.

18 Q Now, Doctor, that study shows that the ones that
19 were exposed to dioxin and PAB have more bladder cancer
20 than those that are not exposed to dioxin; correct?

21 A No, sir, I don't know that.

22 Q Isn't that what the study showed, Doctor?

23 A No, sir.

24 Q Do you have an exhibit in front of you, Doctor?

1 A No, sir.

2 MR.HEINEMAN: Page 582?

3 MR. CARR: Page 586, I think is the proper one.

4 Q (By Mr. Carr) Is it not, Doctor?

5 MR. HEINEMAN: Bottom of page 582.

6 THE WITNESS: Table 9?

7 MR. CARR: 582? Table 9. Not 582.

8 Q (By Mr. Carr) Doctor, in each instance there is
9 a high rate of bladder cancer, is there not, sir?

10 A Yes, sir.

11 Q And according to Zack-Gaffey it's 809 percent
12 higher than expected for the people exposed to dioxin, is it
13 not, sir?

14 A Yes, sir.

15 Q Doctor, doesn't that indicate that there is a
16 connection between dioxin and bladder cancer?

17 A No, sir.

18 Q It doesn't indicate that?

19 A NO, sir.

20 Q Doctor, the group of people at the Monsanto
21 Plant that we've established all have some exposure to
22 dioxin, don't they, sir?

23 A Theoretically, yes.

24 Q Well, not just theoretically. We know, in fact,

1 that they have some exposure to dioxin.

2 A NO, sir.

3 Q You don't know that?

4 A No, sir. Absolutely not.

5 Q Didn't you just agree to that, Doctor?

6 A Pardon?

7 Q Didn't you agree -- haven't you agreed to that
8 a half a dozen times?

9 A Theoretically each time.

10 Q It's not theory, Doctor. The chemical is there.
11 The department takes one whole block of the Nitro Plant.
12 The railroad, where it's carried right through to the other
13 end of the plant. There's a building at the one end of the
14 plant that was used to create the stuff, and package the
15 stuff. There's buildings all over the plant. You can't
16 go in that plant at Nitro without being next to someplace
17 where they have done something with 2,4,5-T, or TCP; isn't
18 that correct? They've excavated -- as late as 1983, Doctor,
19 the EPA required you to excavate soil because it was dioxin
20 contaminated. Many years after you quit doing it. After
21 you quit making the stuff.

22 A No, sir, I don't think that's correct.

23 Q You don't think that's right?

24 A No, sir.

1 Q YOU don't recall excavating the soil along the
2 south fence in 1983? You don't recall paving over areas of
3 your plant to prevent people from being exposed to the
4 dioxin? You don't recall the wipe samples being -- the
5 dioxin being found years later, many years later in that
6 plant? You don't recall any of those things, Doctor?

7 A Yes, sir. Yes, sir.

8 Q You do recall those things?

9 A Yes. Yes, sir.

10 Q Now, Doctor, they quit making the dioxin, the
11 2,4,5-T in 1969 and 1970 in that building, other people
12 have worked in that building since that time on other
13 processes, haven't they, sir? In all those buildings.

14 A No, sir.

15 Q Those buildings have been abandoned?

16 A Yes.

17 Q They haven't been used since '69?

18 A I think there's one that's still in use.

19 Q Yes, Doctor. And the people that work in that
20 building are exposed to dioxin everyday, aren't they? Your
21 wipe samples showed that, didn't it, sir?

22 A That doesn't mean they've been exposed everyday.

23 Q Doctor, the dioxin was there, and they're working
24 there, they're exposed to it, aren't they?

1 A I don't know. It hasn't been measured.

2 Q Doctor, because you haven't measured it doesn't
3 mean -- you know it's there, you know they're working
4 there, you know that they're there everyday, eight hours a
5 day, you know that they're exposed to dioxin by virtue of
6 working in that plant, don't you, sir?

7 A I don't know that.

8 Q Why don't you know that, Doctor?

9 A Because you can't measure it.

10 Q Doctor, are you saying they -- they did measure
11 it, though, with their wipe samples.

12 A IN a few places, yes, sir.

13 Q Sir?

14 A In a few places.

15 Q Well, it's there, then. They did measure it,
16 didn't they?

17 A Yes, sir.

18 Q Whoever was in those two places was exposed to
19 it, weren't they, sir?

20 A I don't know.

21 Q You don't know that?

22 A NO, sir.

23 Q Why don't you know that, Doctor?

24 A Because they were taking it up in the rafters

1 and places like that to see if there's any evidence of it
2 in the plant.

3 Q What were they getting off the rafters, Doctor?
4 Dust, weren't they?

5 A Yes, sir.

6 Q And, Doctor, does dust -- have you ever seen a
7 train come along -- along next to the plant? Have you ever
8 seen the dust come out of rafters when the building shakes?
9 Have you ever seen that, Doctor? Have you never been in
10 the plant when there's vibrations going on?

11 A The trains don't run passed there.

12 Q A truck runs passed there. Wind. A storm
13 comes along, the building shakes. Haven't you seen things
14 come from the rafters, from those overhead beams, Doctor?

15 A No, sir.

16 Q You haven't seen that?

17 A No, sir.

18 Q Are you suggesting that it doesn't happen?

19 A No, sir.

20 Q Haven't you been --

21 A No, sir.

22 Q You know it happens. You know that dust comes
23 down from those rafters, you know that, don't you, Doctor?

24 A NO, I don't.

1 Q Well, Doctor, does your scientific mind tell
2 you that there are occasions since 1969 when somebody in
3 that building that dust, that dioxin on those rafters could
4 have fallen on those people?

5 A Yes, sir.

6 Q Your mind will permit that deduction, won't it,
7 sir?

8 A Yes, sir.

9 Q Then you do know that it does occur, don't you,
10 sir?

11 A I don't know that.

12 Q Why don't you know it, Doctor?

13 A Because I can't measure it.

14 Q Doctor, they measured -- we went through that
15 once. They measured, they found it in the rafters in that
16 building.

17 A Yes, sir.

18 Q They took wipe samples, they found it there
19 in the dust.

20 A Yes, sir.

21 Q Had been there for years and years.

22 A Yes, sir.

23 Q So they did measure it, didn't they, sir?

24 A YES, sir.

1 Q So you do know it, then, don't you, sir?

2 A NO, sir.

3 Q I thought you said you didn't know it because
4 you couldn't measure it.

5 A Yes, sir.

6 Q Isn't that why you said you didn't know it??

7 A I said I don't know that the man has been getting
8 that exposure.

9 Q No, Doctor, you get different reasons at different
10 times. You said once that you don't know that it ever gets
11 there. We demonstrated it logically that dust would fall
12 on them from time to time. We demonstrated that, and you
13 agreed with that, that logically you would agree. Then you
14 said you don't know it because it's not been measured.
15 But it has been measured.

16 A Not in men. Not by personal exposure.

17 Q Doctor, the dust has been measured in those
18 buildings, by you, and by the EPA, was it not, sir?

19 A Yes, sir.

20 Q And the dust was found to contain dioxin, didn't
21 it, sir?

22 A Yes, sir.

23 Q Doctor, those people in those buildings were
24 exposed to that dioxin, weren't they, sir?

1 A I Don't know.

2 Q Why is it you don't know, Doctor?

3 A Because I don't know whether that exposure has
4 taken place -- if you can't measure it, you can't say it's
5 there.

6 Q Doctor, we went through -- we're going in
7 circles. You agreed that it was measured.

8 A I'm talking about in the air.

9 Q Doctor, when it gets off of the rafters, it
10 settles. It's heavier than air, isn't it, sir?

11 A Yes, sir.

12 Q And it will settle on anybody that's there.
13 It will settle on the floor, it will settle on the workmen,
14 won't it, sir?

15 A If it does settle out, yes, sir.

16 Q So you don't have to measure it in the air to
17 know they're exposed to it, do you, sir?

18 A No, sir.

19 Q Doctor, do you now agree that men working in
20 that plant, not making 2,4,5-T, are exposed to dioxin?

21 A Possibly some of them, yes, sir.

22 Q All right. Now they suggest here, Miss Strauss
23 suggests that these two matters acting together would make
24 matters worse. Do you agree with that?

1 A No, sir.

2 Q All right. I won't get anymore arguments with
3 you. But that's what she suggests, isn't it, sir?

4 A Yes, sir.

5 Q Now she also says, the next question, since it
6 causes multiple tumor types in experimental animals at very
7 low levels of exposure, why do you feel that it may not also
8 cause cancer in the exposed Nitro workers. Do you agree
9 with her suggestion, first of all, that it causes cancer in
10 experimental animals?

11 A Yes, sir.

12 Q And tumors, by the way, when you say tumor, you
13 mean either a malignant or benign tumor, don't you, sir?
14 That's a broad word, includes both kinds?

15 A No, we're talking about malignant tumors.

16 Q Yes. But the word, just using the word tumor by
17 itself, doesn't tell you whether it's benign or malignant,
18 does it?

19 A That's right.

20 Q Tumor is the word that encompasses both benign
21 -- malignant and benign growth?

22 A Yes, sir.

23 Q But she is talking in this instance, because
24 of the context, you know that she's talking about cancer.

1 A Yes, sir.

2 Q And, Doctor, do you agree, her next suggestion
3 that it may also cause cancer in exposed Nitro workers?
4 I can answer it for you, Doctor, you don't agree to that,
5 do you?

6 A That's right.

7 Q And we've already got into 13, so we can skip
8 over that. How about Number 14? Do you agree that you
9 should worry -- first of all, synergistic action between
10 chemicals means that one acts upon the other to make some-
11 thing occur that would not have occurred without the two
12 chemicals being together.

13 A That isn't what is meant. But that's part of
14 it.

15 Q Well, the sum of the two is greater than each
16 one by itself. You will get more than two. One and one --
17 two chemicals put together will give you more than two.

18 A Yes, sir. That's what it means.

19 Q That's what it means. Now what about that?
20 You didn't worry about that, did you, Doctor?

21 A Yes, sir.

22 Q You did worry about it?

23 A Yes, sir.

24 Q Do you agree that there is -- that you did

1 permit exposure to people that had 2,4,5-T, hydrogen sulfide
2 I suppose that is, and PAB?

3 A Yes, sir.

4 Q And you didn't worry about it, or did you worry
5 about it?

6 A We monitored for them to see what was in the
7 affect.

8 Q What did you find?

9 A We didn't find any evidence of affect.

10 Q Well, then you didn't worry about it anymore?

11 A Now if I find out that there's no synergistic
12 action, I don't.

13 Q You don't believe that dioxin and PAB work
14 together, you're back on that thesis again, to promote
15 cancer?

16 A This study here that you asked me to read said
17 it doesn't.

18 Q I'm sorry?

19 A This document you just gave me to read says it
20 doesn't.

21 Q Doctor, all that document is, as you well know,
22 is a study of people exposed to dioxin.

23 A No, sir.

24 Q That document created by Zack-Gaffey put in,

1 made no distinction between people that were exposed to
2 the dioxin, TCP and the people that were exposed to just
3 2,4,5-T, and Table 11 is fine evidence of that, isn't it,
4 sir?

5 A Yes. But that also took out many other causes
6 of death too.

7 Q Well, Doctor, that's not the question that I'm
8 asking you. This Zack-Gaffey Study is no a study of people
9 who were exposed to TCDD, is it, sir? Even though it
10 purports to be that.

11 A Yes, sir, it is.

12 Q They have mixed the groups, have they not,
13 Doctor?

14 A Yes, sir.

15 Q Then you cannot compare the groups if you mix
16 them, can you, sir?

17 A Yes, sir.

18 Q How can you compare it, Doctor?

19 A By comparing the way they did.

20 Q Well, Doctor, you see here they put four people
21 that they knew were exposed to dioxin, they put it in the
22 unexposed group.

23 A Yes, sir.

24 Q Doctor, we don't need to go through that again,

1 do we? Well, Doctor, I won't go through it again. I'm
2 going to pass to the next question here. Cl_2 has got
3 nothing to do with the case. So we can pass by that. What
4 about 16, do you agree that TCDD has been reported to cause
5 toxic effects upon multiple organ systems?

6 A Yes, sir.

7 Q And do you agree that it would potentiate the
8 toxic effects due to other toxic agents in the plant
9 environment?

10 A There's no evidence that it does.

11 Q Then you don't agree?

12 A No, sir.

13 Q You have to have absolutely evidence that it
14 does before you would agree to this statement; is that right,
15 sir?

16 A There's no evidence that they do.

17 Q Excuse me. Do you agree with it or not, Doctor?

18 A I don't agree that it potentiates.

19 Q All right. That's what I expected. Now the
20 next question, "What role do Monsanto wastes play in the
21 increased cancer rate in the Kanawha Valley?

22 A None.

23 Q Just like Monsanto plays no role in the increased
24 heart disease rate?

1 A Yes, sir.

2 Q How much are the -- how much is the cancer rate
3 increased in Kanawha Valley over the rest of the population?

4 A I don't know what total cancer is. I don't
5 have that data.

6 Q Have there been studies done?

7 A Yes, sir.

8 Q And you do know that they do have higher cancer
9 rates?

10 A Yes.

11 Q If I asked you all those questions about this
12 increased cancer rate, the same questions I asked you about
13 the increased cardio vascular rate, would your answer be
14 that it's the lifestyle that's causing the cancer rates
15 to be higher?

16 A Yes, sir.

17 Q And if I asked you the questions whether or not
18 you investigated the lifestyle of these people in the
19 Kanawha Valley to find out whether or not they're doing
20 something that could cause them to be afflicted with more
21 cancer, would your answers be the same, that you haven't
22 done any such study?

23 A We did a study on our population, of all of our
24 lung cancer was smokers, all but one.

1 Q All that proves, Doctor, is the point that I'm
2 trying to prove, that this causes lung cancer in people who
3 would not otherwise get it, even though they smoke. That's
4 the point, Doctor, of the study. Aren't you aware of that,
5 sir?

6 A Yes, sir.

7 Q Doctor, what it means is that absent dioxin,
8 a smoker might not get cancer. Absent exposure to the
9 chemicals put out by Monsanto, and by others, the smoker
10 might be able to smoke, if he weren't exposed to the dioxin.
11 If he weren't exposed to the chemicals. Do you see that,
12 Doctor, as the affect of these studies? Did the fact that
13 there are 10 lung cancer deaths in smokers, now you know you
14 got a lot more smokers, there is no distinction between
15 exposed and unexposed as far as smokers is concerned, is
16 there, sir? You don't know any difference between whether
17 or not people smoke or don't smoke, and being exposed or
18 not exposed?

19 A We didn't do it like we did on those 10.

20 Q All right. Doctor, what you do know, this
21 population of smokers, if they're not exposed to dioxin,
22 you only get three cases of lung cancer, but if they are
23 exposed to dioxin you get ten in a smaller denominator, in
24 a smaller group.

1 A No, sir.

2 Q Doctor, I'm not going to go through that again.

3
4 But we did establish those numbers this morning, did we
5 not? The ten and the three. Remember that, Doctor?

6 A Yes, sir.

7 Q Just this morning.

8 A Yes, sir.

9 Q We did establish the denominator was greater
10 in the unexposed group than it was in the exposed group.
11 Remember that, Doctor?

12 A Yes, sir.

13 Q Just this morning?

14 A Yes, sir.

15 Q We did establish the denominator was greater
16 in the unexposed group than it was in the exposed group.
17 Remember that, Doctor?

18 A Yes, sir.

19 Q And we established that there are 10 lung cancers
20 in the smaller group is a higher rate than three lung cancers
21 in the larger group.

22 A I'm sorry, I don't accept that. I'm not sure
23 we've got the data -- I have to look at the data before I
24 can say that.

1 Q Doctor, we established this morning, and I'm not
2 going to establish it again, that the exposed group was
3 smaller than the unexposed group, didn't we, sir?

4 A Yes, sir.

5 Q And the smaller exposed group had 10 lung cancers,
6 didn't it, sir?

7 A Yes, sir. I think that's right. I'd like to
8 look at it.

9 Q The larger the unexposed -- the unexposed group
10 was larger, we established that, didn't we, Doctor?

11 A Yes, sir.

12 Q There was only three lung cancers in that larger
13 group, we established that this morning, didn't we, Doctor?

14 A I have to look at the data. That doesn't help
15 me. I have to look at the reports.

16 Q Doctor, this is the report. This table is taken
17 from the report.

18 A Yes, sir.

19 Q You have the report right here in front of you.

20 A Yes, sir.

21 Q Three lung cancers in the unexposed group to
22 TCDD, correct, Doctor? It might help you to look at Table
23 11 there, Doctor. Have you got Table 11? You want me to
24 find it for you?

1 A I've got it, sir.

2 Q Okay. Look at Table 11 and eliminate the four
3 with the underline, and count the lung cancers after
4 eliminating those four.

5 A I have to see what it does to the study.

6 Q Doctor, I'm not asking you to do that. I'm
7 not attempting for you to analyze the study. I'm attempting
8 to establish a point that we established this morning. I'm
9 not asking for a critique of the study.

10 A Yes, sir.

11 Q Now, according to Table 11, there are only three
12 lung cancers in the unexposed group deaths, aren't there?

13 A Yes, sir.

14 Q And now are we agreed that according to Table
15 11 and according to Table 10, Table 10 is the exposed group --

16 A Yes, sir.

17 Q -- we add those four to the ten, to Table 10?

18 A Yes, sir.

19 Q And we've got ten and three, haven't we, sir?

20 A Yes, sir.

21 Q Now, is it possible, Doctor, that -- well,
22 haven't we now established, Doctor, that it's the dioxin
23 has a greater affect on having lung cancer than the cigarette
24 smoking?

1 A No, sir.

2 Q Doctor, we've got only three deaths in a larger
3 group, haven't we, sir?

4 A Yes, sir.

5 Q Much larger group?

6 A Yes, sir.

7 Q And we've got ten deaths in a much smaller
8 group, haven't we, sir?

9 A Yes, sir.

10 Q Doesn't that have just a little bit of
11 convincing you, Doctor, that a person could, perhaps, smoke
12 and the list wouldn't be near as great -- we could get away
13 with smoking. I smoked for 20 years, Doctor, and I finally
14 quit. My wife still smokes.

15 A Yes, sir.

16 Q Isn't it possible that if we weren't exposed
17 to dioxin and other chemicals that can do the same thing,
18 that would promote cancer, isn't it possible that smokers
19 who smoke and have a much lower risk of having -- it
20 wouldn't be eliminated, I'm not suggesting that it would.
21 But isn't it possible, based upon just this study alone,
22 just this one --

23 A NO, sir.

24 Q -- it's not possible?

1 Q Doctor, what other reason could there be for
2 increased cancer rate in the Kanawha Valley, except the
3 chemicals to which those people are exposed?

4 A That they smoke.

5 Q Doctor, we've already gone through that. People
6 all over the country smoke.

7 A Yes, sir.

8 Q Is there any evidence that the people in the
9 Kanawha Valley are more -- smoke more than the people in
10 Belleville?

11 A I don't know that.

12 Q Then you have absolutely no evidence to suggest
13 that it's because -- that the higher rate is because they
14 smoke?

15 A Yes, sir.

16 Q What do you have, sir?

17 A Because when people go in the hospital and they
18 operate them for lung cancer, the ones who get lung cancer
19 are the ones who are heavy smokers.

20 Q There's no doubt about that, Doctor. I'm not
21 quarreling with that. That's got nothing to do with the
22 question that I'm asking you.

23 A I think it does.

24 Q Doctor, what I'm asking you is there any reason

1 for the smokers in Belleville to have a less risk of lung
2 cancer than the smokers in Kanawha Valley?

3 A Yes, sir. They don't smoke as much.

4 Q No, Doctor. You don't know that at all.

5 A No. I don't have a fact, no, sir.

6 Q You don't have the slightest idea that that's
7 the case. Do you, Doctor?

8 A Medical evidence would say it is.

9 Q The only medical evidence you've got is that
10 they got lung cancer.

11 A Yes, sir.

12 Q So what we've got in Kanawha Valley is smoker,
13 lung cancer, plus dioxin. What we have in Belleville is
14 smoker and less lung cancer.

15 A Yes, sir.

16 Q The only difference is the dioxin, or the other
17 chemicals. I don't want to blame it all on dioxin. The
18 other chemicals in the Kanawha Valley. That's the only
19 difference in the hypothetical that I've given you, and you
20 don't know of any other difference, do you, Doctor?

21 A No, sir.

22 Q Doctor, I promised you at the lunch hour that I
23 would give you a copy of the most recent New Zealand Study.
24 Would you mark this as Plaintiff's Exhibit.

1 (Plaintiff's Exhibit 1523 was marked
2 for identification by the court reporter.)

3
4 Q (By Mr. Carr) Doctor, is the American
5 Journal of Epidemiology a recognized, authoritative
6 medical publication?

7 A It's a Referee Journal, yes, sir.

8 Q You recognize Plaintiff's Exhibit 1523 as being
9 an article published in the American Journal of Epidemio-
10 logy in 1985?

11 A Yes, sir.

12 MR. CARR: I offer that exhibit into evidence,
13 if it please the Court.

14 MR. HEINEMAN: No foundation laid for it,
15 your Honor. I have to object on that basis. It's hearsay.
16 There's no foundation for it.

17 Q (By Mr. Carr) Well, let me ask him. Do you
18 accept this article published in the American Journal of
19 Epidemiology as an authoritative publication?

20 A No, sir.

21 Q Why wouldn't you, Doctor?

22 A It doesn't mean -- these are their findings.
23 That doesn't mean it's authoritative.

24 Q Doctor, you don't understand the meaning of the

1 word -- this article -- this is a peer reviewed article,
2 is it not?

3 A Yes, sir.

4 Q And other scientists in the community read
5 this and accept it as peer reviewed. They may not agree
6 with its conclusions, mind you. Nobody is suggesting
7 that. But it is in a recognized authoritative publication.

8 A Yes, sir. Absolutely.

9 Q Yes. And it is peer reviewed, isn't it, sir?

10 A Yes, sir.

11 MR. CARR: I offer it again, your Honor.

12 MR. HEINEMAN: Same objection, your Honor.

13 Hearsay, no foundation.

14 THE COURT: Overruled. Foundation is adequate.
15 Admitted over objection.

16 Q (By Mr. Carr) Doctor, is this the first time
17 you've seen this particular article?

18 A Yes, sir.

19 Q I won't cross examine you at length about it.
20 But it deals with cancer in agricultural occupations.
21 You can see that from the summary at the very first -- at
22 the top of it, can you not?

23 A And forestry.

24 Q I'm sorry. And forestry, yes.

1 A But they're saying -- You're right. It's
2 aggricultural.

3 Q I'm sorry?

4 A You're right, it's aggricultural.

5 Q Doctor, the last sentence of it, and I do not
6 want to suggest to you that the authors of this article
7 say that exposure to herbicides is the only possible cause
8 of this increase. They pose three possible causes in the
9 aggricultural workers. And I don't want to get into
10 detail with it, because it's a lengthy article and you
11 haven't read it. But just directing your attention to the
12 very last sentence in that abstract, it says, does it not,
13 sir, "Mortality from malignant lymphoma and multiple
14 myeloma increased significantly during the period 1955-1979?"

15 A Yes, sir.

16 Q All right. Doctor, I'd like to direct your
17 attention to the Monsanto Exhibit 55, the Missouri
18 Division of Health Study. It was what Mr. Heineman
19 questioned you about.

20 MR. HEINEMAN: Excuse me, your Honor. May
21 counsel approach the bench?

22 THE COURT: Sure.

23 (The following proceedings were had at the
24 bench, out of the hearing of the jury:)

1 MR. HEINEMAN: Could I be mistaken, or does it
2 look like there's a portion of that abstract that's
3 missing?

4 MR. CARR: You're mistaken, because these are
5 key words. That's all that is.

6 MR. HEINEMAN: Is that what that is?

7 MR. CARR: Sure, that's the way it's listed
8 under.

9 THE COURT: You mean for reference, to find it?

10 MR. CARR: Right.

11 MR. HEINEMAN: All right. So that doesn't --
12 there's nothing missing in here?

13 MR. CARR: To my knowledge, this is the way
14 I received it, Counsel.

15 MR. HEINEMAN: Not from me.

16 MR. CARR: No.

17 MR. HEINEMAN: Okay.

18 (The following proceedings were had in the
19 presence and hearing of the jury:)

20 MR. CARR: Do you have the Monsanto Exhibit 55,
21 or do you have it, Counsel? Does the Clerk have it or do
22 you have it?

23 MR. HEINEMAN: We have it right here, if I'm
24 not mistaken. Careful, that first page you're about to

1 lose.

2 Q (By Mr. Carr) Doctor, handing you Defendant's
3 Exhibit 55. Do you recall Mr. Heineman questioned you
4 about that?

5 A Yes, sir.

6 Q First of all, to start with, you are aware of
7 the fact, while Mr. Heineman didn't bring it out, you're
8 aware of the fact that this was a study based upon ques-
9 tionnaires sent to people who live in the contaminated
10 areas around St. Louis. You know that, don't you?

11 A Yes, sir.

12 Q And they divided into two groups, the people
13 they call high risk, the ones that answered that they
14 were most exposed to dioxin, and low risk groups, the ones
15 that would have the lesser exposure to dioxin.

16 A Yes, sir.

17 Q You know that, don't you?

18 A Yes, sir.

19 Q So it was not a study of comparing people who
20 were exposed to dioxin to people who were not exposed to
21 dioxin, was it, sir?

22 MR. HEINEMAN: Objection, your Honor. We've
23 read into evidence what the definitions of high and low
24 risk exposure were right from the paper. Is he implying

1 that we were suggesting that we left that out?

2 MR. CARR: What I'm trying to make clear, Mr.
3 Heineman, is that this study, just like the Zack-Gaffey
4 Study, just like the Moses-Selikoff Study, just like the
5 Zack-Suskind Study is not a study that compares unexposed
6 people to exposed people.

7 THE WITNESS: No, sir.

8 MR. CARR: It is the same sort of thing that
9 compares people with higher exposure to people with lower
10 exposure.

11 THE COURT: Objection is overruled. You may
12 continue.

13 Q (By Mr. Carr) Doctor, to direct your attention
14 to the Page 49, first of all, if you would, called
15 "Appendix A." Do you see that, sir.

16 A Yes, sir.

17 Q Do you see there something that's called
18 "Distribution of Porphyrins and Total Porphyrins in
19 Chronic Hepatic Porphyria?"

20 A Yes, sir.

21 Q And, Doctor, there is a ratio set out there
22 that's for Copro/Uro ratio that they call normal, that
23 this study conducted by St. Louis University Hospital,
24 St. Joseph Hospital, the Centers for Disease Control, and

1 Missouri Division of Health. They put a Table there for
2 a normal Copro/Uro ratio, did they not, sir?

3 A Yes, sir.

4 Q What is the normal ratio according to this
5 document?

6 A Two to six.

7 Q Doctor, are you aware of the fact that people
8 of Sturgeon, many of the people of Sturgeon have Copro-Uro
9 ratios that are outside this normal ratio two to six?

10 A No, sir.

11 Q Are you familiar at all with Dr. Carnow's
12 testimony, long involved testimony, as to the significance
13 of Copro-Uro ratios?

14 A No, sir-

15 Q Nobody has told you that Monsanto has taken
16 the position that the Copro/Uro ratio, there is no such
17 thing as a normal one, and that the two to six ratio
18 testified to by Dr. Carnow is not the normal ratio?

19 A No, sir, but I don't believe in that ratio.

20 Q Well, I didn't ask you if you believed in it --

21 A I understand.

22 Q -- Dr. Roush. I know what your answer would be
23 in advance, if I asked you to believe it. All I'm asking
24 you is do you see that that is the ratio used by the

1 Missouri Division of Health, the Centers for Disease
2 Control, St. Joseph Hospital, Kirkwood and St. Louis
3 University Hospital, for urinary analysis of the porphyrins.

4 A It's certainly cited.

5 Q And they use the word "Normal two to six,"
6 don't they, sir?

7 A Yes, sir

8 Q And they're talking about trying to find chronic
9 hepatic porphyria, aren't they, sir?

10 A Yes, sir.

11 Q And, Doctor, they also show here that
12 Coproporphyrinuria is when the ratio is greater than six,
13 don't they, sir?

14 A Yes, sir.

15 Q And type A of the Chronic Hepatic Porphyria
16 is when the ratio is greater than one; correct, sir?

17 A Yes, sir.

18 Q Type B is where it's less than one?

19 A Yes, sir.

20 Q And both Latent and Overt Porphyria Cutanea
21 Tarda also has ratios of less than one, do they not, sir?

22 A Yes, sir.

23 Q An inverted ratio that is.

24 A Yes, sir.

1 Q Now, Doctor, I'd like for you now to turn to
2 Roman Number IV of this study, and to the bottom of the
3 page.

4 A Yes, sir.

5 Q They point out in this study that, "Finally
6 public health policy in situations such as this environ-
7 mental contamination with TCDD must continue to be focused
8 on the prevention of any potential health effects even if
9 such effects were not demonstrated in a small pilot study."

10 A Yes, sir.

11 Q It does say that, doesn't it?

12 A Yes, sir.

13 Q It goes on to say that "Health effects could
14 occur with a latency period exceeding the time from initial
15 exposure to examination in this study."

16 A Yes, sir.

17 Q "For this reason, all appropriate efforts need
18 to be made to prevent human exposure."

19 A Yes, sir.

20 Q Do you agree with that, Doctor?

21 A No, sir. They don't mean it either.

22 Q They're saying it there, but you're saying they
23 don't mean it?

24 A Yes, sir.

1 Q Doctor, these people from St. Louis University,
2 from the Centers for Disease Control, and the Missouri
3 Division of Health, they're responsible people, aren't
4 they, sir?

5 A Yes, sir.

6 Q Huh?

7 A Yes, sir.

8 Q And they're not given to make irresponsible and
9 rash statements, are they, sir?

10 A Not rash at that time.

11 Q Sir?

12 A Not rash at that time.

13 Q All right. And they meant what they said,
14 didn't they, sir?

15 A In 1983, yes, sir.

16 Q Well, you said they didn't mean it.

17 A They meant what they said in 1983.

18 Q Yeah. And they meant in 1983 that all
19 appropriate efforts need to be made to prevent human
20 exposure, didn't they, sir?

21 A Yes, sir.

22 Q But you at Monsanto don't agree with that,
23 do you, sir? Never have agreed with it, have you?

24 A No.

1 Q And for that reason, because you don't agree
2 with that statement, you at Monsanto have done nothing
3 with regard to the situation at Sturgeon to prevent human
4 exposure, have you, sir?

5 A No, sir.

6 Q Now, Doctor, if you'll turn to page 14, if
7 you would, of this study.

8 A Table 2 there.

9 Q Do you see that, sir?

10 A Yes, sir.

11 Q And Table 2 talks about "Relative Carcinogenic
12 Potencies Among Selected Chemicals Evaluated by the
13 Carcinogen Assessment Group as Suspect Human Carcinogens."
14 Do you see that, sir?

15 A Yes, sir.

16 Q And do you see TCDD listed as one of those?

17 A Yes, sir.

18 Q And they list Aflatoxin E₁, Benzo(a)Pyrene,
19 Beryllium, Carbon Tetrachloride, DDT, Epichlorhydrin,
20 Tetethylene Dibromide, PCBs, TCDD and Vinyl Chloride, do
21 they not, sir?

22 A Yes, sir.

23 Q Do you see that? They list all of those, do
24 they not, sir?

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A Yes, sir.

Q Now, sir, turn your eyes towards the last column, where it says "Order of Magnitude."

A Yes, sir.

Q Which of those carcinogens, which of those chemicals selected as being suspect human carcinogens, which of those has the highest number in the order of magnitude?

A TCDD.

Q Yes, indeed. But you don't agree with that either, do you?

A Yes, sir.

Q You do agree with that?

A Yes, sir.

Q That TCDD does have the highest order of magnitude among all these carcinogens?

A By comparison of those, yes, sir.

Q Do you agree that these others are carcinogens?

A No, sir. Not in man.

Q None of these are carcinogens in man?

A Yes, sir.

Q By yes, sir, you mean some of them are and some of them aren't?

A Some of them are and some of them are not.

1 Q Which ones are and which ones are not?

2 A Aflatoxin B₁ is what's found in peanut butter,
3 and the levels found in peanut butter --

4 Q I'm just asking you, Doctor, to answer my
5 question.

6 A Right.

7 Q Is it or is it not a carcinogen in humans?

8 A Aflatoxin is a liver carcinogen in man. Benzo
9 (a)Pyrene is known to cause skin cancer.

10 Q All right.

11 A Whether it causes lung cancer isn't clear.
12 Beryllium has never been shown to be a human carcinogen.
13 Carbon Tetrachloride has never been shown to be a human
14 carcinogen. DDT has never been shown to be a human
15 carcinogen. I don't know what Epichlorhydrin is. Ethylene
16 Dibromide has not been shown to be a human carcinogen.
17 PG , has not been shown to be a human carcinogen, and
18 Vinyl Chloride is clearly a human carcinogen.

19 Q It is clearly?

20 A Yes, sir.

21 Q And, Doctor, of all those that are -- that you
22 say are carcinogens, the TCDD is the one with the greatest
23 test order of magnitude?

24 A Yes, sir.

1 Q Doctor, if you would turn to page 16 in the
2 second paragraph there, in the middle of that paragraph.
3 That paragraph talks about this being a pilot study to
4 assess the current health effects in the highly exposed
5 group, doesn't it, sir?

6 A Yes, sir.

7 Q And it also says it is too early since first
8 exposures at these sites to adequately assess long-term
9 risks for cancer or other effects by direct study of this
10 exposed population. You see that, don't you, sir?

11 A Yes, sir.

12 Q That's because the latency periods for some
13 cancer is as much as 20 and 30 and 40 years; isn't that
14 correct, sir?

15 A No, sir.

16 Q There are not latency periods for some cancer
17 of 20, 30, 40 years?

18 A The longest maybe 20 years, but not the short-
19 est, for any one of the carcinogens.

20 Q Doctor, my question was that there are some
21 cancers that have a latency period of 40 years, isn't
22 there, sir?

23 A As long as 40 years?

24 Q As long as 40 years.

1 A Yes, sir.

2 Q And they can have a latency period, I suppose,
3 that's as short as --

4 A Five years.

5 Q -- five years. And the first exposure at
6 Times Beach was 197 --

7 A '71.

8 Q '75.

9 A '71, I think.

10 Q So we've got 14 years there, haven't we, sir?

11 A Yes, sir.

12 Q And most cancers have a longer latency period
13 than that, haven't they, sir?

14 A Not mean.

15 Q Sir?

16 A Not the mean of latency. The mean of latency
17 is something less than 15 years.

18 Q How much less than 15 years?

19 A Not much. It's something right around 15 years.

20 Q Well, what you're saying is that from 15 years
21 on you can possibly see some cancers; is that what you're
22 saying?

23 A If you see them -- you can have them as long
24 as 40, but if you have a population there will be cancers

1 before 40 years in all of them. I don't know of any which
2 you find as late as 40 years, without having cancers
3 occurring early as well. I'm saying the mean for all of
4 them is 15 to 20 years.

5 Q I won't quarrel with that. That goes according
6 to various human susceptibility, with variances again in
7 human beings.

8 A Yes, sir.

9 Q Some people are more apt to fight off the
10 cancer, their systems, they have an immune system that's
11 functioning properly, or functioning differently than some
12 others.

13 A I don't know why.

14 Q Sir?

15 A I don't know why.

16 Q We know for some reason that there is a variance,
17 isn't there, sir?

18 A Yes, sir.

19 Q Now, do you also see the statement there on
20 page -- I'm sorry, turn to Page 35, if you would. You see
21 there is on Table 2 a trend of increased --

22 A Pardon me, sir? I'm sorry?

23 Q Page 35.

24 A That's not a table. Are you talking about a

1 table?

2 Q Doctor, turn to Page 35.

3 A Yes, sir.

4 Q It says "As presented in Table 2."

5 A I'm sorry. I'm sorry.

6 Q "-- there appeared to be a trend of increased
7 urinary tract problems among the high risk cohort as
8 reported from the medical history." Do you see that, sir?

9 A Yes, sir.

10 Q And they repeat the same thing, if you turn to
11 Page 43, don't they, sir?

12 A Page 43?

13 Q Yes. The 6th line from the top, where it says
14 "Of greater interest is the apparent trend indicative
15 of urinary tract abnormalities among the high risk
16 individuals." Do you see that, sir?

17 A Yes, sir.

18 Q And on the next page they talk about the
19 individuals that had the high liver on percussion, and
20 they're concerned about that because of the extensive
21 animal and high-dose human data suggesting hepatotoxic
22 effects of TCDD exposure. Do you see that, sir? Do you
23 see that, sir?

24 A Yes, sir.

1 Q And again that has to do with the porphyrins
2 and the importance of watching and measuring those
3 porphyrins; isn't that correct, sir?

4 A No, sir.

5 Q Doctor, when they talk about a chronic hepatic
6 problem, what are they talking about?

7 A They're talking about something that causes
8 pathology in the liver.

9 Q And, Doctor, isn't that caused -- isn't
10 porphyria a chronic hepatic disease?

11 A No, sir.

12 Q Would you turn to Page 49 again, Doctor.

13 A Yes, sir.

14 Q Do you see that Table there?

15 A Yes, sir.

16 Q What does it say? It says "Chronic Hepatic
17 Porphyria."

18 A Yes, sir.

19 Q Sir?

20 A Yes, sir.

21 Q And isn't that a form of liver disease?

22 A No, sir.

23 Q What is it, Doctor?

24 A It's an enzymatic disease. It's genetic. This 104