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IN THE CIRCUIT COURT OF THE TWENTIETH JUDICIAL CIRCUIT
ST. CLAIR COUNTY, ILLINOIS

FRANCES E. KEMNER, ET AL.,

Plaintiffs,

vs

NO. 80-L-970

MONSANTO COMPANY,

Defendant.

REPORT OF PROCEEDINGS

July 22, 1985

Before the HONORABLE RICHARD P. GOLDENHERSH, Circuit Judge

APPEARANCES:

Mr. REX CARR and MR. JEROME SEIGFREID, Attorneys at
Law, on Behalf of the Plaintiffs; and

MR. KENNETH HEINEMAN and MR. JOSEPH NASSIF
on Behalf of the Defendant, Monsanto Company.

Kathleen Watson Brunsmann
Official Court Reporter

INDEX OF WITNESSES

Called on behalf of the Plaintiffs:

DR. GEORGE ROUSH

Clarification Examination

(By Mr. Heineman)..... 2

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PLAINTIFF'S EX. NO.

MARKED FOR
IDENTIFICATION

ADMITTED
INTO EVIDENCE

1512

52

MONSANTO'S EX. NO.

910

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911

55

1 BY IT REMEMBERED AND CERTIFIED, that heretofore,
2 on to-wit: July 22, 1985, the matter as hereinbefore set
3 forth came on for hearing before the Honorable Richard p.
4 Goldenherst, Circuit Judge in and for the Twentieth Judicial
5 Circuit, and the following was had of record, to-wit:

6
7
8 (The clarification examination of Dr. George Roush
9 by Mr. Heineman continued as follows:)

10
11
12 (The following proceedings were had in chambers,
13 out of the presence and hearing of the jury:)

14
15 MR. CARR: Judge, there's been some dispute
16 on the record as to whether or not the reference ranges that
17 we have used for porphyrins and for the creatinines are the
18 normal reference ranges that have been given by the labora-
19 tory. And there was dispute as to whether or not I had ever
20 asked for them, or what they were, what these were that had
21 been given to me. I checked the records, and on April the
22 15th, 1985 I had just been delivered the day before the pile
23 of material dealing with the Krummrich Health Study, the
24 medi cal records. I had had an opportunity to briefly scan

1 the laboratory results and discovered that there were no
2 normals for the porphyrins at that time. And the Court will
3 note, on April the 15th, 1985, on page 107, I asked that
4 they give me the normal ranges used. That was on a weekend.
5 And the following Monday, I guess it was, at any rate a few
6 days later, on the 22nd of April, 1985 they did, indeed,
7 produce these exhibits, 3846, 47 and 48, which deal with
8 the porphyrins and the creatinine levels.

9 Now, unless Counsel stipulate that the sequence
10 of events, and that these were furnished to me in response
11 to my request made on April the 15th, I want to make an
12 additional record by putting Mr. Nassif on the stand to
13 confirm that this is the sequence of events, and that these
14 test ranges given me, 3846, 3847, 3848, were given to me in
15 response to that request for the normal reference ranges.

16 THE COURT: First of all, is there any dispute
17 as to that? I think that was the first point, wasn't it?

18 MR. CARR: Yes. If there is no dispute, then
19 I think it's Exhibit 1509 that can be no challenge as to the
20 authenticity of that. They may not have challenged it, but
21 I don't think they have admitted in court at least that
22 these were the Metpath Test Ranges for the porphyrins that
23 were given to me, and for the creatinines that were given
24 to me in response to my request.

1 MR. HEINEMAN: I am trying to recall in my own
2 mind, Judge, the occasion when this first came up in the
3 testimony of Dr. Roush. I may be incorrect, but I think my
4 recollection is that Mr. Carr asked Dr. Roush whether those
5 documents were, in fact, the normal reference ranges. And
6 I think at the same time, perhaps, may have represented that
7 they were furnished by Monsanto's attorneys for something
8 to that affect. My recollection is that Dr. Roush said that
9 they were, indeed, the normal reference ranges. Didn't he?

10 MR. CARR: Yes. But you objected to their
11 authenticity. You said you didn't -- and I had on the copy
12 that had been put into evidence, I had written on it "Nitro
13 normal," or "Suskind Laboratory," because it was, in fact,
14 the same. As I learned from Carnow and Conibear, it was
15 the same reference ranges used in the Suskind Morbidity
16 Study for Nitro. And you challenged that at that time on
17 the record in front of the jury. You said, "Why these don't
18 even refer to Krummrich," or something of the sort, "These
19 are the Nitro." I represented then to you that these
20 were the normal reference ranges given to me in the
21 Krummrich. You again expressed a doubt, or I'm sure objected
22 on the record to the use of these values. If you didn't
23 object on the record, then there is no problem.

24 THE COURT: Well, okay. There was an objection

1 on the record. These were admitted, 1509 was admitted on
2 July 16th, and my notes have they were admitted over objec-
3 tion.

4 MR. HEINEMAN: If we're talking about -- I'm
5 not sure that we're talking about the same occasion.

6 THE COURT: This is when they were first used
7 on the 16th.

8 MR. HEINEMAN: All right.

9 THE COURT: I have in my notes that they were
10 admitted over objection at the time.

11 MR. HEINEMAN: You don't have in your notes
12 what the objection was?

13 THE COURT: I don't.

14 MR. HEINEMAN: I don't know. Was the objection
15 only that his handwriting was on them, and they said "Nitro?"

16 MR. CARR: The objection was that these were
17 not connected, these were not shown to be the normal
18 reference ranges, and you weren't going to take any represen-
19 tation that they were. I represented to the Court that they
20 were produced to me, and your objection was to their authentic
21 or that they were, in fact, the normal test ranges. You're
22 not making that objection now. There's no problem.
23 All I want is on the record a statement from you that these
24 were the normal test range values given to me by you in

1 response to my request of April the 15th, and that these are
2 the normal test ranges that were used in the laboratory
3 reports that we have in evidence in this case, referring
4 to the Krummrich Health Study.

5 THE COURT: My notes do indicate that you, Mr.
6 Carr, indicated that these were produced in response to an
7 order of court. I don't have noted down what the specific
8 objection was.

9 MR. HEINEMAN: Do you know whether Dr. -- whether
10 he asked Dr. Roush about it right at that point? Because
11 I have a recollection, maybe incorrect, that Roush said,
12 "Yes, these, indeed, are the normal reference ranges for por-
13 phyrins from Metpath."

14 MR. CARR: He has testified on the record that
15 these are the normal test ranges used at Metpath. That is
16 not my quarrel. I have him on the record three or four
17 times in which he agreed that these were the normal test
18 ranges. That's not the equivalent to a stipulation by you
19 that they are, or that by an agreement by you. Because you
20 made the objection on the record that you don't know the
21 authenticity of them, and you challenged them, and you
22 objected to them, and I want it clear on the record from
23 Counsel that what I represented was correct, that these
24 were produced by you in response to my demand or request

1 for these normal values, normal test ranges.

2 THE COURT: Whatever position you took then, do
3 you have any objection to that now? Let's put it that way.

4 MR. HEINEMAN: First, I want to read the
5 transcript here.

6 THE COURT: Sure, go ahead.

7 MR. HEINEMAN: Of the in-chambers conference.
8 Then I will need to ask Joe Nassif if they, indeed, are the
9 same ones that were produced.

10 MR. CARR: Jesus, Ken, you can see the numbers
11 on the receipt, and the numbers -- well, never mind. You
12 do whatever you need to do.

13 MR. HEINEMAN: Oh, there's a receipt here?
14 Okay.

15 THE COURT: That's just before the actual
16 documents.

17 MR. HEINEMAN: Well, from the receipt they
18 obviously are the same documents that were produced.

19 THE COURT: Fine.

20 MR. CARR: Well, are you stipulating and
21 agreeing that exhibit 1509 represents the normal test range
22 values as shown for those three urine specimens, whatever
23 they are, for the Krummrich Health Study?

24 MR. HEINEMAN: What I would stipulate to is

1 that these three documents, which I don't remember exactly
2 what comprized 1509 --

3 THE COURT: Those three documents.

4 MR. HEINEMAN: These three documents are 1509?

5 THE COURT: Yes.

6 MR. HEINEMAN: But if these are 1509, that
7 these three documents demonstrating that Metpath's normal
8 reference ranges are for micrograms per twenty-four hour
9 sample are, indeed, the normal reference ranges that Metpath
10 used.

11 MR. CARR: Well, I want more than that. I
12 want that these were given to me in my response for the
13 value -- asking for the values, normal values given for the
14 porphyrins.

15 MR. HEINEMAN: I am sure, as I sit here, that
16 these documents were provided to Mr. Carr in response to
17 the request that is set forth in this transcript.

18 MR. CARR: Then that's all I want.

19 THE COURT: Fine. Great. Okay. We'll start
20 in a couple of minutes.

21 MR. NASSIF: I remember a request from Mr. Carr
22 for the Metpath reference ranges, and to my recollection
23 those three documents were produced in response to that
24 request.

1 THE COURT: Okay, gentlemen. We'll start in a
2 couple of minutes. Thank you.

3 MR. CARR: Yes, your Honor.

4
5 (The following proceedings were had in the
6 presence and hearing of the jury:)

7
8 GEORGE ROUSH,
9 having previously been called as a witness under
10 Section 2-1102, having previously been sworn,
11 continued clarification examination as follows:
12

13 EXAMINATION

14 BY MR. HEINEMAN:

15 THE COURT: Good morning, ladies and gentlemen.
16 I apologize for starting a little bit late. As I've told
17 you before, you've heard this many times, there are certain
18 matters that have to be taken up in chambers, outside the
19 presence of the jury. We had one of those this morning, and
20 I believe we've resolved it. So we're ready to proceed.
21 Mr. Heineman.

22 Q (By Mr. Heineman) Yes. Dr. Roush, on Thursday,
23 when we closed court at the end of the day, we had begun
24 discussing the Zack-Suskind Study, had we not, sir?

1 A Yes, sir.

2 Q And I'd like to hand you a copy of that study
3 as it's been previously marked as Monsanto Exhibit Number
4 62, and I'd like to ask you some questions about it, sir.
5 Now, as I understand it, sir, the only way that those who
6 could have been exposed to the clean-up of the '49 accident
7 could be determined was through the chloracne records; is
8 that right?

9 A Yes, sir.

10 Q Now, as a matter of fact, the paper states, does
11 it not, that it's subject is the chronic health effects to
12 exposure to TCDD as reflected in the mortality experience of
13 a cohort of Monsanto Company workers who developed symptoms
14 of chloracne following a trichlorophenol process accident
15 at the Nitro, West Virginia plant in 1949?

16 A Yes, sir.

17 Q And if you'd look at the last paragraph in the
18 right column on the first page of Exhibit 62, would you read
19 that first sentence, please, to the jury.

20 A "Employees who worked in the area of TCP
21 production or were involved in the clean-up began to develop
22 symptoms immediately following exposure to the material
23 which was discharged from the autoclave."

24 Q Thank you. And then it goes on to discuss these

1.

1 symptoms; correct, sir?

2 A Yes, sir.

3 Q And would you tell us what it says the symptoms
4 were.

5 A Should I read them or just tell you?

6 Q Well, please read them.

7 A "Symptoms included eye and respiratory tract
8 irritation, headache, dizziness and nausea, and a severe
9 irritant reaction of the exposed skin."

10 Q Then it goes on to discuss the symptoms subsiding;
11 does it not, sir? Would you read that next portion?

12 A "After these initial symptoms subsided, the
13 chloracne and other symptoms became evident."

14 Q Now, what it appears to be discussed there, sir,
15 is an acute exposure with acute symptoms; is that right?

16 A Yes. As a matter of fact, the immediate
17 reaction following that autoclave discharge was manifesta-
18 tions of irritant and thought to be due to the caustic
19 content of the material that came out, not due to the TC --

20 MR. CARR: Your Honor, I object unless the
21 witness is testifying from his own knowledge. If he's not,
22 he should identify the source of his knowledge. It appears
23 as if he's stating something as a fact.

24 THE COURT: Objection is sustained. Could you

1 rephrase the question so that matter is cleared up.

2 Q (By Mr. Heineman) Doctor, Dr. Roush, with
3 respect to the acute nature of the symptoms that arose and
4 of the exposure, how does that relate to the fact that the
5 study is talking about results after a long period of time?

6 MR. CARR: Your Honor, Counsel isn't going to
7 rephrase that question, I ask that the jury be instructed
8 to disregard what the doctor said.

9 THE COURT: Objection is sustained. The jury
10 is to disregard.

11 THE WITNESS: I'm sorry. Would you repeat the
12 question? I'm not sure how it related --

13 THE COURT: Could you read back the question
14 please.

15 (Question read.)

16 THE WITNESS: Well, these workers did have
17 acute reaction immediately following the release, but those
18 symptoms subsided quite rapidly, and then after a period of
19 days to months they developed a skin reaction quite different
20 than the irritant reaction, and that when it came on over a
21 period of days to a month or more was called chloracne. So
22 that identified group was based on the identification of
23 the chloracne or the skin reaction.

24 Q (By Mr. Heineman) Now, was it possible in 1979

1 or 1977 when this study -- when you began working on this
2 study, is it possible at that time to determine all of the
3 people who were exposed in the 1949 accident?

4 MR. CARR: Your Honor, first I would object.
5 Counsel hasn't established that this witness has that
6 knowledge, of his own knowledge, or if he's referring to
7 this exhibit, whether or not this exhibit says that it's
8 possible. It's not clear what he's referring to. Is he
9 referring to the witness' own knowledge? If so, if he
10 hasn't established that the witness has such knowledge.

11 MR. HEINEMAN: Well, your Honor, I'd like to
12 establish Dr. Roush testifying on behalf of information that
13 was developed by people working under him.

14 MR. CARR: Well, I object to that, your Honor.
15 If he's going to refer to this study, refer to this study.
16 If he's referring to some hearsay documents, or hearsay in-
17 formation, that should be here so I can cross examine and
18 determine the authenticity of it.

19 THE COURT: I'm sustaining the objection. Would
20 you rephrase the question?

21 Q (By Mr. Heineman) Doctor, do you have personal
22 knowledge with respect to the way in which, or the effort
23 that was undertaken to try to determine a cohort for this
24 study that's reflected in Defendant's Exhibit 62?

1 A Yes, sir.

2 Q All right. Now, would you tell us please what
3 was done to try to determine the people who were exposed?
4 Was there any way to determine all of the people that were
5 exposed in that 1949 incident?

6 MR. CARR: Your Honor, I object to that. That's
7 two questions. First of all, what was done? I think he
8 has to establish that.

9 THE COURT: You can answer both of them in
10 sequence.

11 THE WITNESS: In an attempt to identify those
12 who had been involved in that accident, they attempted to
13 find whether there's records available on work records that
14 would identify who had been working in that accident, and
15 they were unable to do so. The other approach to deciding
16 who was exposed is to determine those who had chloracne.
17 Dr. Suskind sent me the first group of people he knew were
18 exposed, and there were about fifty of them, fifty to
19 fifty-three, as I recall. Then we went back, and to add on
20 to that population who had chloracne, we went and got a
21 copy of Mr. Volz's files in which he listed those that were
22 on the Workmen's Compensation list. In addition to that, we
23 checked with Workmen's Comp, and verified those names that
24 obviously had chloracne. So what we have then is a list of

1 people who were identified by Dr. Suskind, by those who
2 came in from Ed Volz, and then the Workmen's Compensation
3 files. And that constituted what they called the chloracne
4 group. That means that there could have been some people
5 who were there who had chloracne that was so mild that it
6 was not included, because a decision of who had chloracne
7 was made by the doctor. They cross-checked the medical
8 records, but it still wasn't clear if a man had a blackhead
9 whether the physician thought that was chloracne or not.
10 So we were unable to determine those who did not have
11 chloracne and who were involved in the clean-up. We believe
12 that we picked most of them who had significant chloracne
13 by the method used.

14 Q (By Mr. Heineman) Now, when you say you had
15 access to Dr. Suskind's files, now Dr. Suskind had indeed
16 examined a number of these people back at the time of the
17 incident, and subsequently?

18 A Yes.

19 Q So he had files with respect to people who were
20 his own patients?

21 A Yes, sir.

22 Q And these were employees involved in the
23 incident?

24 A Right.

1

1 Q Then you said something about Ed Volz's files.

2 A Right.

3 Q Now Ed was the Safety Director of the plant?

4 A Yes, he was.

5 Q And he kept track of those people who had
6 filed Workmen's Compensation claims?

7 A That's right. But he also had a responsibility
8 to keep that list up-to-date for the plant manager. The
9 plant manager wanted a regular report of how much chloracne
10 there was.

11 Q So he kept a record of who had chloracne?

12 A Yes, sir.

13 Q And then you said you went to Worker's Compensa-
14 tion files?

15 A Yes.

16 Q Were those kept by Monsanto or by the State?

17 A By the State.

18 Q State of West Virginia?

19 A Yes.

20 Q And from those three sources you compiled the
21 group of who had chloracne and who did not?

22 MR. CARR: Your Honor, I object as to who had
23 chloracne, not who were exposed and did not have chloracne.

24 MR. HEINEMAN: I'm sorry, I misspoke.

1 MR. CARR: Yes, you did.

2 Q (By Mr. Heineman) You had the list of who had
3 chloracne?

4 A Yes, sir.

5 Q Those were the people who were followed in this
6 study?

7 A They became what we call the cohort. The
8 population that we could study.

9 Q Now, I want to get to the difference, sir,
10 between an acute exposure and a chronic exposure. People
11 that were the subject of this study, what sort of exposure
12 did they have?

13 A These people who developed this chloracne at
14 that time were related to the episode in which there was a
15 large discharge of the 2, 3, 7 TCDD.

16 Q So which would that be? Would that be an acute
17 or chronic?

18 A An acute exposure.

19 Q That would be an acute exposure?

20 A Right.

21 Q Something that takes place over relatively
22 short period of time?

23 A Yes, sir.

24 Q There's a statement that I want to direct your

1 attention to. If I could direct your attention to the
2 second page of Exhibit 62, the right-hand column. There's
3 a portion there that says "Population and Methods;" is that
4 correct?

5 A Yes, sir.

6 Q At the end of that first paragraph there's a
7 sentence that begins with the words "An analysis." Do you
8 see that?

9 A Yes, sir.

10 Q Would you read that to the jury, please.

11 A "An analysis of the chloracne cases and
12 exposures not associated with this accident but rather with
13 the normal TCP/2,4,5-T production processes will be the
14 subject of a future paper."

15 Q Now, what is it that the authors of this
16 document are referring to in that sentence?

17 A This study was a study of those involved in the
18 acute accident. This subsequent study was to be related to
19 what health effects were associated with the normal operation
20 and production of TCP, and the 2, 4, 5-T at the plant, over
21 a period of time.

22 Q So that would it be possible, sir, to describe
23 the second group of people to be examined in a future
24 paper, the subject of a future paper, would that be a

1 chronic exposure that's being dealt with there?

2 A Well, the normal TCP/2,4,5-T production process
3 would involve a continuing, long-term exposure as opposed
4 to an episode.

5 Q All right. Now what was the second -- the
6 second one is the Zack-Gaffey Study; is it not, sir?

7 A Yes, sir.

8 Q Now, what is the difference between the two?
9 What are the two separate studies accomplishing?

10 A Well, the first study was a concern for the
11 possibility that those workers involved in this accident
12 in which there were people who were quite ill. They were
13 sick. Four of them were hospitalized at the University
14 of Cincinnati, some hundred miles away from Nitro, West
15 Virginia, for a study in depth. So these workers had
16 significant exposure. And the question was for these
17 hundred and twenty-two people identified with exposure, that
18 heavy exposure had any adverse affect on their mortality
19 experience.

20 Q All right. Now how does that differentiate
21 from the second one?

22 A The second study took those workers who had
23 been working at the plant for a period of about twenty years
24 or during that twenty years, and had exposure to continuing

1 over most of this time, or at least up until 1969, and the
2 question was at these lower levels of exposure, but over
3 this long period of time, did that have any affect on their
4 mortality experience.

5 Q Now, it may well be that there were some people
6 in the second study who were also exposed in the first one?

7 A Yes, sir.

8 Q And there may be some people in the first one
9 who were not involved in the second one because they weren't
10 involved in the subsequent 2,4,5,T production; is that right?

11 A Yes, sir.

12 Q One was for chronic exposure, one was for acute
13 exposure?

14 A Yes.

15 Q Now, with respect to the Zack-Gaffey Study, sir,
16 does that study purport to say --

17 MR. CARR: Your Honor, I object to the leading
18 form of the question. I haven't objected to now, but I do
19 object now.

20 THE COURT: Rephrase it, please. I believe it
21 is leading.

22 Q (By Mr. Heineman) All right. What, if anything,
23 sir, does that study say with respect to whether or not
24 anybody who was the subject of it -- strike that. Let me

1 start over again. What does that study purport to say, if
2 anything, sir, about whether anybody who was listed as not
3 exposed in the Gaffey Study had ever been exposed to TCDD
4 in the past?

5 A It didn't address that question. The study was
6 simply a comparison of the mortality experience of those
7 involved either in the regular operation, on a regular basis,
8 or a year at least who had their job was making the TCP, or
9 making 2,4,5-T, and they want to know whether they had --
10 what their mortality experience was. And for comparison,
11 the comparison crew was the rest of the plant. And the rest
12 of the plant could include those who were not assigned to
13 that unit, but were a part of the whole work force.

14 Q Now, sir -- now, in dealing with these two
15 studies, sir -- now, Mr. Carr went through with you and he
16 said, did he not, sir, that there were four people -- this
17 is Exhibit 1462-A, sir, I want to show you. He picks out
18 four people that were exposed, listed as exposed in the
19 trichlorophenol process accident in 1949; correct?

20 A Yes, sir.

21 Q And then he showed you Plaintiff's Exhibit 281-B,
22 in which he stated that those same four people were included --
23 that's the wrong one.

24 Here, we are. Here we go. I had the wrong one. 21

1 1462-B, sir. Keeping in mind 1462-A, listed the four
2 people, listed or had underlined four people who had been
3 exposed in the '49 trichlorophenol process accident; correct?

4 A Yes, sir.

5 Q 1462-B, had underlined the same four people as
6 being listed in the not exposed to 2,4,5-T table from the
7 Zack-Gaffey Study.

8 A Yes, sir.

9 Q Is that right, sir?

10 A Yes, sir.

11 Q Now, how could it be, sir, that the four people
12 who were listed as exposed in the trichlorophenol process
13 accident could be listed as not exposed to the 2,4,5-T in
14 the Zack-Gaffey Study?

15 A The definition of who was going to be in the
16 Zack-Gaffey exposed group were those who were working with
17 TCP or 2,4,5-T during the period of 1955 to 1977. And
18 these four people were not in that cohort as I've just
19 described that's going to be studied. They were there
20 because they could not be identified by virtue of looking
21 at the work records.

22 Q So that while they may have been exposed to
23 TCDD in the trichlorophenol process accident in 1949, they
24 were not exposed to the chronic, low-level group, or just

1 chronic -- let's just use that word -- the chronic exposure
2 in the day-to-day operation of the 2,4,5-T Department from
3 '55 to '70?

4 A That's right.

5 MR. CARR: Your Honor, I would object unless
6 counsel and the witness will point out something in the
7 Zack-Gaffey Study where it says this excludes anybody who
8 was working before 1955 in the TCP accident, in the TCP
9 production.

10 THE COURT: Objection sustained.

11 MR. HEINEMAN: I think, your Honor, I think the
12 Zack-Gaffey Study itself defines the cohort.

13 MR. CARR: That's the reason I'm asking Counsel,
14 that's the reason I'm making the objection, because I'm
15 suggesting to you that it says nowhere that the people who
16 were exposed before 1955 were excluded from this study.

17 The representation that you're making to the
18 jury is wrong.

19 MR. HEINEMAN: Well, sir, I think the represen-
20 tation is that those were the people who were working in
21 that department between '55 and '70.

22 THE COURT: Okay. Objection is sustained.

23 MR. CARR: Those weren't your words, Counsel.

24 THE COURT: The objection directly relates to the

1 proposition being put to the witness. The objection is
2 sustained. I'll allow you to rephrase the question, if you
3 wish.

4 Q (By Mr. Heineman) Doctor, in light of the
5 objection that Mr. Carr has made, sir, would you define the
6 cohort to the Zack-Gaffay study carefully?

7 A The cohort that was going to be studied for the
8 effect of working with TCP, 2,4,5-T was all of those who
9 could be identified by the work records that had worked
10 with these materials, these two materials, over the period
11 from the first time we had work records available, 1955
12 up to 1977. We could not go beyond that.

13 Q Sir, that study, the attempt to identify that
14 cohort, was begun when?

15 A About the same time, 1978, '79.

16 Q Sometime around 1978? So in 1978 you were
17 trying to go back and find out who worked in the 2,4,5-T --
18 let's see -- the 2,4,5,-T, TCP production process?

19 A Right.

20 Q And as of that date the only work records you had
21 began in 1955?

22 A That's right.

23 Q Now there were people, were there not, who were
24 at work in 1955, in that process, who may have been at work

1 in that process before 1955; isn't that right?

2 A Yes.

3 Q And had they been at work for a year, a year or
4 more after 1955, they would be included in the cohort?

5 A That's right.

6 Q In addition to that, sir, were there people, or
7 do you know whether there were people who were not working
8 with the company in 1955 who may have been exposed in that
9 process prior to 1955 and whom you -- could you identify
10 people of that kind?

11 A No.

12 Q So there may have been people who had previously
13 worked in the process but as to whom you did not have work
14 records prior to 1955?

15 A That's right.

16 Q Now, what Mr. Carr sought to have you do was
17 to take the people from 19 -- from the 1949 incident that
18 had cancer and add them to the people in the Zack-Gaffey
19 Study; is that right?

20 A Yes, sir.

21 Q All right. Now, can you do that?

22 A What do you mean by can you do that?

23 Q Well, under the principles of epidemiology, can
24 you do that, sir?

1 A If you're trying to combine what we thought was
2 the affects of an acute exposure, plus those from a chronic
3 exposure, and think of them at the same time, you can.

4 Q All right. But under what circumstances do you
5 have to do it? What's required in order for you to be able
6 to do that, sir?

7 A Well, several things. First of all, you have
8 to make sure that your definition of those two cohorts are
9 consistent, and that's difficult to answer, because they were
10 defined differently. And there's subtle differences when
11 you start talking about a cohort. You don't define a cohort
12 after you've completed the study. Both of these studies were
13 done by a study group that was defined before they looked
14 for the experience. The health experience. In other words,
15 that hundred and twenty-two was put together and then they
16 went back and looked to find out whether those who had left
17 were alive or dead, that was done after the cohort is
18 designed. Otherwise it becomes a bias study. The same
19 thing on the Zack-Gaffey Study, that population was defined
20 and then the mortality experience was looked at. So when
21 you start trying to put them together, yes, you can do it.
22 But you're not sure what you've done in terms of how you've
23 changed the definition of the cohort, because you don't have
24 a clear definition of the cohort you're looking at. That's

1 one reason.

2 Q You mean if you put them together?

3 A Yes.

4 Q Because the two cohorts were put together with
5 different things in mind; is that right?

6 A And defined differently.

7 Q Defined differently?

8 A Yes.

9 Q So if you jumble them together, you don't know
10 what the definition of your cohort is?

11 A That's right.

12 Q Now, in connection with an epidemiological
13 study, you said that you defined the cohort first without
14 regard to what the experience is. What do you mean by that,
15 sir?

16 A We define that first cohort as those who had
17 chloracne, and we were able to identify that population
18 group we're going to look at as a hundred and twenty-two
19 workers, and we took out one. The nurse was in there.
20 Since there was one female, we dropped her out just because
21 of the consistency. Hundred and twenty-one of them were
22 males. The second population group was those who had
23 worked continuously in that operation, or for at least one
24 year during that time period of time. That's how that

1 population was defined.

2 Q Now, when you make the definition of the
3 population, at that time do you have any idea what the
4 actual mortality experience is for that population?

5 A No, sir.

6 Q So you define it first, and then you find out
7 where the chips fall?

8 A That's right.

9 Q And that's done in both studies?

10 A Exactly the same.

11 Q And you don't maneuver them? You don't change
12 the cohort once you find out what the mortality experience
13 is?

14 A No, sir.

15 Q You've already defined what the cohort is?

16 A That's right.

17 Q Now, so that while it is true to say, or it
18 may be true to say that both groups studied could have been
19 exposed to TCDD, that would be true, you say?

20 A Yes, sir.

21 Q They were exposed under different circumstances;
22 correct?

23 A Yes.

24 Q And the purpose of the studies was to find out

1 the differing -- whether those differing circumstances
2 produced differing mortality experiences; correct?

3 A Yes, sir.

4 Q Now, when Mr. Carr asked you to start adding
5 them together, the first thing he did was ask you to name
6 certain people and he picked them off, I think, Exhibit 1460,
7 which was a list of everybody that was included in the Zack-
8 Suskind Study; isn't that right?

9 A Yes.

10 Q And then -- then, sir, he had you start doing
11 some computations; didn't he?

12 A Yes, sir.

13 Q And what he would do is take the deaths as to
14 a certain type of cancer as compared to the total number of
15 deaths in the Zack-Gaffey Study, and then have you add in
16 the cancer deaths from the Zack-Suskind Study; correct?

17 A Yes, sir.

18 Q And he had you add those to the numerator and he
19 had you add those same to the denominator; correct?

20 A No, sir.

21 Q Now, what's the difference? Why is it, sir?
22 Why is it that you can't compare them by just lumping
23 in the cancer deaths from the other study without any
24 reference to the total number of deaths in that study?

1 A That first line up there shows that there were
2 10.94 cancer deaths expected, and he divided it by the
3 population in the Gaffey Study, in which there were 58, and
4 he says 18.9 percent of the deaths were due to cancer. But
5 then he took the -- he took 67 -- he took 58 and added 9 --
6 that's hard to tell from that -- he added 9 cancer deaths
7 from the Zack-Suskind Study to the population of Zack-Gaffey
8 to come up with 67. In other words, his population now was
9 67, and he got 18.9 percent, and said he would expect 12.6.
10 But you can't do that.

11 Q But, sir, he used the 18.9 percent, which is the
12 result of determining how many are expected in this
13 population --

14 A Right.

15 Q -- correct, sir?

16 A Right.

17 Q That isn't the number of expected in this
18 population, is it?

19 A No. He's trying to calculate it there.

20 Q Right. But what in addition do you have to do,
21 even if this 10.94 is not the expected for this created
22 population of taking the 9 and adding them to 58, there's
23 still something further wrong with it, isn't there, sir?

24 A Yes.

1 Q Okay. Now what's that?

2 A He has to change that population from the 57 --
3 he has to add the total population of the Zack-Suskind
4 study to it.

5 Q At least that portion of the total population
6 which is not duplicated?

7 A That's right.

8 Q In the Zack-Gaffey Study?

9 A That's right.

10 Q So you've got to find out how many total deaths
11 there are in the combined --

12 A Right.

13 Q -- group? You can't just take the cancers --
14 that's like taking the red apples out of yellow and red
15 apples, and red apples out of yellow and red apples, and
16 let's take these reds and these reds, and put them over
17 here and say among this bunch of apples we've got a lot
18 more reds.

19 A That's right.

20 Q But that doesn't show what the total incident
21 is, does it?

22 A That's right.

23 Q You've got to take the yellow apples from here
24 and bring them over with the yellow apples from here, don't

1 you, sir?

2 A That's right.

3 Q So you're showing the number of red apples, which
4 may be the number of people exposed to TCDD in the entire
5 population, not just in that portion of the population;
6 correct?

7 A Yes.

8 Q Now, so then..if you look at Exhibit 1464-A here,
9 sir, he says here that the deaths observed were 18 and not
10 9.

11 A Yes.

12 Q But he compares it with the deaths expected to
13 the deaths expected only from the Zack-Gaffey Study popula-
14 tion; correct?

15 A No, sir. He compared it to that recalculated
16 one on the other page right behind it.

17 Q All right. Back here?

18 A Yes. That right there. That one two six.

19 Q Twelve point six?

20 A Twelve point six, yes.

21 Q All right. So you calculated -- what's this, the
22 new expected?

23 A Yes.

24 Q Now this is the new expected for this

1 population?

2 A Yes, and that's not a population.

3 Q But what's the new expected for the real
4 population, which is how many people?

5 A Fifth-eight plus thirty-two, minus four, I think.
6 So it's -- it's 86. What you should do is take that 86
7 times -- 18.9, if in fact the percent expected in a larger
8 population would be the same as it was in the first popula-
9 tion, and that's not correct.

10 Q So that changes too, doesn't it?

11 A Right. You can't do that. That percent
12 expected in the Zack-Gaffay Study was derived from a
13 computer program which corrects the expected by virtue of
14 age. As a population gets older, the cancer experience
15 increases. So you never can pick up and identify the
16 expected. First of all, the age expected mortality from
17 cancer in any population is about twenty percent. So that's
18 pretty close. But that that's expected in any special
19 population is dependant upon the age of the population. So
20 when you start to add, take 18.9 percent in the Zack-Suskind
21 Study, which was considerably older than the Zack-Gaffay
22 because it was based on that population back in 1949, the
23 expected is going to be quite different from that. And you
24 can't do it anyway -- you can't take 18.9 and multiply it

1 times the Zack-Gaffey mortality and just add the cancer to
2 it and say that's the population. The population is the 58
3 plus 32, minus the overlap. So that's completely wrong, the
4 way that was done.

5 Q Now, why is that, sir? Are there principles of
6 epidemiology we're talking about here?

7 A The expected in mortality experience in any
8 population is dependant upon correcting it for age. And in
9 order to correct it for age, you can do it manually, but it
10 would take days. So there are computer programs that have
11 been written to take a population in which you insert the age
12 of each one of the people involved in this study, into the
13 program, and then it calculates the expected cancer experience
14 based on age.

15 Q All right. Well, let me direct your attention
16 again, if I may, to Defendant's Exhibit 62 . If you'll look
17 at the second page of the exhibit, sir --

18 A Are you talking about --

19 Q Yes, the Zack-Suskind Study.

20 A I don't have it -- Zack-Suskind, all right.

21 Q All right. The second page, right where you
22 were.

23 A All right.

24 Q Right there. Right down at the beginning of

1 this paragraph. Dr. Suskind is describing there, is he not,
2 one of these generally recognized computer programs?

3 MR. CARR: Dr. Suskind or Zack? Is the principle
4 author Suskind --

5 Q (By Mr. Heineman) All right. Zack and Suskind
6 are discussing here one of these generally recognized
7 programs; isn't that right?

8 A Yes.

9 Q In other words, when they say "The data were
10 analyzed by the modified life-table method using the updated
11 Monson program," it doesn't tell you right here what the
12 updated Monson Program is, does it?

13 A No, sir.

14 Q So that the people, this being written for
15 other epidemiologists, I suppose, people will know what the
16 updated Monson Program is?

17 A Yes, sir.

18 Q Wouldn't they?

19 A Yes, sir.

20 Q Why do they know that?

21 A Because it's commonly used.

22 Q Everybody uses it?

23 A Yes.

24 Q All right. So that when you're talking about

1 these epidemiological computer programs, these are things
2 that are used all over the country?

3 A Yes, sir.

4 Q And these are statistical analyses employed by
5 mathematicians; correct?

6 A Yes, sir.

7 Q Now, if indeed this process was used by Mr.
8 Carr, where he added only the deaths, only the cancer deaths
9 from the Zack-Suskind Study and not the total number of
10 deaths, so that things, as I understand it, that are wrong
11 here are one, you can't just take the cancer deaths, you've
12 got to bring in the total number of deaths into your
13 denominator here?

14 A Right.

15 Q Don't you?

16 A Yes, sir.

17 Q In addition to that, your expected changes,
18 doesn't it?

19 A Yes. He was trying to calculate the expected
20 there, but it is not -- but you can't even do that that way.

21 Q All right. So your expected changes?

22 A Yes.

23 Q In addition to that your expected changes not
24 only because of the number of people involved, but your

1 expected changes because of the differences in age of the
2 people involved?

3 A Yes, sir. And time of death.

4 Q And the time of death --

5 A Right.

6 Q -- is another factor. So all of those have to
7 be plugged into the computer in order to come up with what
8 in fact is the incident of death, whether it is statistically
9 significant?

10 A Whether it's greater than the number of expected,
11 all that has to be done. Yes, sir.

12 Q Doesn't it? So that this figure, where other
13 types of cancer deaths have been calculated by Mr. Carr,
14 that's not correct either, is it?

15 A No, sir.

16 Q For the reasons that we've just talked about?

17 A Right.

18 Q And this one for a different kind of cancer
19 death, that's not correct either, is it, for the reasons
20 we talked about?

21 A That's right.

22 Q And the same would be true of this one?

23 A Yes, sir.

24 Q All right. That gets into the next study. We'll

1 worry about that later. Now, in the Zack-Suskind Study, you
2 studied a hundred and twenty-one people, correct?

3 A Yes, sir.

4 Q Now out of the total deaths, there were how
5 many, 327

6 A Thirty-two.

7 Q And how many were expected, sir?

8 A Out of 46.4.

9 THE COURT: I'm sorry. What was that number?

10 THE WITNESS: Forty-six point four.

11 THE COURT: Thank you.

12 Q (By Mr. Heineman) Now in that study, Dr. Suskind
13 says on page -- well, it's the third page of the exhibit,
14 right in the "Results" section --

15 MR. CARR: What exhibit are you talking about?

16 MR. HEINEMAN: 62. Defendant's 62, the Zack-
17 Suskind Study.

18 MR. CARR: You said Suskind again. Dr. Zack
19 said this, and Suskind signed it along with Zack.

20 Q (By Mr. Heineman) The Zack-Suskind Study.

21 A Yes.

22 Q The results are stated there on that page right
23 below Table 1, are they not, sir?

24 A Yes, sir.

1 Q And it says, "The results of the standardized
2 mortality analysis of the 121-member study cohort are shown
3 in Table 1;" correct, sir?

4 A Yes, sir.

5 Q "The standardized mortality ratio for all deaths
6 is shown to be 0.69, with 32 observed deaths and 46.41
7 expected."

8 A Yes, sir.

9 Q Correct? So that's 41. He says this is the
10 only statistically significant difference shown in this
11 table; correct?

12 A Yes, sir.

13 Q The only one that was statistically significant
14 was this. And what was it? It was low, wasn't it?

15 A Yes, sir.

16 Q It was statistically significant, less, fewer
17 deaths than expected; correct?

18 A Yes, sir.

19 Q All of the other findings where excesses were
20 found and there are lung cancer, disease of other respiratory --
21 pardon me -- respiratory system and lung, there are excesses
22 found, are there not?

23 A Yes, sir.

24 Q But they're not statistically significant?

1 A That's right.

2 Q The diseases of the circulatory system are
3 found to be less than expected?

4 A Yes, sir.

5 Q Arteriosclerotic disease, including coronary
6 heart disease, is found to be less than expected?

7 A Yes, sir.

8 Q The malignant neoplasms, all malignant neoplasms
9 are found to be as expected; right?

10 A Yes, sir.

11 Q Cancer, 9 observed, 9.4 expected.

12 A Right.

13 Q Right? Now, these expected figures are expected
14 for this population; correct?

15 A Yes, sir.

16 Q All right. Gastrointestinal, are these cancers
17 now?

18 A Yes, sir.

19 Q Gastrointestinal cancers, none found, 2.5
20 expected.

21 A Yes, sir.

22 Q Correct? Lung cancers; correct?

23 A Yes, sir.

24 Q Five found, 2.85 expected. Correct?

1 A Yes, sir.

2 Q So the gastrointestinalals are low by some margin,
3 the lung cancers are high by some margin, but neither of them
4 is found to be statistically significant?

5 A That's right.

6 Q Heart disease, 13 found, 17 expected. Correct?

7 A Seventeen seventy-four.

8 Q Seventeen point --

9 A Seventy-four.

10 Q All right. And that was found not to be
11 statistically significant?

12 A That's right.

13 Q The bladder cancers, none found; correct?

14 A That's right.

15 Q Was there an expected level there for bladder
16 cancers?

17 A One point one six.

18 Q That's the Zack-Suskind Study, isn't it, sir?

19 A That's right.

20 Q Zack-Gaffey. Now what's the population in this
21 group?

22 A I don't have it.

23 Q That's Plaintiff's Exhibit 281. It may be up
24 here. No, I'm sorry, it sure isn't. Let me hand you, sir,

1 what's been marked as Plaintiff's Exhibit 281 and Defendant
2 Mesasanto Exhibit 65. Now that's the Zack-Gaffey Study, is
3 it not, sir?

4 A Yes, sir.

5 Q Now what's the population in this group, sir?

6 A Fifty-eight.

7 Q Fifty-eight is the number of deaths, right?

8 A Yes, sir.

9 Q Out of a much larger population than that?

10 A Not defined.

11 Q All right. If I can direct your attention back
12 to the Zack-Suskind Study, there were a hundred and twenty-
13 one that had chloracne, but there were thirty-two deaths;
14 right?

15 A Yes, sir.

16 Q All right. So the Zack-Gaffey we have total deaths
17 fifty-eight. We have total cancer, how many, sir?

18 A Nine.

19 Q And how many expected?

20 A Ten point ninety-four.

21 Q In this population; correct?

22 A Yes. That population of that age distribution.

23 Q Gastrointestinal, how many?

24 A Zero.

1 Q None. And how many expected?

2 A Two point eight zero.

3 Q Lung?

4 A Six.

5 Q How many expected?

6 A Three point five seven.

7 Q Heart disease?

8 A Twenty-seven.

9 Q How many expected, sir?

10 A Nineteen point seven two.

11 Q And bladder?

12 A Bladder two, with point twenty-two expected.

13 Q Yes, sir. Now of the total of these 32 deaths
14 in the Zack-Suskind Study, there were four that we know of
15 that were in the Zack-Suskind Study and listed as unexposed
16 in Zack-Gaffey; correct?

17 A Yes.

18 Q In addition to that, sir, were there some that
19 were in the Zack-Suskind Study and listed as exposed in the
20 Zack-Gaffey Study?

21 A Yes, four of them.

22 Q So there is a total of eight people that overlap
23 between the two groups?

24 A That's right.

1 Q The two groups of deaths?

2 A That's right.

3 Q Now with respect to adding Zack-Suskind and
4 Zack-Gaffey, what did you do with that, sir?

5 A You'll have to add the 58 of the Gaffey Study
6 and you add to that the 32 Zack-Suskind, minus four that
7 were already included.

8 Q Now, how about the other four?

9 A That's the four we're adding.

10 Q All right. So that the total deaths when you
11 add these two together are how many?

12 A It's 58 plus 28, or 86.

13 Q So it's not 67?

14 A No.

15 Q It's 86?

16 A That's right.

17 Q Correct? Did you in the Epidemiology Department
18 make this calculation since Mr. Carr went over this with you?

19 A Yes, sir.

20 Q All right. And what did you do in order to make
21 the calculation?

22 A We used a Monson Program based on the age
23 distribution of that 86 to determine what the expected cancer
24 death for each one of those categories.

1 Q All right. Now over here you've got the
2 computer Monson Program; correct?

3 A Correct.

4 Q Over here we have what computations Mr. Carr
5 went through with you. Okay?

6 A Right.

7 Q Now we start with the total cancer. Let's make
8 sure we've got them in order here. Gastrointestinal, lung,
9 bladder, lymph system, other cancers, and heart disease.
10 Correct, sir?

11 A Yes, sir.

12 Q Now those are the various items that Mr. Carr
13 went over with you?

14 A Yes, sir.

15 Q Now -- now, as to total cancers, Mr. Carr said
16 there were 18, and there should be expected how many, sir?
17 Twelve point six, wasn't it?

18 A That first item you had was twelve six.

19 Q Okay. As to gastrointestinal, he said there
20 were two, and --

21 MR. CARR: Your Honor, I don't really mind being
22 considered as a witness in this case, but I've not said
23 anything. I've asked questions and the witness has respond-
24 ed, various witnesses have responded giving these facts, and

1 all these particular facts were elicited from this witness
2 at this time from the exhibits in evidence. I object to
3 counsel characterizing as "I said."

4 MR. HEINEMAN: I think that's quite accurate,
5 Mr. Carr.

6 MR. CARR: Thank you.

7 MR. HEINEMAN: What you did was write down these
8 calculations for him. You said you had done them on a
9 calculator. Correct?

10 MR. CARR: Counsel, as you know, each thing on
11 there has to be agreed to by a witness based upon the facts
12 given the witness, based upon the exhibits in evidence, or
13 else it cannot be put there for the jury, as you're aware
14 of that. It cannot be admitted into evidence. Therefore,
15 each fact that I have put on any board I have done so with
16 the agreement of the witness at the particular point in
17 time.

18 THE COURT: Objection is sustained. Could you
19 rephrase your statements.

20 Q (By Mr. Heineman) Doctor, Mr. Carr showed you
21 a calculation for lung cancer. Do you recall that?

22 A Yes, sir.

23 Q And he said there were --

24 MR. CARR: Your Honor --

1 Q (By Mr. Heineman) -- he said there were ten?

2 MR. CARR: Your Honor, I object. I gave the
3 calculation to the witness. The witness agreed that that
4 calculation, based upon those facts, were correct. These
5 are not calculations that are mine. I'll be glad to testify
6 to them, but the way that it works, Counsel, is the witness
7 either agrees or disagrees. If he disagrees, it cannot be
8 written on the exhibit.

9 MR. HEINEMAN: Your Honor, if I might address
10 that a moment. My recollection of what happened was that
11 the witness said a number of times that you can't do that.
12 You can't add the two together. And Mr. Carr said he could,
13 and that were these calculations correct if you assumed
14 that they added them together. That's what the witness
15 agreed that the arithmetic was correct.

16 MR. CARR: What I gave to the witness were the
17 facts that were in the exhibits. I said based upon these
18 facts is this calculation correct, and the witness agreed
19 based upon those facts that they were correct.

20 THE COURT: Objection is sustained. I'll ask
21 you again to rephrase it.

22 Q (By Mr. Heineman) The calculations, sir,
23 that you went through with Mr. Carr, reflected 10 lung
24 cancer deaths and 4.12 -- now wait a minute. Well, here

1 we've got it right here. Plaintiff's Exhibit 1465-A. Do
2 you see that, sir?

3 A Yes, sir.

4 Q For lung, 10. Genitourinary, 2. Correct?

5 A Yes, sir.

6 Q Now he listed 10 for lung.

7 MR. CARR: Your Honor, Counsel is doing the same
8 thing again.

9 MR. HEINEMAN: I'm sorry. It's a fraudulent slip,
10 Judge.

11 Q (By Mr. Heineman) The calculation states 10
12 lung cancer deaths; is that right?

13 A Yes, sir.

14 Q And it says here on Plaintiff's Exhibit 1465-A
15 10 lung cancer deaths; correct?

16 A Right.

17 Q And the number expected for lung cancer deaths
18 was calculated to be 4.12; is that right, sir?

19 A I don't recall. That's it.

20 Q Is this it?

21 A Yes.

22 Q Four point one two. Where the 143 percent --

23 A Yes.

24 Q All right. So that's for the lung cancer there,

1 as shown on 1465-A7

2 A Right.

3 Q All right. Now, sir, with respect to -- with
4 respect to bladder cancer, there were two listed in 1465-A;
5 correct, sir?

6 A Yes.

7 Q The calculation of expected -- I don't see that
8 here. I'm trying to find the exhibit where that number
9 was, Judge.

10 THE COURT: Why don't we take a short break and
11 you find it?

12 MR. HEINEMAN: All right. Thank you.

13 THE COURT: Okay. Ladies and gentlemen, we'll
14 take a short break at this time. I will remind you, and
15 this would go for any other breaks which we take, not to
16 discuss this matter among yourselves, with anyone outside
17 the jury panel, or as of yet form any opinions or conclusions
18 about the matter in trial. Court is in recess.
19

20 (Short recess.)

21
22 Q (By Mr. Heineman) Doctor, at the break you
23 corrected me on something, didn't you, sir? You said this
24 G.I. should be G.U.; is that right?

1 A Yes, sir.

2 Q What would that stand for?

3 A That means gastrointestinal, and G.U. would be
4 genitourinary.

5 Q Okay.

6 MR. CARR: And another correction, what is that
7 exhibit number, counsel?

8 MR. HEINEMAN: No, not yet.

9 MR. CARR: Why don't you put an exhibit number
10 on it so I can refer to it?

11 MR. HEINEMAN: Okay. I'll be glad to.

12
13 (Defendant Monsanto Exhibit 910 was marked
14 for identification by the court reporter.)
15

16 Q (By Mr. Heineman) Doctor, I'm marking this
17 sheet that we've been drawing on here as Defendant's Exhibit
18 910, and that's this last sheet where we're adding Zack-
19 Suskind and Zack-Gaffay together; correct, sir?

20 A Yes, sir.

21 MR. CARR: It refers to a "Carr Study," or a
22 "Carr column." Of course, that's inaccurate to be an
23 exhibit, or Dr. Roush's testimony to that affect. But I
24 haven't testified to it. I object to the use of the word

1 "Carr" on this exhibit.

2 MR. HEINEMAN: Well, your Honor, the reason
3 the "Carr" is on there is that these were the calculations
4 that Mr. Carr went through with the witness. And it was
5 to identify them as that column only.

6 THE COURT: I'd prefer that you change that.
7 I'll allow you to change it to whatever number of the
8 exhibit that you've been referring to that those calcula-
9 tions.

10 MR. HEINEMAN: Well, it's a combination of
11 exhibits, your Honor.

12 THE COURT: I do want you to change that.

13 MR. HEINEMAN: All right, sir.

14 THE COURT: You've been referring to 1465-A and

15 MR. CARR: Just put the exhibit numbers on it
16 that you're referring to, Counsel. Then you don't have to
17 guess about what you're talking about.

18 MR. HEINEMAN: Now these documents here, your
19 Honor, from which these numbers came, some of them came,
20 were never marked by Mr. Carr. Could we get plaintiff
21 exhibit numbers on those, then I can put the numbers of
22 these.

23 THE COURT: Fine.

24 MR. CARR: That's fine with me.

1 MR. HEINEMAN: I think it starts here.

2 THE COURT: You can just make it a group exhibit.

3 MR. HEINEMAN: Make it a group exhibit, your
4 Honor?

5 THE COURT: It's the same calculations.

6
7 (Plaintiff's Group Exhibit 1512 was marked
8 for identification by the court reporter.)
9

10 MR. HEINEMAN: All right. So that the record
11 would be clear, your Honor, Plaintiff's Group Exhibit 1512
12 consists of the first sheet of calculations in which Mr.
13 Carr -- in which there appears calculations 67 times 18.9
14 percent equals 12.6.

15 The second sheet of calculations ending in the
16 statement one hundred forty-three percent. The third sheet
17 of calculations ending in the statement 92 percent in excess.
18 And the Fourth sheet of calculations ending in the number
19 26 percent.

20 THE COURT: Fine.

21 Q (By Mr. Heineman) Now, sir, with respect to the
22 bladder -- with respect to bladder cancer, the number which
23 appears in the Zack-Gaffey Study, which is Plaintiff's
24 Exhibit 281, as the expected is what, sir?

1 A Point twenty-two.

2 Q Point twenty-two. And Plaintiff's Group Exhibit
3 1512, to your recollection, sir, does not contain a calcula-
4 tion for bladder cancer, does it?

5 MR. CARR: I object to the form of the question.

6 THE COURT: Objection sustained.

7 Q (By Mr. Heineman) Does Group Exhibit 1512
8 contain a calculation for bladder cancer?

9 A No, sir.

10 Q Now with respect to the lymph cancer calculation,
11 Exhibit 1465-A shows a percentage of deaths higher than
12 expected. That's Plaintiff's Exhibit 1465-A of 92 percent.
13 And we can trace a calculation for that as part of Group
14 Exhibit 1512, can we not, sir?

15 A Yes, sir.

16 Q And in that the expected was placed at 1.56;
17 correct? In the calculation in Group Exhibit 1512.

18 A Which is 1512?

19 Q I'm sorry?

20 A Which is 1512?

21 Q 1512 is this group exhibit of calculations, sir.

22 A Yes. Right.

23 Q Right?

24 A Yes.

1 Q And from Exhibit 1465-A we see that there are
2 listed as 3 --

3 A Right.

4 Q -- occurring. Now, sir, with respect to other
5 sites, we see from Exhibit 1465-A that there are three
6 occurring, and from Exhibit 15 -- two occurring at a percen-
7 tage of death higher than expected of 26 percent, and if
8 we go back to Group Exhibit 1512 we see that in order to get
9 that 26 percent there was a 1.59 expected used.

10 A Yes.

11 Q And with respect to heart disease, sir, we see
12 from Exhibit 1465-A that there are 27 accounted for there.
13 We don't have -- do we have such a calculation among Group
14 Exhibit 1512?

15 A No, sir.

16 Q But from Exhibit 281 we have the expected of
17 what, sir, 19.72?

18 A 19.72.

19 Q All right, sir. Now you told us, sir, that you
20 caused a computer Monson Program to be run; is that right,
21 sir?

22 A Yes, sir.

23 Q And how did you go about doing that?

24 A We took that -- what we were trying to find is

1 what would be the expected cancer, G.U., lung, bladder,
2 lymphatic, other, and heart for a population of a size of
3 86 with the age distribution as presented in that group. We
4 used the Monson Program to determine the expected rates
5 for each of those.

6 Q And the Monson Program was used on this 86 and
7 the group you looked at were the two groups that were put
8 together; is that right?

9 A Yes.

10 Q So that you could get a determination of age?

11 A Yes. Assuming that they could be put together.

12 Q Assuming that they could be put together?

13 A Right.

14 Q All right. And whom did you discuss this with?

15 A Dr. Gaffey.

16 Q Dr. Gaffey?

17 A Right.

18 Q And you and Dr. Gaffey worked together on this
19 being performed?

20 A Yes, sir.

21 Q All right.

22
23 (Defendant Monsanto Exhibit 911 was marked
24 for identification by the court reporter.)

1 MR. CARR: Your Honor, I object to any use by
2 Gaffey unless Dr. Roush did it himself. If Dr. Gaffey did
3 it, Dr. Gaffey should be here. It's not clear thus far,
4 other than the fact that Roush discussed it with Dr. Gaffey,
5 who worked the computer, who put it in, who did the study.

6 THE COURT: Would you clarify that please.

7 MR. HEINEMAN: I'll be glad to clear that up.

8 THE COURT: Fine.

9 Q (By Mr. Heineman) Dr. Roush, tell us how you
10 and Dr. Gaffey did this, and what each of you did.

11 A We -- I asked him whether we could put these
12 two studies together in his opinion, and he said no, they
13 could not be put --

14 MR. CARR: Your Honor, I object to any testimony
15 that this witness is going to give to some other person.

16 THE COURT: Objection is sustained. It is
17 hearsay.

18 Q (By Mr. Heineman) Now, if you would, sir, tell
19 us what the two of you did, together or separately, in
20 coming up with the figures on the computer Monson Program.

21 A We did the computer analysis of the expected
22 mortality for each of those specific causes of death.

23 Q So --

4 A Related to a population of 86 with the age

1 distribution that could only be gotten from that program.

2 Q All right. Now was that done under your
3 direction, sir?

4 A Yes, sir.

5 Q Were you with him out at Monsanto when he did it?

6 A No, sir.

7 Q So that it was at your instruction that he
8 performed this exercise with the Computer Monson Program?

9 A Yes, sir.

10 Q And then he came to you with the results?

11 A Yes, sir.

12 Q All right. Let me hand you what's been marked
13 as Defendant's Exhibit 911, sir. Can you identify that for
14 me.

15 A Yes, sir.

16 Q What is that?

17 A This is the proportional mortality ratio study
18 of Gaffey by putting those two populations together.

19 Q I notice it's in handwriting; is that right?

20 A Yes, sir.

21 Q Whose handwriting is that?

22 A Dr. Gaffey's.

23 Q And that was -- that handwriting, was that given
24 to you?

1 A Yes, sir.

2 Q Was that the report of what you had asked him
3 to do?

4 A Yes, sir.

5 Q Sir, was there a determination with respect to
6 this Computer Monson Program as to how many total cancers
7 were to be considered?

8 MR. CARR: Your Honor, I object. Any use of the
9 table is clearly Dr. Gaffey's table, and not Dr. Roush's
10 table, and not be used unless I cross examine Dr. Gaffey
11 as to its authenticity, and how he got it is clearly a
12 self-serving statement prepared by Monsanto. I object to
13 it.

14 MR. HEINEMAN: Your Honor, there isn't any
15 question, as I've established through this witness, this
16 work was done by Dr. Gaffey under this witness' direction,
17 and that this report was made by Dr. Gaffey in his own
18 handwriting as to the results of the report on the results
19 of this Computer Monson Program. I think under those
20 circumstances, all I want this witness to do is to report
21 what those numbers are.

22 MR. CARR: I object to it, that all he wants to
23 do is to have Dr. Gaffey's table introduced into evidence,
4 or used without Dr. Gaffey being here and subject to the

1 cross examination as the rules require.

2 THE COURT: Objection is sustained.

3 Q (By Mr. Heineman) All right. Doctor, one of
4 the items included on Plaintiff's Exhibit 1464-A is an
5 entry for a Mr. John Workman. Do you see that, sir?

6 A Yes, sir.

7 Q Whose date of death was 1971. Do you see that,
8 sir?

9 A Yes, sir.

10 Q And the source of information was Marcie Strauss.

11 A Yes, sir.

12 Q Do you see that, sir?

13 A Yes, sir.

14 Q Now, this John Workman is included on this
15 exhibit entitled, "Cancer Deaths of Workers Exposed to TCDD
16 Omitted from Table 10 Zack-Gaffey Report;" correct?

17 A Yes, sir.

18 Q And it is a fact, is it not, that according to
19 this exhibit, which was shown to you a couple a days ago,
20 a few days ago, that the source of that information was Mar-
21 cie Strauss; is that right?

22 A Yes, sir.

23 Q You have -- Do you have Plaintiff's Exhibit 1463?
24 Thank you. Let me hand you what's been previously marked

1 as Plaintiff's Exhibit 1463. Do you remember that document,
2 sir?

3 A Yes, sir.

4 Q Mr. Carr went through it with you, or went
5 through portions of it with you, did he not?

6 A Yes, sir.

7 Q And he asked you specifically about a certain
8 page which is page four of four, and Attachment II, Roman
9 Numeral II. Do you remember that, sir?

10 A Where was that, sir? I don't remember it.

11 Q Page four of four, Attachment II.

12 A Yes.

13 Q All right. Under there he asked you about the
14 entry for a Mr. John Workman, did he not, sir?

15 A Yes, sir.

16 Q And this is the same John Workman for which
17 Strauss is listed as the source of information?

18 A Yes, sir.

19 Q And there is a portion of this record here,
20 there's some writing on this document that's in evidence
21 which Mr. Carr did not ask you to read to the jury. Do
22 you remember that?

23 A Yes, sir.

24 Q Would you read it to the jury --

1 MR. CARR: Would you identify whose writing it
2 is, because this is a work of Strauss, unless this is
3 Strauss' handwriting on there, I'll object to it.

4 THE HEINEMAN: The document is in evidence, Mr.
5 Carr.

6 MR. CARR: Then I withdraw the objection. But
7 I would ask that you identify whose writing it is, Counsel.

8 MR. HEINEMAN: I don't know whether this
9 witness knows whose writing it is.

10 Q (By Mr. Heineman) Do you know whose writing
11 that is there, sir?

12 A No, sir.

13 Q You don't know one way or the other?

14 A No.

15 Q It might be Marcie Strauss, it might not be?

16 A Yes, sir.

17 MR. CARR: I object to that. That's pure
18 speculation. I ask the jury be instructed to disregard it.

19 THE COURT: Objection is sustained, the jury
20 is ordered to disregard it.

21 Q (By Mr. Heineman) Now would you read that
22 statement to the jury, please.

23 A "He shouldn't be counted as exposed because
24 information came from the medical records, not the work

1 history."

2 Q All right. It says he shouldn't be counted as
3 exposed because the information came from the medical
4 records, not the work history; correct?

5 A Yes, sir.

6 Q Now, the Zack-Gaffey Study, sir, was based upon
7 work histories, was it not?

8 A Yes, sir.

9 Q And it was the people whose work histories
10 demonstrated their exposure to the process of manufacturing
11 2,4,5-T and TCP that were included?

12 A Yes, sir.

13 Q So that, in this document that's in evidence,
14 the typewritten portion has John Workman listed?

15 A Yes, sir.

16 Q The handwritten portion says he should not be
17 included?

18 A Yes, sir.

19 Q Now, sir -- before I get to that. Let me ask
20 you this, Dr. Roush, if you have two separate studies, and
21 statistically one study does not reveal a certain abnormality,
22 and statistically the other study does not stress that
23 particular abnormality, even though both are looked for, if
1 you put the two together, what would you expect to find?

1 A Since you're adding constant ratios, a certain
2 percentage in one study has cancer and a certain percentage
3 of the other that have cancer, the percentages will come
4 out to be about the same, and relate to the two of them.
5 It won't be strikingly different?

6 Q So that if you put the sets of figures together
7 properly by adding the total populations studied in each,
8 that you shouldn't find enormous changes from one to the
9 other, should you?

10 A No. As a matter of fact, it would be someplace
11 inbetween.

12 Q It would be inbetween the finding of one and
13 the finding of the other?

14 A That's right.

15 Q It's like taking five and four, putting them
16 together to make nine, divide it by two and you get four
17 and a half?

18 A Yes. The only problem is that the populations
19 are not equal size, so they have to be weighted.

20 Q All right. So that in an epidemiological study,
21 the populations have to be weighted according to size,
22 according to age?

23 A Yes, sir.

24 Q Those kinds of corrections have to be made.

1 According to date of death as well. But when you do all
2 of those calculations according to the Monson Program, then
3 what comes out is something that's a hybrid of the two?

4 A That's right.

5 Q But it's not going to be outlandishly greater
6 than either one, is it?

7 A Right. The only thing that will happen then is
8 the significance of it will be related now to the new
9 larger denominator, so the significance will change because
10 of the larger number in the denominator. That's the reason
11 the denominator is so important. It's the reason you can't
12 just take part of it and add it.

13 Q So the larger denominator may create something
14 that is statistically significant that wasn't before?

15 A That's right.

16 Q And it may create something not to be statistical-
17 ly significant that was before?

18 A Yes, sir.

19 Q So the larger numbers change statistically,
20 the findings of each one separately?

21 A That's right.

22 Q But not greatly?

23 A No. No. It depends on how far they're apart,
4 because a larger one will tend to make the numbers come up

1 closer to the larger one.

2 Q All right. But it's not going to be outside
3 the range of either one?

4 A No, sir.

5 Q It's going to be somewhere inbetween them?

6 A Right.

7 Q Now, sir, do you have Exhibit 1483 there?
8 I'm sorry, here it is right here. Exhibit 1483 is in
9 evidence there, sir, is it not?

10 A What do you mean in evidence?

11 Q Well, it has been admitted into evidence, has it
12 not?

13 THE COURT: I think it has.

14 Q (By Mr. Heineman) You may not know that, Dr.
15 Roush, but I think it has occurred. Now I'd like to direct
16 your attention to page 39, I think it is, of that exxhbit.

17 THE COURT: It has been admitted into evidence.

18 MR. HEINEMAN: Thank you, Judge. Would you
19 mark that please.

20
21 (Defendant Monsanto Exhibit 912 was marked
22 for identification by the court reporter.)
23

24 Q (By Mr. Heineman) Sir, let me hand you what's

1 been marked for identification purposes as Defendant's
2 Exhibit Number 912. Is that an accurate copy of page 30 of
3 Exhibit 1483?

4 A Yes, sir.

5 MR. HEINEMAN: Your Honor, may I pass copies of
6 Exhibit 912 to the jury?

7 THE COURT: Yes, you may.

8 MR. CARR: No objection, your Honor.

9 Q (By Mr. Heineman) Now do you remember, sir,
10 Mr. Carr discussing with you the subject of the relationship
11 statistically between 2,4,5,-T exposure and the extent to
12 which PAB caused bladder cancer in the Nitro population?

13 A Yes, sir.

14 Q Do you remember that, sir?

15 A Yes, sir.

16 Q Now there was no doubt, was there, sir, that
17 Monsanto was aware that exposure to PAB, which stands for --

18 A Para-aminobiphenyl.

19 Q Para-aminobiphenyl?

20 A Right.

21 Q That had been manufactured at the Nitro Plant
22 up until like 1955?

23 A Yes, sir.

24 Q Was found to be a bladder carcinogen, and was no 66

1 longer manufactured after that date.

2 A Yes, sir.

3 Q And Monsanto instituted a program of monitoring
4 those people that had been exposed to PAB?

5 A Yes, sir.

6 Q And indeed some of those people were included
7 in the Nitro Morbidity Study?

8 A Yes, sir.

9 Q And some of the findings with respect to them
10 were set out here in Exhibit 9 -- what is it -- 912?

11 A 912.

12 Q 912. Is that right, sir?

13 A Yes, sir.

14 Q Now, Mr. Carr suggested to you, did he not --
15 well, first of all, when you look at the people that were
16 exposed here, those across the top, those words across the
17 top refer to exposure to 2,4,5-T; correct?

18 A Yes, sir.

19 Q So that the column on the left are those who
20 were not exposed to 2,4,5-T and the middle column is those
21 who were, and the right-hand column is those with question-
22 able exposure to 2,4,5-T; correct?

23 A Yes, sir.

24 Q And then those who had been exposed to para-

1 aminobiphenyl are distributed among those three columns;
2 correct?

3 A Yes, sir.

4 Q And those among the persons that had exposure
5 to para-aminobiphenyl who had bladder tumors, or bladder
6 cancer, those are also distributed among those columns;
7 correct?

8 A Yes, sir.

9 Q So that -- and these are by history rather than
10 examination, according to this document?

11 A It had to be by history.

12 Q I'm sorry?

13 A It had to be by history and not by examination.

14 Q All right. So what is the difference between a
15 bladder tumor and a bladder cancer?

16 A A tumor is any cancer or both growths that can
17 happen anyplace in the body, and the difference between a
18 tumor and a cancer is the tumor is a benign tumor by this
19 definition, and because they're separated the bladder cancer
20 is one that's a malignancy. One is a growth and the other
21 one is a growth that's a malignancy.

22 Q What this was was differentiating between the
23 two?

24 A Yes.

1 Q Those which were benign tumors and those which
2 were malignant cancers?

3 A Yes, sir.

4 Q All right. Now, Mr. Carr, when questioning
5 you, showed you these percent numbers. Do you remember
6 that, sir?

7 A Yes, sir.

8 Q And he said that the .61 percent was less than
9 one percent; correct?

10 A Yes, sir.

11 Q On the bladder tumors and bladder cancers?

12 A Yes, sir.

13 Q But the 3.43 percent for the bladder tumors was
14 many times larger than the .61. I think he said it was
15 seven times larger; correct?

16 A Six times larger.

17 Q And that would be accurate if you looked just
18 at those percentage numbers, wouldn't it, sir?

19 A Yes, sir.

20 Q And he relied on those numbers to lead to the
21 conclusion that those who were exposed had more bladder
22 tumors, those were exposed to 2,4,5-T and para-aminobiphenyl
23 had more bladder tumors than those who were exposed only to
24 para-aminobiphenyl and not the 2,4,5-T; correct?

1 A Yes, sir.

2 Q But as a matter of fact, Doctor, those percentages
3 that are being looked at there are the percentages that
4 those numbers bear to the little 'n' up here, isn't that
5 right?

6 A Yes, sir.

7 Q Okay. Now that little 'n' number up there
8 refers to the total number of people exposed, or the total
9 number of people unexposed in the Suskind Morbidity Study,
10 doesn't it?

11 A Yes, sir.

12 Q Doesn't refer to the number of people exposed
13 to para-aminobiphenyl, does it?

14 A No, sir.

15 Q So those numbers are not percentages of 8, or
16 71, or 16, they're percentages of 163, 204 and 51?

17 A Yes, sir.

18 Q Aren't they?

19 A Yes, sir.

20 Q So that if you want to look, sir, at how many
21 people actually got bladder tumors or bladder cancer, of
22 those who were exposed to para-aminobiphenyl, as compared
23 to those that were exposed of those which ones also had
24 exposure to 2,4,5-T, you just look at the numbers that are

1 at the top of those columns, don't you?

2 A Yes, sir.

3 Q So that of those who were not exposed to 2,4,5-T
4 eight had para-aminobiphenyl exposure; right?

5 A Yes, sir.

6 Q And of those, two had either a tumor or cancer;
7 correct?

8 A Yes, sir.

9 Q So that would be two out of eight, or 25 percent;
10 correct, sir?

11 A Yes, sir.

12 Q So that the rate of those who were exposed to
13 both para-aminobiphenyl and 2,4,5-T that got one of these
14 cancers or tumors was 25 percent? Excuse me, I did that
15 wrong, didn't I?

16 A Yes, you did.

17 Q It's the other way around. The rate of those
18 who were exposed only to para-aminobiphenyl and not exposed
19 to 2,4,5-T is 25 percent; correct?

20 A Yes, sir.

21 Q Well, let's look at the next column. Those
22 who were exposed to both is 71; correct?

23 A Yes, sir.

24 Q And of those 9 people had either a tumor or a

1 cancer of the bladder; correct?

2 A Yes, sir.

3 Q And it's 9 out of 71, or about twelve and a
4 half percent?

5 A That's right.

6 Q Correct?

7 A Yes, sir

8 Q So that there is less bladder cancer among the
9 people who were also exposed to 2,4,5-T than there is among
10 the people who are only exposed to para-aminobiphenyl; correct?

11 A Yes, sir.

12 Q And, indeed, those with questionable exposure
13 are two out of 16, one out of 8, about twelve and a half
14 percent again?

15 A Yes, sir.

16 Q And there as well, there's less people who
17 have questionable exposure to 2,4,5-T and para-aminobiphenyl
18 exposure than those who have exposure to para-aminobiphenyl
19 alone?

20 A Yes, sir.

21 Q Correct? As a matter of fact, this document
22 proves just the opposite of what Mr. Carr asked you about
23 doesn't it, sir?

24 A Yes, sir.

1 Q If there were any conclusion to be raised from
2 this table along, it would be --

3 MR. CARR: Your Honor, I object to that.

4 Q (by Mr. Heineman) -- it would be that dioxin
5 protects you.

6 THE COURT: An objection is being made, I believe.

7 MR. CARR: I do object to the leading cross
8 examination form of the question. I ask that the witness
9 make conclusions rather than Counsel.

10 THE COURT: Objection is sustained.

11 MR. HEINEMAN: This would be a good time, Judge,
12 if you want to break for lunch.

13 THE COURT: Fine. I believe we're breaking for
14 the day.

15 MR. HEINEMAN: I beg your pardon?

16 THE COURT: This is it for the day, I believe.

17 MR. HEINEMAN: Oh, that's right. Okay.

18 THE COURT: Okay. Ladies and gentlemen, we will
19 break for the day at this point in time, as I told you
20 before we were going to do. We'll start again tomorrow
21 morning at 9:00. I would remind you that you're not to
22 read, listen to or watch anything about this case, in
23 particular, or subject matter in general in any of the media.
24 We'll see you tomorrow morning at nine. Thank you for your

1 attention and cooperation. Court is adjourned.

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3 (Court adjourned.)
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