

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

3 FRANCES E. KEMNER, et. al.)
)
4 Plaintiffs,)
)
5 VS.) NO: 80-L-970
)
6 MONSANTO COMPANY,)
)
7 Defendant.)

8
9
10 REPORT OF PROCEEDINGS

11 Before the HON. RICHARD P. GOLDENHERSH

12 JURY TRIAL

13 February 13, 1986

14
15 APPEARANCES:

16 Mr. Rex Carr
17 Mr. Jerome Seigfreid
 On Behalf of the Plaintiffs;

18 Mr. Kenneth Heineman
19 Mr. Joseph Nassif
 On Behalf of the Defendant.

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23 Debra M. Musielak, CSR, CM
24 Official Court Reporter

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EXHIBITS SUBMITTED ON BEHALF OF THE DEFENDANT

Defendant's Exhibit No.:

62		71
1694		9
1700	(1950 report) 10	22
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1 BE IT REMEMBERED, that on the 13th day of November,
2 1986, the same being one of the regular judicial days of said
3 court, the above-styled cause came on regularly for hearing
4 before the HONORABLE RICHARD P. GOLDENHERSH, one of the
5 Judges at the St. Clair County Building, 10 Public Square, in
6 the City of Belleville, County of St. Clair, State of
7 Illinois. Whereupon the following proceedings were had:

8 COURT CONVENED:

9 (The following proceedings were had in Chambers, outside the
10 presence of the jury.)

11 MR. NASSIF: Judge, you sustained Mr. Carr's motion
12 regarding the suspension of trial on the 20th and 21st so Dr.
13 Suskind could attend a Lawrence Livermore Conference and
14 asked that that be -- you commented that you would maintain
15 that sustaining of that motion until we got back to you with
16 some additional information.

17 THE COURT: No, I said on the basis of what I'd
18 been told and what I had -- on the basis of that information
19 I was ruling, I was sustaining the objection.

20 MR. NASSIF: I have some more information we'd like
21 to tell the Court.

22 THE COURT: Fine. I'd like to hear it.

23 MR. NASSIF: The Lawrence Livermore problem is a
24 very serious skin melanoma that they have -- which is

1 potentially life threatening, not --

2 THE COURT: I know melanoma is, and you told me
3 that in the original argument.

4 MR. NASSIF: Okay. What they have done, they
5 initiated their first meeting was in August of '85. They
6 began preparing a protocol for an investigation as to what
7 the disease agent is out there. Dr. Suskind is the only
8 occupational environmental investigator on the committee, and
9 they do weapons research out there, and the Defense
10 Department is very interested in determining what is going on
11 with the employees, and this meeting is to plan for the next
12 six months, they met in August, they are meeting in February,
13 is to plan for the next six months' investigation to define
14 what they are going to do to the next meeting, the next
15 protocol is reviewed.

16 Dr. Suskind advised us at the time that we asked to
17 postpone his testimony from October, November, because of the
18 delay in the trial due to Mrs. Melton's injury, or illness,
19 advised us that he had to make this meeting, and we committed
20 to him that he could make this meeting.

21 THE COURT: Well, let me tell you what the problem
22 is with your entire position. You've come in here -- here is
23 the problem. You've come in here with a witness who
24 obviously you consider important. You've gone to some great

1 lengths to get him here. And, you say now he's available
2 these days, these days, he has to be gone these two days,
3 he's available three more days, then he has to be gone three
4 more days, then he's available two days, or something like
5 this, and then he's gone. Period.

6 MR. NASSIF: We have gotten some additional days
7 from him --

8 THE COURT: Wait a second. In breaking everything
9 up, number one -- and, see, every other witness that's been
10 put on in this trial, even if they have had to be
11 interrupted, and some of yours have and some of the
12 Plaintiffs' have, have been here on a commitment that they
13 are going to start here and they are going to finish here.
14 Dr. Dost left for whatever he had to do with the legislature
15 out in Oregon. He came back. He stayed until he finished.
16 Dr. Carnow went up for something up in Chicago, I don't
17 remember exactly what it was, and something in Washington, he
18 came back and both times he stayed until he finished.

19 You are basically telling me with this witness that
20 we are going to have him here for X amount of days. We are
21 going to break it up with the equivalent of a week's worth of
22 recess, and then he's not going to be here any more, and that
23 is completely unacceptable. It is an arrogant position to
24 take. You are here to continue this trial. When you start a

1 witness you have to make the commitment to finish that
2 witness whether that witness is going to take three days,
3 which is a rarity in this case, or 30 days. And that is not
4 acceptable to me. That is absolutely not acceptable. That
5 is not -- you don't put together a trial and the presentation
6 of evidence in this trial like a jigsaw puzzle. You put it
7 together with a commitment to finish what you start, put it
8 together with a logical sequence of organization and not
9 busting things up five different times. You do it in a
10 manner that is professional like that and that encourages the
11 understanding by the jury of what is being presented.

12 What you've presented to me is saying basically by
13 the good graces of this witness, he's going to be available
14 for X amount of days, broken up like this, and you've got to
15 accommodate to it, and that is not the way a trial is going
16 to be run. That is not the way that evidence is put before a
17 jury in the truth-seeking process. That is not the logical
18 and reasonable way to run the trial. It runs counter to any
19 experienced way to run the trial, runs counter to the
20 admonitions of the Appellate Court in Lowe in the logical and
21 systematic presentation of the evidence in this trial. And
22 I'm not going to allow it.

23 Now, we have everybody here. If you want to
24 continue this discussion, we can continue it later. But, the

1 knock on the door by the Bailiff indicated that all the
2 jurors are here and we are going to resume testimony at this
3 time.

4 MR. NASSIF: We'd like to continue the discussion.

5 THE COURT: Fine. I'll allow you to continue it
6 after court.

7 MR. NASSIF: Tonight.

8 THE COURT: Tonight.

9 MR. NASSIF: Fine. Thank you.

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

11 THE COURT: Good morning.

12

13 RAYMOND SUSKIND

14 (being called as a witness on behalf of the Defendant, having
15 been previously sworn, having resumed the stand, continued to
16 testify as follows)

17 DIRECT EXAMINATION

18 BY MR. KENNETH HEINEMAN

19 Q. Dr. Suskind, when we recessed Monday, we were
20 discussing the 1949 report with respect to the examinations
21 you did at that time, sir. And, in connection with that
22 examination, could you tell us what the laboratory test
23 results showed on these four individuals?

24 A. Laboratory tests on the four patients who were

1 hospitalized in Cincinnati demonstrated that with respect to
2 their blood counts and blood cells, they were all normal.

3 MR. CARR: Your Honor, is that in an exhibit,
4 Counsel, that he's reading from?

5 MR. HEINEMAN: Oh, yes?

6 A. 1694.

7 MR. CARR: Thank you.

8 THE COURT: Go ahead.

9 Q. (by Mr. Heineman) Go ahead, sir.

10 A. May I proceed? The findings on urinalysis were
11 essentially normal. Insofar as the blood chemistry analyses
12 were concerned, we found that in at least three out of the
13 four there were elevated total blood lipids or total blood
14 fat. We did not find any abnormalities in their bilirubin or
15 BUN, which is an analysis which reflects kidney function or
16 elevation in blood sugar. We did find, however, that they
17 had a decrease in prothrombin concentration. Prothrombin is
18 a factor in the blood which reflects liver function and in
19 this instance, the prothrombin time was markedly decreased
20 reflecting an alteration in liver function which we suspected
21 because of the fact that two out of the four, and possibly
22 even three out of the four we examined had enlarged tender
23 livers.

24 Their basal metabolic rates were essentially within

1 normal limits. We did notice that their urinary excretion of
2 organic sulfates, inorganic sulfates as well were elevated
3 and that simply reflected a -- the fact that they were
4 detoxifying phenolic components.

5 Q. Thank you, sir. With respect to the summary of
6 what you found on these four people, what were the -- how
7 would you summarize the acute condition of these men?

8 A. Well, it was our opinion that these men were
9 suffering from an intoxication characterized by chloracne,
10 skin lesions, disturbed liver function or hepatitis and
11 disturbed lipid metabolism as well as a peripheral
12 neuropathy, and we also thought at the time because of their
13 -- the complaints of irritability and nervousness, that there
14 might be a central nervous system involvement as well.

15 Q. And, Doctor, their hospitalizations, sir, how did
16 their conditions progress?

17 A. Their skin condition improved significantly during
18 their hospitalization with treatment to their skin as well as
19 vitamins and diet. And we felt that this improvement would
20 be expected to continue under good hygienic care, and if they
21 were kept free of any irritant chemical atmospheres.

22 Q. And, with respect to the symptoms that they had,
23 was there any change in those while they were in the
24 hospital?

1 A. Yes, there was. As a matter of fact, their
2 neuritis in the case of all of them improved significantly.

3 Q. Now, with respect to these four men, did you at
4 that time have a prognosis as to their conditions?

5 A. Well, we felt that because they improved so
6 significantly during their hospitalization, that the
7 prognosis was extremely good, and if they were, if they
8 received adequate therapy as well as remaining free from any
9 chemical insult from there on.

10 MR. HEINEMAN: Your Honor, at this time we would
11 move admission of Defendant's Exhibit 1694, which I believe
12 was marked and identified by the witness on Monday.

13 MR. CARR: We have no objection to it, Your Honor.

14 THE COURT: It's admitted without objection.

15 Q. (by Mr. Heineman) Now, Dr. Suskind, did you have
16 occasion to do any follow-up with respect to these
17 individuals?

18 A. Yes, we did.

19 Q. And, I'm sorry, when did that occur?

20 A. About six months afterwards, in April of 1950.

21 Q. All right, sir. If I may get this marked. Let you
22 hand you, sir, what's been marked as Defendant's Exhibit No.
23 1700.

24 MR. CARR: Thank you.

1 Q. And ask you to examine that and identify it for us,
2 please.

3 A. This is a replica of Dr. Ash and my report of the
4 examination which we performed on six individuals at Nitro on
5 April 14th, 1950.

6 Q. And, sir, at the time of that examination, could
7 you tell us how that came about?

8 A. Well, the examination had been essentially planned
9 for, and we felt that it would be a good idea to examine the
10 same people again to see what their progress was, and in
11 addition to look at the plant operation, the environment in
12 which this problem had -- from which the problem had
13 originated. So that we did visit the plant as well as
14 examine these people.

15 Q. So this examination -- excuse me. This examination
16 was conducted at the Nitro plant?

17 A. It was conducted at the Nitro plant.

18 Q. All right, sir. Would you tell us, please, what
19 you did on that occasion?

20 A. Well, we examined clinically the four individuals
21 who we had hospitalized at the Holmes Hospital in Cincinnati
22 in October of 1949, and we also examined two additional
23 persons at the request of Monsanto who were also -- had been
24 exposed to the products of the runaway reaction in March of

1 1949.

2 Q. And what did you find, sir, when you conducted this
3 investigation?

4 A. Well, if I may go over some of the individual
5 findings to demonstrate what we found, the pipefitter and
6 mechanic, Mr. McClanahan indicated that he was feeling very
7 much improved. He gained 20 pounds and was back at work
8 actually and the pains in the legs and the other muscle areas
9 had subsided and he felt that he was in good physical
10 condition. His loss of libido, or his decreased libido had
11 disappeared and his marital sex life, he indicated, was
12 normal. He expressed some concern that the symptoms and the
13 problem might return, but we assured him that if he was
14 improving he would probably continue to improve.

15 And we did find on physical examination that his
16 skin was markedly improved. He was probably, as we have
17 demonstrated, he was probably the most severely affected of
18 the four with respect to chloracne. And, his skin condition
19 had improved markedly. There were a few cysts and comedones
20 on the face and ears, but, there was a noteable decrease of
21 all the lesions on the back. And over the rest of the body
22 such as the upper extremities and the buttocks where there
23 were numerous lesions before, he had only a few
24 hyperpigmented residuals or scars, really, of the former

1 lesions.

2 We did find, however, that he had -- his liver was
3 still palpable and slightly tender. And, in summary, on
4 physical examination of this man, we felt he was markedly
5 improved and his prognosis was excellent.

6 The chief chemical operator, Mr. Willard had
7 attempted to go back to work, but, he indicated that his acne
8 flared so he quit the job and he hadn't worked since November
9 of the previous year. He did admit, however, and on
10 examination we did find his skin was very much improved, his
11 face was almost completely healed, and there was considerable
12 decrease in lesions on his neck and back although he did have
13 some lesions on the abdomen and the buttocks. He indicated
14 that he didn't have any recurrence or any pains in the legs
15 which he had previously complained about, but he gets an
16 occasional aching in the right calf, but no other
17 discomfort.

18 He did complain of some discomfort in his chest,
19 and, some substernal aching, which usually he said came on
20 exertion.

21 He, too, also gained weight since the last
22 examination. He gained about eight pounds.

23 He admitted quite freely to us -- admitted quite
24 freely to us that he didn't want to return to work and he was

1 avoiding work as long as he could. There was unpleasantness
2 at home. He refused to do any other work because he was
3 afraid that somebody might see him. And he indicated he
4 spent most of his time in bed or in the pool hall.

5 Did complain of some burning sensation in the eyes
6 and he visited his doctor for that once or twice a week. He
7 complained of a cough and also occasional attacks of asthma,
8 which was not verified.

9 On examination, again, we found marked improvement
10 on his face and cheek. They were healed, except for a very
11 few cysts and an occasional nodule. His liver, however, was
12 still palpable, but not tender. And we felt that this man
13 also, like Mr. McClanahan, had improved markedly and that he
14 was essentially prolonging his disability unduly and we felt
15 he was capable of returning to work as was Mr. McClanahan.

16 Mr. Steele did not return to work since that
17 initial examination and he continued to have soreness in his
18 -- on his right side. And, pains, especially on walking. He
19 also claimed that continuous standing resulted in aching and
20 in the muscles in the lower leg. He complained of soreness
21 in his eyes, but there were no symptoms referable to
22 cardiovascular or urinary, genitourinary systems. He also
23 indicated that his sex life had actually returned to normal.
24 Also that the pains in the shoulder and the nervousness and

1 loss of sleep, insomnia, had persisted until the end of
2 March, but was at that time when we examined him was no
3 longer present.

4 This man, however, had admitted to doing occasional
5 jobs outside of the plant, and he apparently could tolerate
6 these jobs.

7 On examination we also found that he was improved,
8 and there were very few residual cysts on his face. This was
9 Mr. Steele, and you see here he had a very large number of
10 comedones and cysts on his face and by April of the following
11 year, six months afterwards, with good treatment, these had
12 healed. So that is the chloracne had improved
13 significantly.

14 He had an erythematous rash involving the
15 follicles on the shoulder and the upper arms and there were
16 a few cysts and nodules on the back and the neck and the
17 genitalia.

18 Q. Excuse me, sir, what is an erythematous rash?

19 A. It's redness. I'm sorry. It's a red rash. We
20 felt that this man's symptom complex, his chloracne as well
21 as his other symptoms were subsiding, except that he still
22 had evidence of liver dysfunction, at least by physical
23 examination. But, we didn't see why Mr. Steele could not
24 return to work with the amount of physical improvement that

1 he had made.

2 The last of the four was Mr. Hurley, who returned
3 to work in March of that year, as an assistant operator and
4 he also indicated that his condition, both skin and systemic
5 complaints had improved. The face lesions and the lesions on
6 the trunk had cleared almost completely, except he complained
7 of swelling of the eyelids. He also noticed that his
8 nervousness, which he complained about previously, had
9 subsided and he had complained, as you may remember
10 originally of pains in the lower legs and he was the man who
11 did the biopsy on and found some peripheral nerve
12 abnormalities. And he indicated, however, that the pains in
13 his legs and feet had improved. However, they do occur after
14 a day's work. He's being treated, or he was being treated
15 for his eyelid swelling.

16 He indicated that he might have some shortness of
17 breath, but this improved in the last month before we
18 examined him, and he also told us that his appetite was very
19 good, and he had no problems with his gastrointestinal tract
20 or his urinary tract. And on physical examination these
21 things were borne out. His skin was much improved. And,
22 there were a few active nodules in the groin, and on the
23 thigh, and we did notice the redness and swelling around his
24 eyes.

1 We were not able to detect any liver enlargement on
2 the examination in this man. So that in his case as well, we
3 felt that the symptom complex, skin and systemic
4 manifestations were subsiding. The peripheral neuropathy,
5 that is the pains still persisted, but at a much lower order,
6 and he did have some swelling of the eyelids. However, we
7 felt, too, that his prognosis was good.

8 The two others we examined, one was a head operator
9 in that building where the accident was, and not -- had not
10 been seen by us before, and he returned to the building on
11 the evening of that accident in order to clean out that
12 autoclave where the trichlorophenol was being made and he did
13 that with caustic and water. And he found that about four
14 days later, he thought he saw cysts and comedones all over
15 the face and body, not sure this was accurate, because it's a
16 little short for the development of chloracne. Usually takes
17 longer than that to develop chloracne, but this is what he
18 believed occurred. He was given a leave for one week, while
19 the building was being cleaned up, then returned to work and
20 then within a month because of his skin condition he was sent
21 off work and he remained off for about four months. And
22 during that time, during the time he remained off work, he
23 developed peripheral neuritis and pains in the ankles and
24 legs and shoulders. And he then returned to work and worked

1 for about five months after that, developed a severe
2 conjunctivitis, and had not worked since January of 1950, or
3 didn't work since January of 1950.

4 He'd been treated with x-ray following the
5 observance of the skin lesions and after he was treated with
6 the x-ray, his skin became pigmented. His skin became
7 greyish brown, and remained that way for about a year, after
8 which it lightened up. He was really terribly concerned
9 about that hyperpigmentation and because of it, he became a
10 little bit of a recluse and he gave up his social activities
11 and his athletic functions and he remained in the house and
12 when we saw him, he did have a deep greyish brown
13 pigmentation of the skin and face, which we will believe was
14 the result of not just the exposure to the chemical agent,
15 but also the exposure to x-ray and perhaps even sunlight.

16 His summary, his symptoms included a
17 conjunctivitis, or a problem with his eyelids and severe
18 pigmentation. Did complain about loss of libido and
19 impotence for six months. And, he also indicated that there
20 was some shortness of breath.

21 When we interviewed him, we felt that this rather
22 handsome man had an emotional problem which was related
23 probably to the fact that he was concerned about his skin and
24 his illness. And we examined him, as I say, we did find that

1 he had a greyish brown pigmentation of the skin, limited to
2 the face and the neck where he was treated and there were
3 some cysts on the face and the forehead, but they weren't
4 red. And, he had a rather interesting -- I think I mentioned
5 that chloracne does produce a thickening of the skin in some
6 people. So that if you rub your hands over the skin, it
7 feels like sandpaper. The follicles, hair follicles become
8 spiny and that's called phrynoderma, which I believe we use
9 in our report. And this man had characteristics of that
10 thickening of the skin as well as the chloracne. This spiny
11 lesions on the skin we call follicular hyperkeratosis or the
12 thickening of the keratin layer around the hair follicles.
13 And he had that not only on his face, but he had it elsewhere
14 in the exposed skin. We found that his liver was palpable.

15 And the rest of his examination was within normal
16 limits. We felt that he demonstrated the symptom complex
17 which the others had exhibited, except that he needed
18 additional time and treatment for improvement. And we made
19 some recommendations with respect to treatment of this
20 person, which hopefully was carried out.

21 The fifth individual or the second individual we
22 did not see previously was a man named Lane. He was a
23 pipefitter, and he developed his acne, he claimed, started
24 about two weeks after the accident. And, it started around

1 the face and the lips and spread to the neck. And later the
2 shoulders became involved and other areas of the body.

3 Thirty days after that, after the onset of his
4 chloracne, he developed peripheral neuritis, pains in the
5 legs and the knees and calves and heels and he -- it became
6 so severe that he was unable to work. And he also complained
7 of insomnia, and wheezing, and a cough which lasted for about
8 nine months. In this person, there was no weight loss like
9 there was among several of the first four that we saw, but,
10 he said that his appetite had remained good. He indicated,
11 however, that there was loss of sexual activity for a period
12 of about nine months, but this had improved and was normal at
13 the time that we examined him.

14 At the time of the examination he still -- he said
15 he still had some aches and pains in the legs at night and
16 nervousness. He indicated, frankly, he felt he had been ill,
17 at the onset, but improved markedly. When we examined him,
18 we also found numerous comedones or blackheads and cysts on
19 the face, neck, shoulders, upper arms and back and there were
20 a few inflamed nodules on the back like the others and some
21 thickening of the skin and hyperpigmentation about the face
22 like Mr. Young, the man I described previously. Had a mild
23 conjunctivitis when we examined him or involvement of the
24 lids. And, everything else appeared to be normal and we felt

1 that this man had the same skin problem and systemic problem
2 that the others had had, and was also improving. Those are
3 the findings.

4 We did some laboratory studies as well. Would you
5 like me to go into them?

6 Q. Would you please.

7 A. In almost all of the -- of the persons we examined,
8 and we did a -- we did laboratory studies on three others, we
9 found that their prothrombin time was increased, indicated
10 persistence of liver dysfunction. Their flocculation results
11 were within normal limits. There was again an indication in
12 about seven of the persons on whom we did laboratory tests
13 that their total lipids were increased. All of the other
14 laboratory parameters appeared to be within normal limits.

15 Q. In summary, Doctor, what was your diagnosis with
16 respect to these men on this occasion and your prognosis as
17 to their condition?

18 A. Well, as I indicated, with respect to the 1949
19 examination, that the people we examined were suffering from
20 an intoxication which affected there -- which affected their
21 skin, central nervous system. We felt that their complaints
22 of nervousness were an indication of it. Peripheral
23 neuritis, liver dysfunction and an effect on their sex life,
24 which might be the result of an effect on their endocrine

1 system. They uniformly had problems or a disturbance in
2 lipid metabolism or fat metabolism, and of course the most
3 obvious symptoms that they had and most obvious findings were
4 the chloracne. Some of them, or few of them, some
5 respiratory problems which was limited to dyspnea and
6 wheezing. The neurological problems were limited largely to
7 pain and weakness, but, in the case of the four that we had
8 seen previously, and the two additional ones, all of these
9 manifestations were improving significantly. And I think our
10 report reflects that in which Dr. Ash and I stated that all
11 of the patients are markedly improved, and that there are no
12 findings in any of those who were examined during our last
13 visit which contraindicates returning to their former
14 duties.

15 We did feel that the had operator, Mr. Young,
16 required some special attention because of his emotional
17 problems which were apparently related to that -- to the
18 effects of the intoxication.

19 Q. That was the man that had the severe --

20 A. Hyperpigmentation and phrynoderma.

21 Q. Now, with respect to all six of these men, Dr.
22 Suskind, what was the first thing that happened to them?
23 What was the first condition that they got?

24 A. Well, the first thing that happened to some of

1 them, when they went in to clean out the building where the
2 accident occurred, was that they developed what I would
3 regard as the acute symptoms or the very acute symptoms of
4 initial exposure to trichlorophenol synthesis accident and
5 that is respiratory irritation, skin irritation,
6 gastrointestinal irritation, headache, nausea, so on, which
7 subsided as soon as they got out or subsequently to their
8 getting out. But, the first manifestation of the exposure to
9 the toxic agent which caused or was associated with the
10 symptom complex, the first manifestation was chloracne. And
11 all of them told us the same story. So they got the
12 chloracne before --

13 A. Before they developed any complaints of pains and
14 aches in the skeletal muscles, or dyspnea or shortness of
15 breath, or loss of libido, changes in their sexual
16 interests.

17 MR. HEINEMAN: Now, Your Honor, at this time we
18 would move the admission of Defendant's Exhibit 1700.

19 MR. CARR: We have no objection.

20 THE COURT: It's admitted without objection.

21 Q. (by Mr. Heineman) Now, Dr. Suskind, did there come
22 an occasion for an additional examination of the people at
23 Nitro?

24 A. Yes, there was an additional examination.

1 Q. All right. And what gave rise to that examination
2 and when did it occur?

3 A. It occurred in 1953, in April of 1953. Before that
4 time, shortly before that time, we were in communication with
5 Dr. Emmett Kelly the then medical director of Monsanto. And,
6 we agreed that it would be a good idea to get into the plant
7 and examine a larger number of persons, people who had been
8 exposed to the runaway reaction in March of 1949 as well as
9 those who were just exposed to the ordinary process of making
10 2,4,5-T. People who came into the employ of Monsanto some
11 time after the accident and were working in the
12 trichlorophenol process, or people who were working in the
13 synthesis of 2,4,5-T, that is the actual making of that acid
14 and the salt of the acid, which was the final product, and
15 that was carried out in another building. So that we felt
16 that it would be an appropriate thing to find out what the
17 difference was between those who were exposed to the accident
18 material, and those who were just involved in the ordinary
19 process of making 2,4,5-T.

20 Q. And how many in all did you examine on that
21 indication, sir?

22 A. We examined 36 individuals altogether. Now, we
23 also had some other objectives. And, we wanted to determine
24 the types of exposure that resulted in the development of the

1 clinical symptoms. What did these people do? They were not
2 all chemical operators, they were not all maintenance
3 people. They might have been involved in hauling. They
4 might have been involved in some maintenance. And they might
5 have had combined exposures. So we thought that it would be
6 a good idea to find out just what kinds of work they did. In
7 occupational medicine, that's an essential aspect of
8 determining why things occur and under what circumstances
9 they occur. Go into the plant and you look at the operations
10 as well as finding out from individuals what specifically
11 they were involved in from the beginning of their
12 employment. And, at the time also we felt that it was, it
13 would be appropriate to do a hygienic survey of the two
14 buildings where the manufacturing process was going on. We
15 knew that Monsanto had their own hygienists and their own
16 engineers to look into these matters, but we felt that it
17 would be a reasonably good idea for us to do it. And, we
18 certainly had the expertise and the qualifications, so that
19 two qualified chemical engineers went in and did a hygienic
20 survey of the two buildings. And, the purpose of their visit
21 was to find out what the conditions of the environment were
22 and to recommend possible alterations which may be made to
23 improve the hygienic conditions.

24 Q. Now, on the occasion of this particular incident,

1 did you prepare a report on that as well?

2 A. Yes, we did.

3 Q. Let me hand you, sir, what's been marked as
4 Defendant's Exhibit 1701 and ask you to examine that and
5 identify it for me, please.

6 A. This appears to be a replica, exact replica of the
7 report which was submitted on a clinical and environmental
8 survey of the Monsanto Chemical Company plant in Nitro,
9 West Virginia, which a report which we carried out in April
10 of 1953.

11 Q. All right, sir. Now, could you tell us with
12 respect to the 36 people that you saw, how many had been
13 exposed to the autoclave accident and how many were involved
14 in the production?

15 A. Well, in this group, there were ten individuals who
16 were exposed to the autoclave incident. And, the rest of the
17 group of 36 were exposed to the, either the regular
18 operations in Building 51, in which trichlorophenol was
19 manufactured, a small number in that operation, and twelve
20 were involved in the regular operations of making 2,4,5-T
21 itself. And there were a few in hauling and several in
22 maintenance, and there were about five who had combined
23 exposures of different -- in different buildings, but most of
24 them, most of these exposures had to do with the making of

1 2,4,5-T, so that essentially there were ten from the accident
2 and 26 from the regular operation of making 2,4,5-T.

3 Q. Now, when you conducted your examination of these
4 people, what was the scope of what you did?

5 A. Well, we did a -- we believed to be a thorough
6 clinical examination of all of the 36, and we did laboratory
7 studies on selected people, people that we felt were severe
8 and we were very interested to know what their laboratory
9 status was. On those individuals we did urinalysis and
10 hemograms, that is blood studies, and we did some more, for
11 instance, and prothrombin time and lipids and some liver
12 function tests as other liver function tests as well.

13 Q. Now, with respect --

14 A. We only did those if the severity of the findings
15 appeared to justify them.

16 Q. Now, what was the -- would you summarize for us,
17 please, the symptoms that were presented by this group that
18 you saw in 1953?

19 A. Well, I think it would be useful to separate the
20 persons who were exposed to the accident material from the
21 rest of that group. The ten individuals who were exposed to
22 the accident material, all of them gave histories of fairly
23 severe chloracne in the beginning. In the beginning. And,
24 among them, most of them did have other systemic

1 manifestations following the appearance of the chloracne.
2 Those who were not involved in the accident, the other 26,
3 first of all, their chloracne in general was not as severe,
4 historically or on examination than the -- those who were
5 involved in the accident, and their systemic manifestations
6 if they were indeed present, we felt were of a much lower
7 order than those involved in the runaway reaction.

8 Actually, we found that all of the -- and they were
9 chosen on that basis, all of the people who had chloracne
10 were put into that group to be examined. There was one
11 individual, however, who we felt did not have chloracne,
12 although he did complain, he had a folliculitis, which is
13 common in the workplace, it's an infection of hair follicle
14 on the back, but his skin was essentially negative. But, he
15 complained that he had aches and pains and when we really got
16 to talk with him, he sounded like a complainer. That was a
17 Mr. Kyle.

18 Q. When you say a folliculitis, what is that?

19 A. It's an inflammation of the hair follicles and it
20 occurs in machinists. It occurs in persons of restricted
21 hygiene, who don't bathe frequently or frequently enough so
22 that their -- the soilage on their clothes is a factor in the
23 follicular infections, infections of the hair follicle, and
24 that is seen very commonly in industrial populations.

1 Q. Now, with respect to the symptoms that were
2 presented, sir, these were -- were these by history?

3 A. Yes, each individual was interviewed and they were
4 interviewed by physicians, and the physicians who interviewed
5 them were myself and Dr. Davis, who was a board certified
6 occupational physician having been trained at the University
7 of Cincinnati and a Robert Akin, who was a dermatologist, and
8 we interviewed all of these people. Dr. Ash was not involved
9 in this study.

10 Q. All right. And, how did these symptoms presented
11 by history, relate to the symptoms that you had previously
12 received from the people on other examinations?

13 A. Well, they were all very similar. They were all
14 very similar, except for severity, and it was our opinion
15 that there was significant difference between the severity of
16 the onset of the symptoms as well as the -- as the severity
17 of the skin problem as well as the systemic manifestations
18 between, that is, there was a real difference between those
19 who were exposed to the accident and those who were just
20 involved in the making of 2,4,5-T.

21 Q. And to what did you attribute that difference in
22 the severity of symptoms?

23 A. We assumed, and I think it was a correct
24 assumption, that the difference was due to the fact that

1 there was an acnegenic and hepatotoxic agent, that is a liver
2 toxin, in the trichlorophenol accident, which was probably of
3 a greater concentration than the -- than in the making of
4 2,4,5-T. It was something in the trichlorophenol which maybe
5 eventually got into the 2,4,5-T and it probably did, because
6 they also had, people working 2,4,5-T, had symptoms, but,
7 those were not as severe. So that just thinking as a
8 toxicologist, the assumption would be made that the accident
9 material -- the accident-exposed individual had a heavier
10 exposure to the toxic agent.

11 Q. All right. Now, when you actually examined those
12 people, could you give us a summary of what you found?

13 A. Well, I think the first part of this summary should
14 relate to the progress that we noted, because we had examined
15 people before, and, we felt that those people whom we had
16 seen before with moderate to severe degrees of the complexion
17 characterized by acne and pains in the extremities and liver
18 dysfunction and dyspnea, nervousness, all of those people had
19 improved markedly. All of those that we had an opportunity
20 to reexamine. And we had an opportunity to reexamine all but
21 one.

22 Q. Now, had they improved from what you had seen in
23 1950?

24 A. And it was quite obvious that all of them had

1 improved significantly.

2 Q. From even what you had seen in 1950?

3 A. Absolutely.

4 Q. Okay.

5 A. And, like me to give you individual instances, I
6 can, but I think that, for example, Mr. Hurley was markedly
7 improved from even 1950. He still had some sensory loss in
8 the feet, but all of his other manifestations, all of his
9 other manifestations, the chloracne and everything else had
10 subsided.

11 In the case of Harold Young, the individual who was
12 -- had this pigment problem, which he complained about and
13 the behavioral problem, as well as a rather severe case of
14 chloracne, he had some residual lesions, just a few, but he
15 was vigorous and energetic, and he held down full time on the
16 plant, not only had a full-time job in the plant, but also
17 operated a private business with his new wife in his off
18 hours and weekends. He went into the drive-in restaurant
19 business. But, he was really doing extremely well.

20 Mr. Willard at that time in 1953, physically was
21 remarkably improved. But, he was complaining about cardiac
22 palpitations and was worried about his heart, and one of the
23 physicians indicated that he had a heart problem and there
24 was no evidence from our examination that he did have a heart

1 problem, we believed, and it's in the record that he was an
2 unstable individual who made a very important psychological
3 adjustment, and there was a serious possibility that his
4 heart disease was iatrogenic, that is he didn't have a heart
5 disease but the doctor made a diagnosis of one and that does
6 happen.

7 Q. I'm not sure I understand what iatrogenic means.

8 A. Iatrogenic means physician originated.

9 Q. Okay.

10 A. For example, if a physician prescribed a drug which
11 produced an adverse reaction in the individual, this would be
12 iatrogenic, the adverse reaction would be iatrogenic.

13 Q. Now, but you had examined -- this was Mr. Willard?

14 A. Mr. Willard, right.

15 Q. And in the opinion of the physicians in your group
16 that examined him, did he have any signs of any
17 cardiovascular problem?

18 A. There was no signs on our examination of any
19 cardiovascular problem.

20 Q. Now, with respect to the, I'm sorry, did we cover
21 the four people?

22 A. We didn't reexamine Mr. McClanahan.

23 Q. I'm sorry, did you say you did not?

24 A. No. No, he was not -- he was not available.

1 Q. With respect to all of the people from the 1949 and
2 1950 examinations, whom you saw again in 1953, what was the
3 status of their health in 1953?

4 A. Well, as I have indicated already, they were all
5 markedly improved, and even Mr. Willard who still complained
6 a good deal, when we examined him, we couldn't find anything
7 wrong with him except for some very few mild residuals of
8 chloracne.

9 Q. Now, with respect to those in addition to those
10 whom you had seen before, what -- can you give us in summary
11 form, what you found with respect to those people?

12 A. Well, again, I indicated that those who were
13 involved in the -- in the process accident, they all
14 developed chloracne. And some of them did have the systemic
15 manifestations which we found in the first four. The
16 individuals who were not exposed to the process accident, but
17 just to the normal operation of making 2,4,5-T, they had some
18 chloracne, but the complaints were never as severe as a whole
19 as those who were involved in the process accident, nor were
20 there systemic manifestations. Some of them did not have
21 systemic manifestations.

22 Q. And with respect to the liver dysfunctions that you
23 had discussed on earlier examinations, did you find any liver
24 dysfunctions in this group that you saw in 1953?

1 A. Those that we did laboratory studies on, we did not
2 find any abnormalities.

3 Q. I see.

4 THE COURT: Is this a good point for a short
5 break?

6 MR. HEINEMAN: Yes, sir.

7 THE COURT: We will take a short recess at this
8 time and then we will resume testimony. I would remind you,
9 you are not to discuss this matter among yourselves, with
10 anyone outside the jury panel or as of yet form any opinions
11 or conclusions about the matters on trial. Court is in a
12 short recess.

13 (Following a recess, these proceedings were had in open
14 court.)

15 THE COURT: Go ahead.

16 Q. (by Mr. Heineman) Dr. Suskind, did there,
17 following the 1953 examination that you conducted at Nitro,
18 West Virginia plant, did there come a time when there was a
19 mortality study done on that Nitro population in which you
20 participated?

21 A. Yes.

22 Q. All right. Can you describe for the Court and the
23 jury the events which triggered or brought about that
24 mortality study?

1 A. Yes. There were a series of events and I think
2 it's appropriate to recount them. Events which led to the
3 alerting of the scientific community and the community as a
4 whole. Alerting them to the importance of studying, studying
5 populations which had been exposed to, and by that time
6 starting in 1957, we knew that the toxic agent, or the most
7 important toxic agent in the trichlorophenol process was
8 TCDD, 2,3,7,8-tetrachlorodibenzo-para-dioxin. This was
9 discovered literally first in Germany and then published by
10 two dermatologists from Hamburg, so that they were alerted as
11 to the fact that the acnegenic agent and the toxic agent was
12 2,3,7,8-TCDD. The Viet Nam war came to pass and Agent Orange
13 had as its two major constituents 2,4-D and 2,4,5-T and the
14 2,4,5-T was a herbicide, a defoliant which might have and did
15 contain concentrations of TCDD.

16 In 1969, the interest was reestablished largely by
17 the fact that the national government had a private
18 laboratory do a study on the teratogenicity or the birth
19 defect possibilities of TCDD in rats, in animals, and it was
20 found that TCDD in rats produced birth defects. That was
21 '69. In '68, there was an epidemic of chloracne and some
22 systemic manifestations with it, which occurred in Japan as a
23 result of accidental ingestion, eating of rice oil that was
24 contaminated with PCB's. And I'm sure you've heard a good

1 deal about PCB's, and in this instance it was used as a heat
2 conductor in a manufacturing process making rice oil and it
3 leaked into the rice oil, and there were literally thousands
4 of persons that consumed the rice oil who were affected.
5 This was in Japan in the southern island of Kyushu and the
6 population was largely in the area around the large city in
7 Kyushu called Fukuoka. I've had an opportunity to visit that
8 area and even examine some of the people who were affected
9 many years later. This alerted the international community
10 into becoming interested in PCB's and its contaminant and its
11 contaminant happened to be the chlorinated dibenzo-furans
12 which is related to TCDD. Which is related to TCDD. Because
13 of these incidents, the National Institute of Environmental
14 Health Sciences decided in 1973 to call a National Conference
15 of Scientists including physicians on how much did we really
16 know about the toxicologic effects, the environmental effects
17 and the health effects of TCDD, and the dibenzo-furans. This
18 was held in North Carolina and I believe the paper that I
19 presented there is an exhibit, and what I talked about simply
20 was my experience with the Nitro population. And what I knew
21 about the acute and the subacute effects of making 2,4,5-T in
22 which TCDD was a contaminant. It was the only clinical paper
23 given at that time there. What was apparent is that we
24 needed to have some kind of assessment of what the state of

1 knowledge was and we tried to do it at that meeting, and it
2 was also obvious that what really needed to be done was to do
3 a lot of work, to do a lot of scientific work, analytical
4 work, as well as toxicologic and medical work. Especially
5 with respect to the populations that were known to be
6 affected by PCB's, as well as the contaminant of
7 trichlorophenol, which is TCDD.

8 A couple of years later there was another meeting,
9 and this was also in North Carolina in Quaila Roosa, lovely
10 little place in which we were housed in a small home, and the
11 people involved were just those who were really engaged in
12 work in TCDD, toxicologic effects and environmental effects,
13 health effects. That also was a kind of a progress report
14 conference. That was 1975.

15 In 1976 there was Seveso, which was literally the
16 same kind of a runaway reaction that occurred in Nitro.
17 Exactly the same kind of runaway reaction. A kettle
18 containing trichlorophenol had an accident, and the valve
19 opened up and spewed out the material from the
20 trichlorophenol kettle into the atmosphere. The so-called
21 toxic cloud contained trichlorophenol and the contaminants
22 including TCDD. And, as soon as that happened, because
23 scientists in the United States had been working on those
24 problems, the Italians asked for help, almost right away.

1 And, what happened was that the Governor of Lombardia where
2 Seveso is. It's very close to the city of Milan, and
3 scientists from the area, including University of Milan and
4 the equivalent of our National Institutes of Health from Rome
5 was there, Professor Pocchiari, and they came to the State
6 Department to seek help.

7 Well, the State Department had the National Academy
8 Of Sciences bring together a group of people, including
9 myself, to meet with the -- to meet with the Italians, and we
10 did this, and one of the things that we decided to do at that
11 time was to send over at least one representative of this
12 group over to Italy to survey the problem, and we did that.
13 We selected one scientist from the group. That was 1976.

14 1978, after this had occurred, the World Health
15 Organization in conjunction with our National Institute of
16 Environmental Health Sciences called out an international
17 conference on dioxins and dibenzo-furans in Leon, and the
18 copy of the paper I gave there on what I knew, I think, is
19 also an exhibit. What was interesting about that was that
20 what we were asked to do was, is to develop some kind of
21 protocol, a plan, with a set of objectives, and what kinds of
22 populations should be studied and what kinds of analytical
23 processes needed -- analytical methods needed development.
24 And, all of the people who were there, which included persons

1 from all of the countries in which there were industries that
2 had problems related to trichlorophenol and TCDD, so the
3 scientists from Great Britain and Holland and Germany, Soviet
4 Union, Jirasek from the Czechoslovakia was the first time he
5 had ever been out of the country. He came to Leon to present
6 his very interesting information about the problem at Spilano
7 and he admitted that this was a very dirty plant. This was
8 the plant in which they had --

9 MR. CARR: May we approach the bench, Your Honor?

10 THE COURT: Yes, you may.

11 (The following Side Bar conversation was had outside the
12 hearing of the jury.)

13 MR. CARR: The witness is doing that which the
14 Court has ordered he should not do. He is giving a statement
15 from a man from Spilano in which he admitted that the plant
16 was dirty. This is hearsay. It is inadmissible. Counsel
17 knows it's inadmissible and I assume he had instructed this
18 witness so that this witness knows it's inadmissible.

19 THE COURT: I think we went through this Monday.

20 MR. HEINEMAN: Right.

21 THE COURT: I told you to instruct him about that,
22 and, apparently it didn't do much good.

23 MR. HEINEMAN: I told the witness about the Court's
24 admonition with respect to statements of others being hearsay

1 and not admissible and that they should not be. He
2 volunteered. He understood that.

3 THE COURT: Why did he just make that statement?

4 MR. HEINEMAN: I'm sure he was just in the midst of
5 describing what happened at this meeting. It just slipped
6 out. I don't know.

7 THE COURT: Well, this is a scientific person, a
8 very intelligent person who has been at this longer than any
9 of us have been alive. I don't think things like that just
10 slip off, slip out. The next time we may have a discussion
11 about contempt if it happens again. I'm going to order the
12 jury to disregard this.

13 MR. CARR: I would prefer that you not order the
14 jury because I think that might simply emphasize the
15 statement.

16 THE COURT: Okay. Fine.

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

18 Q. (by Mr. Heineman) Dr. Suskind, without describing
19 what other people said at this meeting, would you please go
20 on and describe the events that led up to the mortality
21 study?

22 A. Thank you. I understand. As a result of that
23 meeting and the events that I described previously, some of
24 us, like myself, decided that we should go back and study the

1 populations which had been previously exposed. At that
2 meeting we did develop a set of, and it's in the exhibit, the
3 information gaps that needed to be addressed, what kind of
4 information did we need from these populations. Well, what
5 kind of information did we need from toxicologic studies.
6 Prior to that -- prior to that, I called Monsanto in 1976,
7 and asked that we be allowed to do a study of the
8 populations, the population at Nitro that had been exposed,
9 because this was of great international interest and great
10 scientific interest, and Dr. Roush responded and indicated
11 that he would take this up with the people at Monsanto, and
12 as a result of that correspondence, we did get by 1978, when
13 even before I went to Leon, we had a mortality, the beginning
14 of a mortality study underway. That is we were attempting to
15 determine who was still alive. We felt that it was kind of
16 important to start with the population that had been exposed
17 that we reported to a high level of TCDD, people from the
18 runaway reaction. So we chose that population, concentrated
19 on that population, and it was a first step, a mortality
20 analysis of those people who were exposed to the accident.

21 Q. Now, Dr. Suskind, would you tell us generally, what
22 is -- what is epidemiology?

23 A. Well, I think that epidemiology is defined
24 differently by different authors, but I think that a most

1 general definition, which I think applies to the work that we
2 do, is the distribution of disease in human populations and
3 the factors which are associated or influence the frequency
4 of those diseases or that disease.

5 Q. Now, what is it that one looks for in a study to
6 determine association?

7 A. Well, one looks for the factors, the factors that
8 may influence or determine the disease, and for example if we
9 have a population that we know to be exposed to a chemical
10 agent, and that we know or suspect that they have been
11 affected, we would like to know in a mortality analysis, at
12 least, what these people have died from as compared with
13 let's say, an unexposed population, or the general population
14 in the United States.

15 Q. The jury has heard the term statistically
16 significant. What is -- what does that term mean and how
17 does that relate to this association that you are talking
18 about?

19 A. Well, one wants to know whether or not the
20 differences between the -- let's say the exposed group, and
21 the unexposed group, is really significant. From a
22 statistical standpoint and there are ways of looking at the
23 level of significance, for example, in looking at deaths for
24 example, looking at deaths, one one compares the expected

1 frequency of death in a general population to these which one
2 has observed in the population which has been exposed. And,
3 then the probability that there is a difference has to be
4 determined. And, that might be explained just on the basis
5 of chance. So that the level of significance is really, real
6 significance is determined by the so-called P Value, the P
7 Value, and the P Value is the probability that the difference
8 between the two groups is based on chance, so that the
9 greater the P Value, the more likelihood it is chance, and
10 the smaller the P Value, the less likelihood it is due to
11 chance and the greater likelihood it is due to the factors we
12 are looking at. Such as exposure to a substance. And
13 usually the P Value which is regarded as statistically
14 significant, not chance, but due to a -- a given factor is
15 usually a P Value below that of .05. If it's above .05, we
16 usually regard that as probably not statistically
17 significant, so that a P Value of .02 or a P Value of .01 is
18 statistically significant.

19 Q. Now, I don't want to get too complicated with this,
20 but can the P Value change or be different from one group of
21 statistics to another? Is it always the same?

22 A. Well, no, you have to look at different
23 parameters. For example, if one looks at the P Value of --
24 let's say all causes of death in an exposed population as

1 compared to the general population, that could be different
2 than if you just looked at the P Value of one cause of death,
3 like lung cancer, or liver cancer. The P Value might be very
4 different.

5 Q. Now, does an epidemiological study establish a
6 cause and effect relationship?

7 A. An epidemiologic study attempts to do that but I
8 think what is -- what is more significant about an
9 epidemiologic study, it attempts to establish association and
10 the cause-effect -- the cause-effect aspect of it is if you
11 have a very large population, and you do a study, and there
12 is is a very obvious, very obvious relationship between an
13 exposure factor and one parameter of disease, and the P Value
14 is .0001, it's very likely that there is some causal effect.
15 However, in most instances, one can only say that there is an
16 association, an association between the exposure, especially
17 if it's a small population.

18 Q. Now, how would you then differentiate the term
19 association from cause and effect?

20 A. Well, I think what one does say is there is, in
21 association, there is a possible causal relationship. And,
22 very often, that can be -- that can be further supported by
23 other kinds of studies, other kinds of studies where you have
24 cases of exposure, like to the toxic effects of a drug,

1 exposure and then effect. Exposure effect. But, if you are
2 dealing with an epidemiologic study, then you are dealing
3 with, especially a mortality analysis, then you are dealing
4 with a retrospective -- retrospective study, which means that
5 you go back and look at already existing statistics for let's
6 say causes of death. If, for example, you were doing a study
7 of the effects of a drug, and it's possible, association with
8 risks for death, this might be very helpful, but I think that
9 it is kind of, well not kind of, but it's also important to
10 have other kinds of data, clinical data that actually
11 demonstrate that there is a time, a quick time relationship
12 between the -- the exposure like to a drug and a toxic
13 effect.

14 Q. We have heard the term confounding factors used in
15 this courtroom. I wonder if you could explain that to us.
16 What does that mean?

17 A. Well, confounding factors are factors that may also
18 influence, also influence the outcome. For example, in
19 looking at the -- a problem of an exposure being associated
20 with heart disease, one of the confounding factors in heart
21 disease is age. In the United States and most civilized
22 countries, the most common cause of death is heart disease.
23 So that if you are looking at a population and attempting to
24 determine whether or not there was a greater risk for heart

1 disease, you have to consider age. So age is a confounding
2 factor. Smoking is a confounding factor. Alcohol
3 consumption is a confounding factor. And in problems, for
4 example, if you are looking at neurological consequences of
5 an exposure, you have to consider the other common problems
6 that cause neurological problems, like diabetes, like
7 alcohol.

8 Q. All right. Are -- would it be fair to say the
9 confounding factors are things that cause their own health
10 effects?

11 A. Yes, I think that would -- that would be one way to
12 look at it, but, when we are looking at -- these are factors
13 for which in doing an epidemiologic study, you must make some
14 adjustment. And it's difficult to make these adjustments if
15 you are doing a retrospect and mortality analysis.

16 If you are doing a morbidity study, on the other
17 hand, you have at hand from individuals that are being
18 examined, you have information about these confounding
19 factors.

20 Q. Okay. So, you would know in a health or morbidity
21 or sickness study who smokes and how old they are and who
22 drinks and that sort of thing?

23 A. Right.

24 Q. Is that right?

1 A. That's true.

2 Q. If they are still alive you can ask them?

3 A. (indicates affirmatively.)

4 Q. Okay.

5 A. In some mortality studies, I know that there have
6 been attempts to find out from next of kin how much they
7 smoked, or how much alcohol they consumed. That's often very
8 difficult to do.

9 Q. All right. Now, what are the types of epidemiology
10 studies that are normally done?

11 A. Well, there are two general types. One is a
12 retrospective study, epidemiologic study, where you look back
13 and take already existing data, already existing data and
14 like in a mortality analysis, and you determine what the
15 difference is from this already existing data like death
16 certificate, or death certificate and hospital records and
17 you compare that data to the frequency of causes of death to
18 the general population. That's retrospective.

19 Then you have prospective studies, and prospective
20 studies, the largest number of them are usually morbidity
21 studies. You'll look at existing populations, and determine
22 what the state of their health is of the population and you
23 then compare an exposed group, if it's a chemical agent you
24 are interested in, to a non-exposed group, but you must have

1 some kind of control group. And in a morbidity study, you
2 usually don't use general population figures. You usually
3 use control groups which you examine, too.

4 Then there are case control studies and case
5 control studies are these. You take a population, for
6 example, that has -- we know has died of certain type of
7 cancer. We are interested in knowing whether or not that
8 type of cancer is related to an exposure like cancer of the
9 liver in China. Is it related to their high incidence of
10 hepatitis. Is it related to their high incidence of
11 hepatitis, and they have a very high incidence of hepatitis,
12 and what you do then is to determine if indeed this group of
13 persons with cancer of the liver have had hepatitis and
14 when. And then you take another group that has no cancer of
15 the liver, a control group. Matched demographically.
16 Demographically means matched for age and socio-economic
17 factors, education, and so on. And, you find out whether or
18 not that matched group had the same frequency of hepatitis or
19 very much less. Very much less.

20 Q. All right.

21 A. That's a case controlled study. That's a different
22 kind of study. You start with the effect, people who are
23 affected. And then you go back and find out if they were
24 indeed exposed to a particular kind of disease or a

1 particular kind of chemical or particular kind of infectious
2 agent.

3 MR. HEINEMAN: Okay. I see it's lunchtime, Your
4 Honor.

5 THE COURT: Fine. Ladies and, gentlemen we will
6 break for lunch at this time. We will resume again, excuse
7 me, at 1:15. I would remind you that the admonishments I
8 gave you earlier will apply to this break also. Court is in
9 recess for lunch.

10 (Following a recess for the lunch hour, these proceedings
11 were had in open court.)

12 MR. HEINEMAN: Your Honor, I'm informed that I
13 neglected to move this morning the admission of Defendant's
14 Exhibit 1701, which was the 1953 report, and I'd like to do
15 so at this time.

16 MR. CARR: We have no objection.

17 THE COURT: Fine. It's admitted without
18 objection.

19 Q. (by Mr. Heineman) Dr. Suskind, this morning you
20 were talking about the Seveso incident in 1976, did there
21 come a time when you yourself went to Seveso, sir?

22 A. Yes, I went to Seveso in 1982.

23 Q. 1982?

24 A. Yes.

1 Q. And, what did you do there, sir?

2 A. Well, I was invited to Milan to give a lecture to
3 the Carlo Erba Foundation in Milan, at the same time the
4 Lombardia office that ran the Seveso studies invited me to
5 look at and talk with the people who were involved in the
6 study. One of the experiences I had was to examine some of
7 the people who had been exposed and developed chloracne, and
8 there were three children who had been exposed in '76. And,
9 they were now adolescents and I had a chance to examine
10 them. It was an interesting experience, because on the day I
11 arrived there, the examination study was resumed. They had
12 terminated it for awhile, and there was a resumption of the
13 clinical examinations studies at the at the Provincial
14 Hospital, and I was asked to look at some of the cases.

15 Q. Okay. What did you find, sir?

16 A. Well, I found that among the adolescents that I
17 saw, one was actually a pre-adolescent and had a little bit
18 of acne vulgaris around the nose, but -- and also had minimal
19 chloracne on the skin of the cheek bones. The other was a 15
20 year old girl who had rather severe chloracne at the onset,
21 and at the time I saw her, there was a residual chloracne,
22 not severe, and she also had some indication of acne vulgaris
23 as well.

24 Q. Now, Dr. Suskind, we were talking just before the

1 luncheon break about certain types of studies, and you had
2 just finished, I believe, telling us about the case control
3 type study, is that correct?

4 A. Yes.

5 Q. One of the types of studies we have heard mention
6 of is a cohort study. Could you tell us what that is, sir?

7 A. A cohort study is a study in which the
8 epidemiologist identifies sets of populations for
9 comparison. If it's a morbidity cohort study, it would
10 involve a population perhaps that was known to be exposed to
11 a certain agent, and a comparable control population which
12 was not exposed to that agent comparable perhaps
13 demographically.

14 Q. Okay.

15 A. In a mortality study, one can also use cohorts and
16 in that kind of a study one would again use a population
17 exposed and determine what the risk for causes of deaths were
18 in that study as compared with the unexposed population.
19 Now, in another type of cohort study, one can use an exposed
20 cohort, and compare the results of the analysis of the
21 mortality data to the frequency of death from the same causes
22 or the same organ system involvement as it occurs in the
23 general population. That is looking at the mortality
24 statistics of the nation. This is a very common way of doing

1 it. One can use the mortality statistics of the same county,
2 same state, if they are good mortality statistics, but in
3 many instances one uses the mortality statistics for the
4 nation.

5 Q. Now, can you give me an example of a cohort
6 morbidity study?

7 A. Well, a good example, I suppose, is one which I
8 conducted myself using the Nitro population which was exposed
9 and compared their health status, their health status to a
10 control population which was not exposed.

11 Q. We will get into that study in some detail later
12 on, sir. Can you give us an example of a cohort mortality
13 study?

14 A. Well, a cohort mortality study would again be one
15 that I did in which we compared a cohort of persons known to
16 be exposed to, in this instance the runaway reaction material
17 from the Nitro plant in a certain period of time, with
18 certain outcomes, like chloracne. That was the identity of
19 the cohort, as compared -- and we compared their frequency of
20 deaths from 22 different causes by organ systems as compared
21 to the general population. That was a mortality cohort.

22 Q. All right. Now, there is one type that you have
23 not yet told us about, sir, and that's a cross sectional
24 study. Can you tell us what that is?

1 A. A cross sectional study is very simply, it's a
2 state of health study of a given population, an identifiable
3 population. Without identifying it perhaps by exposure, or
4 non-exposure, just let's say a population working in a plant,
5 what's the health status of a population working in a plant
6 making solvents, perhaps. And, there are any number -- it's
7 a very simple kind of study, and what one does is after you
8 have identified some of the problems that have arisen in a
9 population like that, then you might use those parameters as
10 variables, variables that is you compare, let's say, people
11 who work with solvents in a plant, compare people with
12 dermatitis as compared with people who don't have
13 dermatitis. And see what they -- their health status of
14 those who had the dermatitis is by comparison to those who
15 didn't have the dermatitis.

16 Q. Is an effort made in a cross sectional study to
17 find a not exposed group?

18 A. Well, one might, as a result of doing it, find it,
19 but you don't start out with that. Simply examine the
20 population and it might be possible to determine that, yes,
21 by history, by work records, you do determine that there is
22 an exposed group and an unexposed group, but you don't start
23 out with -- and a cohort that has that, has those
24 characteristics.

1 Q. And, does that factor differentiate that kind of
2 study from some of the other studies you've previously
3 described?

4 A. Yes, it differentiates it from a cohort study where
5 you've already established what the exposure characteristics
6 are and maybe some of the clinical outcome characteristics
7 are.

8 Q. Can you give us an example of a cross sectional
9 study?

10 A. Well, one that comes to mind, because it's so close
11 to my interest is the cross sectional study that was done at
12 the Nitro plant by Dr. Marion Moses and her group, and they
13 simply identified, they recruited anybody who wanted to come
14 into the study, and they got a population of 226 people and
15 then they examined them thoroughly, and they found out that
16 there was a group that had at one time developed chloracne
17 and another group in that plant who didn't develop
18 chloracne. And what they did is to compare then the health
19 parameters of the chloracne group as compared with the
20 non-chloracne group. This was after they had identified a
21 chloracne group and a non-chloracne group.

22 Q. Now, getting back to the mortality study which you
23 were telling us about before, which you conducted at Nitro,
24 does that mortality study go by a particular name in

1 scientific circles?

2 A. Well, it's a cohort study, but it is simply an
3 attempt to determine the -- the possible increased risks for
4 causes of death among an exposed population as compared to
5 the general population. The exposed population being the
6 cohort.

7 Q. Okay. Now, with respect to the mortality study
8 that you are talking about, would you tell us how that got
9 started? You already mentioned the conversations with
10 Monsanto initially in '76, but how does that get started and
11 whom did you work with on it?

12 A. Well, in 1978, we had been in communication with
13 Dr. Roush, and then following that Judy Zack, and we decided
14 that one of the places to start to determine what the
15 long-term health effects were of working with 2,4,5-T and its
16 contaminants, especially TCDD, was to do a mortality analysis
17 of those who were the most heavily exposed, and back in 1953
18 we knew that there were at least 117 people who were
19 identified with that runaway reaction. And, we wanted to
20 know what happened to those people if there were indeed more
21 of them, and there were, whether they were still alive, and
22 to do a mortality analysis of that group, the group that we
23 regarded as the most heavily exposed to manufacture of
24 2,4,5-T and especially because of the contaminant TCDD. And,

1 I was responsible essentially for determining what the
2 protocol was going to be, the identification of the
3 population, the kinds of records to be used, the program of
4 the analysis as well as the -- programming the data as well
5 as the analysis. Now, a very important aspect of doing that
6 kind of a study is what in epidemiology we call shoe leather
7 epidemiology. This means that the individual has to really
8 go from house to house or place to place and dig out
9 information about a population which was exposed 30 years
10 before. And, Miss Zack was the individual who did that. And
11 she got to the work records and the safety records and the
12 medical records, and the -- and the workman's compensation
13 records to see who had a medical record of chloracne, which
14 was an indicator that they had some reaction and that they
15 were involved in the accident, and 122 people were
16 identified. And then she went on to find out who died. And
17 she found out who had died of those 122, and she dug up the
18 death certificate of those people, and she was able to get
19 100 percent of the death certificates. That's somewhat
20 unusual, but this is a relatively small group, but she was
21 able to do that. And, there were, out of the 122, there were
22 32 deaths. So she got all of the 32 death certificate.

23 Q. Now, Dr. Suskind, you had -- you said that there
24 were 122 that were identified for the study, is that right?

1 A. Yes.

2 Q. Now, a moment ago you mentioned the figure of 117,
3 what was that in connection with?

4 A. Well, I mentioned 117 because if you look at the
5 1953 report, you'll see at that time we knew that there were
6 117 who had been exposed to the runaway reaction. But, maybe
7 they weren't all identified by 1953, so that when we really
8 did a more thorough examination as to who was exposed to that
9 runaway reaction, it came out to 122, not 117.

10 Q. Now, let me hand you for a moment, if I may,
11 Defendant's Exhibit 92. Can you examine that and identify it
12 for the jury, please.

13 Q. As I recall, this is a copy from the American
14 Journal of Industrial Medicine, of the health status workers
15 study that was conducted by Dr. Moses and her colleagues of
16 some of the Nitro group. This was done in 1979, I believe.
17 This is a copy of the report.

18 Q. All right. Is that the -- is that a report of the
19 study that you referred to a moment ago as being the cross
20 sectional study of Nitro?

21 A. This is a cross sectional study.

22 Q. By Moses. Now, I'd like to direct your attention
23 to Page 167. You have that, sir?

24 A. I do.

1 Q. There is a statement at the top of the page that I
2 want to ask you about, have to do with these numbers of
3 people. Would you read aloud the second sentence from the
4 top of the page that begins, only several years later?

5 A. "Only several years later was it further determined
6 that a 111 other workers in 2,4,5-T production had chloracne
7 prior," and it's in italics, "to the 1949 explosion." And the
8 quotation is from Suskind, 1977.

9 Q. All right, sir. Now, I want you to tell me based
10 upon your knowledge of that population, if that is an
11 accurate statement?

12 A. Oh, I don't believe so. I don't believe.

13 Q. All right, can you --

14 A. First of all, I don't know of anything I wrote in
15 1977 about this incident. And if it refers to a paper given
16 at Leon, which I think is an exhibit here, in 1978, what I
17 had attempted to relate was that at the -- this was in 1953,
18 we were able to determine that there were at least 111
19 persons with chloracne who had been exposed to the 2,4,5-T,
20 2,4,5-T synthesis, but not to the accident material, and it
21 wasn't prior to -- to my knowledge as I recall, in 1949, the
22 company was really alerted to the fact that something in the
23 2,4,5-T operation was causing chloracne, and they were first
24 alerted by the accident. And then when they went back to

1 look at others, they found out that, yes, a few of them did
2 have some chloracne. But it was in 1953 or '55, I'm not
3 really altogether sure, that the figure of 111 emerged as the
4 population which was exposed to the manufacture of 2,4,5-T,
5 not the accident material, and also developed chloracne.

6 Now, in that same paper, there is a table which
7 reads numbers of persons involved in the various accidents
8 and the figure 228, I believe, appears and the 228 comes from
9 117 and 111.

10 Q. Okay.

11 A. So that in 1978, it was my impression from the
12 information that I had that there were altogether 228 people
13 who were affected by the making of 2,4,5-T as well as the
14 accident.

15 Q. Was there anybody known to have had chloracne or
16 were there a 111 people known to have had chloracne prior to
17 the 1949 explosion?

18 A. I just tried to tell you, Mr. Heineman, that that's
19 erroneous. That's not so.

20 Q. Okay.

21 A. By the time 1953 came around, well '55, again I'm
22 not altogether sure, that figure of 111 emerged. And in
23 1949, when they looked at others who were not involved in
24 Building 41, or had anything the do with it, they found that

1 there were a few people, yes, who had chloracne.

2 Q. All right.

3 A. Now, the numbers I can't tell you. I'm not
4 altogether sure about numbers.

5 Q. Now, with respect to the mortality studies, sir,
6 the jury has heard frequently expressed the term the
7 Zack-Suskind study. Is that the name of the study that you
8 are talking about?

9 A. Well, if you are referring to the mortality
10 analysis which we have been discussing which is entitled
11 mortality experience of workers exposed to
12 tetrachlorodibenzo-dioxin in a trichlorophenol process which
13 was offered by Miss Zack and myself, that's the study.

14 Q. Okay. Now, in connection with the development of
15 that study, would you outline for the jury the manner in
16 which the cohort was identified and who designed that manner,
17 who decided how to do it that way?

18 A. Well, I believe I've already said something about
19 it, Mr. Heineman. I believe I've already said that there was
20 a discussion between Miss Zack and myself regarding the
21 protocol for the study. And, who was to do what, and the
22 essential objectives of the study was to determine the
23 possible long-term effects of exposure to relatively high
24 levels of TCDD, although we didn't know what the levels

1 were. We didn't know what the health effects were and we
2 assumed that the levels were high, to determine what the
3 long-term health effects were in terms of mortality risks,
4 mortality risks for 22 different categories of causes of
5 death, and, we felt that the population we needed was the
6 runaway reaction population. And, we developed a strategy
7 for getting the information. And then a strategy for the
8 analysis. And that's how this study was constructed.

9 Q. Now, with respect to the ones the cohort had been
10 identified, the 122, what was done to follow up on that, in
11 order to actually put the data together?

12 A. Well, what we simply did, and it's a relatively
13 simple kind of study, is we found out what the numbers of
14 deaths were due to any of 22 different causes of death, as
15 compared with the expected number for those 22 different
16 causes of death. When we consulted the national statistics
17 in this instance for white males, because there were all
18 white males, 121 were, the person who was left out, because
19 we had obviously no way of comparing her to a national
20 statistics was the nurse, Louise Morris, who had -- who was
21 involved in the process accident material because she used to
22 go through the plant and she did a lot of nursing, practical
23 treatments of the people who had chloracne. And she
24 developed chloracne herself. And so we took her out of the

1 population, and then we simply determined the standard
2 mortality ratio, which is the ratio of observed, observed
3 deaths in the population, to what one would expect in that
4 population.

5 Q. All right. I'm not quite sure I understand why
6 Nurse Morris was eliminated. I wonder if you'd explain
7 that.

8 A. Well, in order to get some understanding of what
9 the difference in frequency is, the causes of death, you've
10 got to have a sizeable population, 122, 121 was small enough,
11 but you can't do it on the basis of one.

12 Q. Okay.

13 A. And we would have to compare her to white females,
14 Caucasian females, you can't compare one, because there were
15 no deaths in that population of one.

16 Q. Okay. She was still living at the time of the
17 study?

18 A. Yes, she was still living at the time of this
19 study, as well as the morbidity study.

20 Q. Now, how were the ones the causes of death were
21 determined? How were they related to the categories that you
22 talked to us about before, the categories of causes?

23 A. The categories are the causes of death, Mr.
24 Heineman. May I read them?

1 Q. Okay.

2 A. The categories of causes of death are all causes of
3 death, overall figure for causes of death, from any cause,
4 then all malignant neoplasms, buccal cavity and pharynx.
5 Digestive organs and peritoneum, and under that stomach,
6 liver, and other digestive organs. Then respiratory system,
7 and all aspects of the respiratory system. Then broken down
8 into lung and other parts of the respiratory system like the
9 nasopharynx, or the larynx. That would also be part of it.
10 Skin; genitourinary organs. The genitourinary organs would
11 include the kidney and the testes, or the penis; lymphatic
12 and hematopoietic tissue; lymphomas like leukemia or
13 Hodgkin's disease, diseases of the nervous system like
14 problems that might lead to death that effect the nervous
15 system. This would be like multiple sclerosis. That's a
16 disease of the nervous system, or diseases of the circulatory
17 system, not malignant, like arteriosclerotic heart disease, a
18 very common disease, including coronary heart disease. All
19 other diseases of the circulatory system which would include
20 stroke. Diseases of the respiratory system like emphysema;
21 disease of the digestive system other than cancer, like
22 bleeding peptic ulcers, which can lead to death. And then
23 all other diseases. Those that I've listed are the common
24 diseases.

1 And then the external causes of death like suicides
2 or accidents. So we looked at all of those categories and
3 determined whether any of the observed deaths fitted into one
4 of those categories, and then looked at the numbers that we
5 would have expected from looking at the Munsen tables or the
6 general population death statistic tables.

7 Q. Now, did you code those death causes in some way?

8 A. Well, yes. One looks at these death certificates
9 and then has to determine in which category they would fit.
10 And there is an international code which is used and for this
11 coding exercise we used a qualified experienced nosologist,
12 somebody who knows a good deal about classification of
13 diseases and where they fit into the international
14 classification series. For each of those categories that I
15 have listed, there is an international classification of
16 diseases code number. With --

17 Q. Is a mortality study of this kind designed to look
18 at long-term health effects, is that accurate?

19 A. Well, not necessarily. It doesn't have to be long
20 term. But in this instance it was long term. Doesn't have
21 to be, but in this instance it was. Because, we were looking
22 at a population that had been exposed in 1949, and here we
23 were 30 years later, 29 years later, because the cut-off date
24 for deaths for this study was December 31st, 1978, but it was

1 essentially 30 years after the fact. Now that's long term.
2 Now, it could have been a study, there are studies that have
3 been done on mortality statistics of exposures to drugs or
4 whatever, and it's done five years afterwards or two years
5 afterwards, or a month afterward, and you could still do a
6 mortality study. So, this doesn't -- this long term is not
7 the characteristic of this kind of mortality analysis. We
8 use it for our long-term study.

9 Q. Okay. Would you differentiate, please, between --
10 and I get confused sometimes between a short-term or a
11 long-term health effect versus an acute or chronic exposure.
12 Can you differentiate between those two things for me?

13 A. Well, an acute exposure -- an acute exposure
14 actually designates a brief high-level exposure like in the
15 case of the runaway reaction. First came in they were
16 exposed to a lot of material and they became acutely ill and
17 then they were -- the some of the same people were exposed to
18 this material because it was still around. And they may have
19 been exposed for a week. They may have been exposed for two
20 weeks. May have been exposed for more than that, if the
21 material was still around. That would be a kind of
22 subchronic exposure, but, the effect of it -- the effect of
23 it could either be an acute effect or a long-standing effect,
24 subchronic effect like in the case of dose, those exposed to

1 the manufacture of 2,4,5-T as well as the runaway reaction.
2 What happened to these people, that's a chronic effect,
3 chronic effect. What happened to these people a month
4 afterwards, two months afterwards, a year afterwards, and if
5 you are looking for long-term effect, then you have to look
6 for years afterwards. If you really are interested in what
7 happened after 15 years, or 20 years, or 30 years, you have
8 to look at the end points after 30 years, and this is what we
9 did here in this study. We were looking for what were the
10 causes of death of these people over a long period of time.

11 Q. Now, these people then is it fair to say they had
12 -- you were looking at a long-term health effect for an acute
13 exposure?

14 A. No, we are looking for the effect over a long
15 period of time, over a long period of time.

16 Q. Okay.

17 A. All right. The morbidity study on the other hand
18 addresses the issue of a health status, what is the health
19 status after 30 years. That's a long-term effect.

20 Q. Okay. Now, with the 121 people that were included
21 in the mortality study, would you tell us what you found as a
22 result of the examination?

23 A. Well, again, rather simply we found that for all
24 causes of death, we observed 32, found 32 and the national

1 table told us there would be about 46 deaths so that the
2 standard mortality ratio would be .69, which is statistically
3 significant, that is the P Value, which I discussed earlier,
4 is smaller than .05, and then we found that of the -- when
5 you looked at the malignant neoplasms, we had 9 due to
6 malignant neoplasms, the expected was also 9, so that there
7 was a standard mortality ratio of one. It was what you would
8 have expected. However, if you went and examined individual
9 causes, each malignant neoplasm or the area of the malignant
10 neoplasm, you found that there were no stomach cancers,
11 nobody died of stomach cancer. Nobody died of liver cancer.
12 And as you will remember, we found in the subchronic phase of
13 the exposure to the runaway reaction, there was liver
14 problems. We had hepatitis, and they had some dysfunction of
15 the liver. So we were looking for deaths that could have
16 been due to either malignancies of the liver or other
17 diseases of the liver, like cirrhosis. We didn't find any --
18 30 years later -- we found that lung cancer, there was five
19 in this group, and the expected would have been about three,
20 however, we then went to find out this was statistically
21 significant, and it happens that the P Value of that SMR is
22 larger than .05, so that it is not statistically
23 significant. A small number, but still not statistically
24 significant. We found that there were three cases of deaths

1 due to lymphomas or hematopoietic diseases, and we would have
2 expected .088. .88, I'm sorry, .8. You'd expect one. But,
3 the numbers are too small, so that if you -- if you did a
4 statistical significance on it, wouldn't mean anything.
5 Wouldn't mean anything if you compared three to one. With
6 this small number of people, 32 altogether. In circulatory
7 diseases, there were 17 observed and one would have expected
8 25. This would be heart disease and stroke, and though the
9 SMR was .68, still wasn't statistically significant. There
10 was a trend. There was a larger number of expected than
11 observed. But, it wasn't statistically significant. If you
12 broke it down to arteriosclerotic heart disease alone, we
13 would have expected in this group, age group, would have
14 expected 13. I mean we would have expected 17, and we
15 actually only found 13. Sorry. It's 13 observed. 17 was
16 expected. And that also is not statistically significant.

17 So that in summary, I think while the cohort
18 epidemiologically is a small one, the only real significance
19 is this overall causes of death, that is statistically
20 significant. And, at the time we did it, we didn't think we
21 could draw any firm conclusions from it. Although, and I
22 have to underscore this, 30 years afterwards, if there were
23 problems involving the liver, or cardiovascular disease, or
24 pulmonary disease, we would have seen it even in this small

1 group, which we did not.

2 Q. Would you expect to find it in cancers after 30
3 years?

4 A. You might. The period is long enough, and if these
5 people were going to develop liver cancer, which you do in, I
6 have to point out in animals, in animals, and the papers so
7 state, animals, you can produce liver cancer with TCDD.

8 Q. And the significance -- what is the significance of
9 the fact that there wasn't any, or was there, that there
10 wasn't any liver cancer in this group after 30 years?

11 A. Well, the fact is that the liver problem such as it
12 was must have been a transient one. And we find that by 1953
13 the people we examined didn't have any liver problems. In
14 1949 and '50, those exposed to the runaway reaction did. But
15 by 1953, the liver problems, everyone has to distinguish
16 between hepatitis liver inflammation and liver cancer. And,
17 none of the people whom we saw back in '49 or who were
18 exposed to the runaway reaction ever developed liver cancer.

19 Q. Now, is it possible to consider the results of this
20 study conclusive for association?

21 A. Well, I think the report says that we weren't
22 prepared to consider this conclusive but I think that from
23 the standpoint of good statistics, but I think that even
24 though this is a small group, one has to recognize that there

1 are no obvious increase in causes of death from anyone at
2 anyone's site.

3 Q. Sir, with respect to studies that had been done
4 subsequently to this study by yourself and others, do you
5 have an opinion as to whether or not this study is consistent
6 with other studies that have been done on human population?

7 A. Well, the only long-term mortality study that I
8 know about is the one done by Dr. Theiss on the badische
9 aniline group. I wouldn't consider the Ranch Hand a
10 long-term study because it was a relatively short period of
11 time after exposure to Agent Orange. But I would consider
12 that Dr. Theiss' study is as this is a long-term study,
13 probably not as long a period had elapsed, and he found that
14 there was -- there were some increased risk at least for one
15 type of problem in his group.

16 Q. And that problem was what, sir?

17 A. He found an excess of cancer of the stomach. Now,
18 there was no attempt to find out if there were other
19 confounding factors which we discussed this morning, but this
20 is what he found and -- if you look at ours, and ours is up
21 until the point we did this, the largest group of persons
22 exposed to TCDD after long-term follow up.

23 Q. Now, Doctor, you are aware, are you not, sir, that
24 Dr. Carnow has testified in this case?

1 A. Yes, I am aware of it.

2 Q. And, are you aware, sir, that Dr. Carnow testified
3 that in June of 1984 --

4 MR. CARR: Date please, counsel?

5 Q. June 18th, 1984, Page 41. Testified in this case
6 that the fault to be found with this study that you've just
7 been discussing was that it makes it appear that exposure to
8 dioxin improves health and mortality. Do you agree with that
9 statement?

10 A. Well, I wasn't aware that he said that, but I think
11 it's a palpably ridiculous statement.

12 Q. Why do you believe that, sir?

13 A. Well, first of all, because if he's going by the
14 overall, the SMR for all causes of death, in a work
15 population, and American workers are known to be healthy
16 people. And it's been shown that the health of workers in
17 the last ten years has improved, twenty years, has improved.
18 So that what we are seeing here is likely to be a healthy
19 worker effect. Not -- not the effect of dioxin.

20 Q. Now, sir, you have -- oh, first of all, let me ask
21 you to identify Defendant's Exhibit 62.

22 A. This is a reprint from the Journal of Occupational
23 Medicine, January 1980, of a paper entitled, "The Mortality
24 Experience of Workers Exposed to Tetrachlorodibenzo-dioxin in

1 a Trichlorophenol Process Accident." And it's a reproduction
2 of the paper we have been discussing.

3 Q. All right.

4 A. By Doctor -- my Miss Zack and myself.

5 MR. HEINEMAN: Now, with respect to -- Your Honor,
6 at this point I would like to move the admission of
7 Defendant's Exhibit 62 into evidence.

8 MR. CARR: We don't object.

9 THE COURT: Admitted without objection.

10 Q. (by Mr. Heineman) Now with respect to the
11 preparation of that paper for publication, would you tell us
12 what participation you had in that?

13 A. Well, I indicated to you what participation, what
14 my responsibility was in the organization of the protocol for
15 this study. And after the data was in, a draft of the
16 analysis was sent to me with a -- a first draft of a
17 manuscript, and what I did essentially, I was responsible for
18 all of, most of the introductory material which describes the
19 acute and subacute and chronic health effects as it -- in the
20 Monsanto Nitro population as Dr. Ash and I described it in
21 1949 and '50, and the report which I wrote in 1953. In the
22 first two pages, almost two pages were consistent material
23 that I contributed to this paper. Miss Zack assembled the
24 data, put it into tables, and I reviewed it and edited it,

1 and the discussion and conclusions were essentially the
2 result of our putting our heads together to determine what we
3 had to say about the data, and what we concluded from the
4 data. And there was a series of correspondence and telephone
5 calls about this, and finally I wrote to the editor of the
6 Journal of Occupational Medicine, Dr. Lloyd Temper and asked
7 him if he would be interested in it. He said yes, and we
8 sent him the paper. Judy Zack sent him the paper.

9 Q. Now, to your knowledge, sir, was that paper peer
10 reviewed?

11 A. I believe it was. The review would have come to
12 Miss Zack as the senior author.

13 Q. Now, at the time that that study was carried out,
14 Dr. Suskind, did the University of Cincinnati, either the
15 University of Cincinnati or you yourself personally receive
16 any compensation from Monsanto Company for that study?

17 A. None whatsoever. My participation in it did not
18 involve an application for funds or did we receive any funds
19 for my participation.

20 Q. Now, Dr. Suskind, you spoke earlier about a
21 morbidity study. I wonder if you would briefly tell us what
22 a morbidity study is.

23 A. A morbidity study is a study of the state of health
24 of a population at a point in time, and it usually consists

1 of a definable cohort which is looked at, examined, variety
2 of ways, and to determine what the state of health is of that
3 cohort, individually, and collectively. And if, for example,
4 one is looking at an attempt to relate increased risks for
5 specific kinds of disease processes, whether they are
6 elicited by history, whether the diseases are elicited by
7 history or by examination, one does then look at, examine a
8 number of organ systems that one would like to see if there
9 is any risk for disease.

10 Q. Now, you've used the term protocol, sir. What --
11 how do you develop a protocol for a morbidity study?

12 A. Well, a protocol is simply an attempt to provide a
13 design for the study. It identifies objectives of the
14 study. It identifies the population that you are going to be
15 concerned with, the characteristics of that population, for
16 example, if there is going to be an exposed group and the
17 control group. It would identify what kind of exposure, how
18 many people you would anticipate putting into a cohort, and
19 what your control group would be like. Whether it would be
20 an external control or internal control group. Then you
21 would determine -- you would describe, what you were going to
22 do with this population. How you were going to examine this
23 population in order to accomplish your objectives. What
24 kinds of examinations, what the scope of the examination

1 would be, and then who would be being the examination and how
2 it would be carried out.

3 And then finally what kind of data organization you
4 would anticipate, and what kind of analysis of the data you
5 would desire.

6 Q. And, would you explain the difference between an
7 internal control group and an external control group?

8 A. An internal control group is usually a group which
9 is chosen from perhaps the same plant or the same industry
10 and matched for demographic factors, if it's possible to do
11 that, but it's much more possible to do that sometimes in an
12 internal control than an external control.

13 An external control means going to another industry
14 or another plant or another population.

15 Q. What are the practical limitations that an
16 epidemiologist finds himself faced with in developing a
17 protocol for a study, deciding to select the control group
18 and what kind of control group you can have?

19 A. Could you repeat the question, Mr. Heineman?

20 Q. Certainly. Excuse me for being so obtuse with it.
21 Let me try it a different way. When an epidemiologist
22 approaches a problem or a study, are there practical
23 limitations within which that study has to prey, based upon
24 the group and the population and that sort of thing?

1 A. There are always problems of that sort that face
2 epidemiologists. In order for a study to have the power to
3 determine significant differences, the power to determine
4 significant differences, you have to have a significant
5 number of people involved, so that numbers are important and
6 very often when you are dealing with an industrial
7 population, you cannot fulfill the pristine requirements of
8 classical epidemiology from numbers. But you have to do as
9 best you can. You do the best you can and you get as much
10 information as you can out of a limited number of people.
11 Now, that's usually the case when you are studying or about
12 to study an industrial population. And particularly if that
13 industrial population was exposed him many ago, as in the
14 case of the Nitro group.

15 Q. Now --

16 A. Go ahead.

17 Q. I'm sorry. Did I interrupt you?

18 A. No.

19 Q. The particular morbidity study that you conducted
20 at Nitro, who are the authors of that study, sir?

21 A. The authors of this study are Hertzburg, a
22 biostatistician, and myself. There were a lot of
23 professional participants in that study, especially in the
24 carrying out of the examination, and developing a strategy

1 for doing the study. But the major authors of the study are
2 myself and Dr. Hertzburg.

3 Q. Would you characterize this as Monsanto's study,
4 sir, something engineered by Monsanto Company?

5 A. No. I'm always amused to hear that, but I have to
6 tell you that years before we did this study, we had been
7 attempting to, as the records will show, to get a study
8 done. And, the study from beginning to end was conceived,
9 developed, and the outcomes were analyzed by myself and my
10 staff and it's a University of Cincinnati study.

11 However, we couldn't have done this without the
12 assistance of the group that ran the plant. They knew what
13 the population was all about. They had the records, the
14 employment records, the health records, the workman's
15 compensation records. We didn't. So we had to depend upon
16 them to provide us with a population to recruit from. Also
17 from a strategic standpoint, needed assistance if we were to
18 carry out that study in the locale of the Nitro plant to make
19 it accessible to the workers there or the former workers who
20 lived in the area.

21 So that the study itself was a University of
22 Cincinnati study with me as the principal investigator and
23 Dr. Hertzburg as the coauthor of it, since she helped analyze
24 the data and organize it, a most important function in a

1 study like this.

2 Q. How was this study funded, sir?

3 A. Study was funded from three different sources. It
4 was funded by the Environmental Science Center through a
5 grant and the resources for doing a lot of these studies
6 including the organization of the team and the resources that
7 the team used, including the analytical work and the access
8 to the computer, and the coders and all that, those were all
9 supported by the resources at University of Cincinnati, were
10 supported by the NIHS. Now, some of our salaries were paid
11 for by the University of Cincinnati, including mine. And
12 Monsanto, we attempted to determine how much it would cost to
13 do it in Winfield, West Virginia, where it was conducted with
14 -- where the examination was fully conducted, and we got a
15 budget up, which included the cost of the various functions,
16 including some of the people and their travel and Monsanto
17 bore the cost of carrying out the study on site. Except for
18 -- well, the participation of myself and the participation of
19 the two people from NIOSH, and the participation of the two
20 physicians from the Air Force. They didn't take care of
21 them, of course.

22 Now, when you say the on site expenses, you are
23 talking about someplace to house it, someplace to house it,
24 the renting of the space, the clinic, the nurses then people

1 from Monsanto and that clinic that we used who assisted us in
2 carrying out the actual examination. When you do a study
3 involving 436 people over a period of more than 10 days,
4 there has to be a real good organization so that the flow of
5 traffic from the taking of the samples of blood and urine and
6 to x-ray and ECG and nerve conduction velocity, to taking
7 vital statistics and the interview, all that has to have some
8 kind of traffic management, and the Monsanto people were very
9 helpful in doing that. We had our own coordinators, yes, but
10 without them, we probably wouldn't have done as good a job or
11 as effective a job.

12 Q. This was people from the plant assigned to help?

13 A. People from the medical department of plant.

14 Q. I see. They just help move things along, I guess?

15 A. Right.

16 Q. You looked at how many people?

17 A. 436.

18 Q. Go ahead. Now, who conducted these interviews that
19 you mentioned?

20 A. Well, these interviews were actually conducted by a
21 team of trained individuals who were recruited by us from the
22 University of Cincinnati, and they included nurses, nurses
23 who had training in occupational health nursing and further
24 training in interviewing people for such a study. They

1 included graduate students, senior graduate students in
2 toxicology who were involved in therapy, also trained to do
3 the interviewing, and they were very good. And, the number
4 of interviewers were about six, and they were all from the
5 Department of Environmental Health.

6 Q. Did any Monsanto personnel participate in the
7 actual conduct of the study? By that I mean the interviews,
8 the physical examinations, the laboratory work, any of that?

9 A. No, not at all. The Monsanto personnel were
10 helpful in transporting people from the plant or there were
11 retirees who came in from outside the city who were living in
12 hotels or motels and they were transported by Monsanto people
13 to the place of examination. They also helped -- that is
14 again people from the medical department helped in making
15 sure that people got to the place of the interview and
16 examination on time. They transported them. They made sure
17 that people who had to have their blood drawn before
18 breakfast because we were doing chemical studies of blood on
19 fasting persons. Make sure that they got to the proper place
20 for the drawing of blood, and now the preparing of the sample
21 was done by ourselves. But they helped in making sure they
22 got to the place where the bloods had to be drawn and the
23 urines were received and following that they made sure they
24 had breakfast, because they were hungry people.

1 THE COURT: Is this a good point for a short
2 break?

3 MR. HEINEMAN: Fine.

4 THE COURT: We will take a short recess at this
5 time and then resume testimony. The admonishments that I
6 gave you earlier will apply during this break also. Court is
7 in recess.

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

9 Q. (by Mr. Heineman) Dr. Suskind, with respect to
10 making a determination as to who should participate in this
11 study as Monsanto employees and former employees, how did you
12 learn that information? How did you understand who it was
13 that was going to participate?

14 A. Well, it wasn't that we knew who was going to
15 participate, we decided on what the criteria were for
16 participation. That was our job. But we needed to know how
17 many persons were still living, where they were, and whether
18 they were retired or terminated or still active, who had been
19 exposed, and then of course we wanted an equivalent control
20 group.

21 Now, originally we had thought that we should be in
22 the original protocol. We thought that we would want a total
23 population of anywhere from 450 to 500 with approximately 150
24 to 200 people who had chloracne and had been exposed. And

1 then people who did not have chloracne but were exposed. And
2 then another population unexposed, and it turned out that
3 when we looked at the information, which was gleaned from
4 records that there were about 806 persons who would have
5 qualified for the cohorts that we were seeking. And we got
6 from Monsanto lists of people who were exposed and had
7 chloracne and exposed without chloracne, and now these were
8 both people exposed to the runaway reaction as well as the
9 manufacture of 2,4,5-T. And then people who were so-called
10 intermittently exposed. We are never sure about what that
11 really meant, except that they have been in and out of the
12 process and they may or may not have had chloracne. Most of
13 them in that list that we got of so-called intermittently
14 exposed did not have chloracne. Some of them did. A few of
15 them did, and then there were those who were unexposed, and
16 who did not have chloracne. We felt -- and this was after
17 discussion, that we could recruit in the time that we had to
18 do it, and this was between early February and June when we
19 wanted to do our examination, all persons active or
20 terminated or retired who were exposed to the runaway
21 reaction. We wanted to have that group in as a population to
22 be recruited. And all of the active or retired, who were
23 exposed to the 2,4,5-T that had chloracne with records of it,
24 that is workman's comp records, those were in the recruitable

1 population within the time that we had to do it. And, all
2 active or retired, retired who were exposed to 2,4,5-T
3 without chloracne in this group, it was almost impossible to
4 locate because there were no records of it without
5 chloracne. There were no records of where they were. So,
6 that the terminated individuals which would be -- were
7 different to find, they were essentially not recruited.

8 And then there was a control group of unexposed.
9 We also felt that when we looked at this group of 800, that
10 we had to exclude or should exclude, because it would only
11 confuse the issues. People who were born 1951 or afterwards,
12 by 1969, when the process of making 2,4,5-T ended, they would
13 have probably been 18 years old or younger. And we felt that
14 that would -- that would prejudice the -- askew the age
15 match, which we felt would be difficult to do anyway because
16 the exposed group was a new and older group, and we ended up
17 with inviting 1,800 and 6,431 who were known to be exposed
18 and 375 with no known exposure. And, letters were sent out
19 first by the plant manager, Royce Scott, and in forming that
20 population that there would be a study conducted in June, and
21 I believe the letters went out in February of 1979. And,
22 follow-up letters were sent as well and then the plant
23 newspaper had stories about or publicity about the
24 examination which was to be conducted. And then later on, I

1 wrote letters as well and the letters that I wrote, because
2 of the ease with which they would be delivered was sent
3 actually by the plant managers office at Monsanto. And
4 that's how we did our recruitment and that's how we attempted
5 to assemble our cohorts.

6 Q. Let me hand you, sir, what's been marked as
7 Defendant's Exhibit No. 1702, and ask you if you would
8 examine that and identify it for me, please?

9 A. This is a letter with the stationery of the
10 Institute of Environmental Health at the University of
11 Cincinnati with myself as the Director, dated May 16th, 1979
12 addressed to Monsanto retirees, I believe there were two such
13 letters and this one was addressed to the retirees informing
14 them of the study which would be conducted during the week of
15 June 11th, 1979, of workers and retirees from Nitro, and that
16 it would be a comprehensive examination, and he also informed
17 them that we had begun the phase of this study in 1977 when
18 we initiated an epidemiologic study with the epidemiologic
19 team at Monsanto, and I believe we referred to the work we
20 were doing with Judy Zack.

21 Q. And, who is --

22 A. We also included a return card indicating what day
23 would be most convenient for their participation, and the
24 fact that travel expenses would be paid for out-of-town

1 participants and the hours of the examination and how long
2 the examination would require.

3 Q. And who signed that letter, sir?

4 A. I signed the letter.

5 Q. All right. The second page is what, sir?

6 A. Second page, I believe, is the reverse side of the
7 post card which asks to be returned whether you intend to
8 participate or not, and there is a line with an area to check
9 I will participate in the health examination, and another
10 line I will be unable to participate, and the two most
11 convenient days to be circled, and the persons to call for
12 additional information about assistance in transportation.
13 These people were two very helpful Monsanto employees, one of
14 them is Owen Dolen, and the other is the nurse Sarah Anthony,
15 both of whom were very helpful in the scheduling as well as
16 the strategy of carrying on the examination.

17 MR. HEINEMAN: Now, if the Court please, Your
18 Honor, we'd offer Defendant's Exhibit 1702.

19 THE COURT: Any objections?

20 MR. CARR: None, Your Honor.

21 THE COURT: Admitted without objection.

22 Q. Let me hand you next what's been marked as
23 Defendant's Exhibit 1703, and would you identify that for us,
24 please, sir?

1 A. This is a letter with the same date and stationery
2 University of Cincinnati, Department of Environmental Health,
3 signed by myself, which indicates as well and this was
4 addressed to Monsanto employees, that there would be a health
5 examination of Monsanto workers and retirees in Nitro during
6 the week of June 11th to 18th and that it would be a
7 comprehensive examination and many tests would be made to
8 determine the state of health of each individual and to
9 identify health problems which might be related to
10 occupational environments. And again we write about the
11 epidemiologic study which was underway at the time, as well
12 as inserting a post card for a reply from the individual to
13 whom this letter is addressed asking to check off whether
14 they will or will not participate and what the two most
15 convenient days were.

16 Q. Now, sir, one letter is to retired persons and one
17 letter is to current employees, is that right?

18 A. Right.

19 Q. Was an identical letter sent to every retiree?

20 A. An identical letter was sent to every retiree, yes.

21 Q. And how about every employee? Was an identical
22 letter sent to every one of them?

23 A. Yes, to my knowledge, it was.

24 Q. Was there any --

1 A. That included the 886 individuals.

2 Q. Was there any effort made to dissuade anybody from
3 participating?

4 A. If there was, we would have quit, Mr. Heineman.

5 Q. So the answer to my question, sir, is there was
6 not?

7 A. Not to my knowledge.

8 Q. And, you mentioned a moment ago that Mr. --

9 A. Owen Dolen.

10 Q. Owen Dolen and Mrs. --

11 A. Sue Anthony.

12 Q. Mrs. Anthony participated in it. Was it the
13 strategy of the examinations, did I understand you correctly?

14 A. They participated in the carrying out of the
15 examination, but they also participated in the recruitment,
16 because they followed up these letters especially if there
17 were replies that were uncertain, or if there were two dates
18 chosen they had to give them one day to participate, and they
19 would then call this individual back to tell them what day
20 they were going to participate.

21 Q. Now, what exactly did these two individuals do in
22 connection with the examinations themselves?

23 A. Mr. Dolen didn't do anything about the examination,
24 he was the -- he assisted in the strategy of recruitment and

1 strategy of getting the people who had been recruited to the
2 examination with proper transportation and so on.

3 Mrs. Anthony was very helpful in the scheduling,
4 along with our coordinator, Pam Winter, who was a very
5 effective administrator, happened to be a graduate in
6 industrial hygiene, and she was a very efficient coordinator
7 and she and Miss Anthony and others from the medical
8 department at Monsanto really organized the scheduling of the
9 436 individuals over a period of 10 days or more.

10 MR. HEINEMAN: Now, first of all, Your Honor, I'd
11 like to move the admission of Exhibit 1703.

12 MR. CARR: Again, we have no objection.

13 THE COURT: Admitted without objection.

14 Q. (by Mr. Heineman) Now, when you got a list of
15 these 800 and some people, did you get any records from the
16 -- from Monsanto with respect to those 800 people?

17 A. Well, I'm not altogether sure my memory is correct
18 that we got them at the same time or later, but we did
19 eventually get the medical records, the medical records of
20 the people who were recruited and the work records as well.

21 Q. Now, did I understand you to say that Monsanto
22 provided you with their impression as to who was exposed and
23 who wasn't?

24 A. Well, I don't believe it was an impression, I think

1 that they went through their records, and they determined, I
2 believe, that the department of -- or Division of
3 Epidemiology, their office, went through those records to
4 determine where each of the individuals on this list of 806
5 could be classified, whether they were in the active employee
6 list, and they were exposed with or without acne, or whether
7 they were unexposed and didn't have acne.

8 Q. Now, in making your determination in conducting the
9 study as to who was exposed and who wasn't exposed, what did
10 you rely on?

11 A. Well, after the examination was conducted, we
12 looked at the histories that we took from the workers
13 themselves, and we contrasted them with the work histories
14 that we got, or the categories that they were placed in by
15 Monsanto, and we found that there were really some
16 discrepancies between the workers concept, and the work
17 histories were very thorough, as to whether they were indeed
18 working in either Building 41 or 34 or 51 or 92, which were
19 the exposed areas, or whether they were maintenance people
20 and mechanics that had access and were assigned to those
21 areas, so in some instances there was a discrepancy and some
22 of the people that Monsanto had designated in those sheets as
23 unexposed, we felt they were exposed, and also there were
24 some instances where the opposite was true. So, we really

1 relied for the final cohort designation of exposed and
2 unexposed, and we decided that we had better just use those
3 two categories, and we also developed a third category and a
4 third category was questionably exposed. There was some
5 doubt in our minds as to whether they were really exposed to
6 the 2,4,5-T process. And there were over 50 of those in our
7 group. So that we really had in the final cohort designation
8 three groups, exposed, unexposed, and questionably exposed.
9 And then what we decided to do was to not use chloracne as a
10 criteria for a cohort, but to use it as a variable. This
11 would allow us to determine who among the exposed had
12 chloracne, what the severity was, who among the non-exposed
13 had chloracne, and who among the questionably exposed had
14 chloracne, and then we could use chloracne as a variable.
15 And, it was a very important variable. That is did they ever
16 have chloracne, did they have chloracne in the past but we
17 didn't find it on examination, or did they, or was there
18 residual chloracne. And those were three variables we used,
19 but not in establishing a cohort.

20 Q. Now, that's what I want to get back to for a moment
21 in establishing the cohort. In those instances -- well, as
22 between the way Monsanto designated them as exposed versus
23 unexposed, and on the other hand the way the people who
24 participated classified themselves by work history, which did

1 you rely on in classifying them for your study?

2 A. We relied to a large degree on the workers' history
3 of exposure and we knew what buildings were involved, and the
4 workers themselves were very alert and conscious of the fact
5 that they might have been exposed if they had worked in an
6 area as a maintenance worker or a hauler or whatever. And,
7 we relied on those histories as the -- as the criteria for
8 designating exposed versus non-exposed and questionably
9 exposed. We also did this -- we had to make some judgments
10 which were important. We also went to the work records to
11 find out whether or not indeed there was any evidence of
12 exposure in the Monsanto work records. Now, the work records
13 had some limitations. The work records didn't tell us what
14 the worker handled in that building or in any of the
15 activities. It usually provided designation as to known
16 classification, and sometimes assignment to building but not
17 what they did in that building.

18 Q. Okay. So when you said you relied upon the workers
19 history, that's the history that that worker gave to your
20 interviewers during the study, is that right?

21 A. Yes, indeed.

22 Q. And not how far Monsanto had characterized them?

23 A. Yes.

24 Q. Now, were there instances in which Monsanto

1 characterized them as unexposed but the worker characterized
2 himself in such a way that you believed he was exposed?

3 A. Yes, there were.

4 Q. Okay. Were there instances in which Monsanto would
5 characterize a person as exposed but from what you got from
6 the worker you drew the conclusion that he was unexposed?

7 A. Um, there were a few, and there were more of the
8 so-called intermittently exposed, which the Monsanto
9 classification of intermittently exposed in which we found
10 discrepancies. We didn't use the designation intermittently
11 exposed. We used a designation of exposed, unexposed, and
12 then questionably exposed. And, with respect to what the
13 workers told you about their exposure, were there just --
14 would they just say, well, I was exposed or unexposed or
15 would they be questioned about where they work, what they
16 did, that sort of thing?

17 A. Yes indeed, there certainly were questions within
18 the work history material, the questions which allowed us to
19 determine whether they were exposed and what they did, what
20 they did so that they felt that they were exposed.

21 Q. Okay. Now, I'm not sure I understand about the
22 difference between the group originally identified that you
23 wanted to include in the study, as compared to the group that
24 you eventually sent invitations to. Did I understand there

1 was a difference between the two?

2 A. No, not at all. We sent invitations to everybody
3 who we felt would be recruited, or satisfied the criteria
4 that we set. And there were 806 of them.

5 Q. Okay.

6 A. And we didn't know -- we didn't know at that time
7 whether they were intermittently exposed or how they were
8 exposed, with or without chloracne. These were people who
9 were employed or retired or terminated and had worked or were
10 working at Monsanto.

11 Q. Was there an original protocol for recruiting or
12 criteria that you would look for?

13 A. Sure, but you had to start out with -- you had to
14 start out with a large group and then determine what class
15 they were going to be put in. What if we originally in our
16 original protocol wanted people with exposure and chloracne,
17 or exposure without chloracne, or no exposure, no chloracne,
18 we would have gotten that eventually, and we did. We did.
19 We got a list of the people that Monsanto felt were exposed
20 with chloracne or exposed without chloracne, or they had an
21 intermittently exposed group which we didn't participate
22 prior to when we originally wrote the protocol, with or
23 without chloracne and an unexposed group.

24 Q. Okay.

1 A. So that in a sense, the information that we got,
2 the list that we got also allowed us to determine what
3 Monsanto felt the cohort that they might be put in.

4 Q. Were there people that you couldn't trace? Was
5 there anyone you couldn't trace?

6 A. Well, I assume that there were. These were -- the
7 lists that we got were the only traceable people. The 806
8 were the traceable people.

9 Q. I thought I understood you to say something about
10 the people who had been terminated. Could you phrase
11 everyone who had been terminated either voluntarily or in
12 voluntarily?

13 A. No, that's why -- that's why they were that
14 recruitable, because those who were terminated and had no
15 medical records, like workman's comp records, were difficult
16 to trace. They might have been traceable if we had months in
17 which to do it, but we didn't.

18 Q. Now, what about the people who had been exposed in
19 the '49 runaway reaction?

20 A. They were all traceable, because they all had
21 medical records and workman's comp records.

22 Q. Okay.

23 A. Whether they were retired, terminated, or active.

24 Q. Which group did you feel was the most heavily

1 exposed, the highest exposure group?

2 A. Well, I think we have discussed that before, Mr.
3 Heineman, and I think that we had felt that originally that's
4 why we did our mortality analysis, that the group that was
5 exposed to the runaway reaction was the most heavily exposed.

6 Q. Now, with respect to the questionably exposed
7 group, did you include the questionably exposed group in your
8 ultimate paper written with respect to this study?

9 A. Yes, we did. Yes, we did. However, because of the
10 length of the manuscript, the editors of the Journal of the
11 American Medical Association felt that it had to be shortened
12 and we had to make a choice as to how to shorten it. And one
13 of the ways that we could do that was to take the exposed and
14 take out the questionably exposed and take out the data of
15 the questionably exposed so we were just comparing the data
16 on the clearly exposed versus the clearly unexposed, so that
17 the final manuscript which was submitted for review contained
18 those data on the clearly exposed and the clearly
19 non-exposed, and that was the material which appeared in the
20 publication in the Journal of the American Medical
21 Association.

22 Q. Now, with respect to the control group, the clearly
23 unexposed group, were they an internal control group?

24 A. Yes, they were an internal control group.

1 Q. And, on what basis did you make the determination
2 that they were clearly unexposed?

3 A. On the basis of the fact that in their work
4 histories, there was no evidence on the review of their
5 records, the work history records that we took, that we
6 elicited. There was no evidence that they were ever exposed
7 to the 2,4,5-T material or operation.

8 Q. Were there occasions when these work histories that
9 you took conflicted with what the Monsanto records of work
10 history showed?

11 A. Well, as I pointed out, in some instances many
12 instances the work records that we got from Monsanto did not
13 designate frequently what building they were in, or what they
14 did, so we had to depend upon the worker to tell us that.
15 And, the work histories were not marked exposed or not
16 exposed. No such designation on a work record. Work record
17 is really a personnel record. And, the personnel record
18 simply designates assignment, classification of job, and
19 where they worked. Sometimes, if it was a pipefitter or
20 maintenance worker or machinist, sometimes they were
21 floating, and they would be in many parts of the plant, but
22 that wasn't on the work record, just the job was on the work
23 record. So, we had to elicit from the participant where they
24 worked, did they ever work in Building 41, or 34, or 51.

1 Q. Now, with respect to the, I believe 436 who
2 volunteered to participate, were there any others who ended
3 up participating in the study?

4 A. No, the 436, Mr. Heineman were the number of people
5 examined, not the number who were recruited before the
6 examination. The final number examined.

7 Q. Right.

8 A. Now, some of those people, because we continued, we
9 wanted as many participants as possible, some of those people
10 actually said that they would participate in the examination
11 during the week of the examination. And we turned nobody
12 down. And some of the people who volunteered were active
13 employees, not exposed. Some of them were active employees,
14 exposed. So -- but the total number that we examined during
15 that week were 436.

16 Q. And they included people then who were not in the
17 original list of invitees?

18 A. No. Those were all invited, but they didn't choose
19 to participate originally.

20 Q. So they changed their mind?

21 A. Yeah, there was just one individual who was not
22 invited, and we can discuss that and the reasons for our
23 wanting to examine him. We can do that later on.

24 Q. Okay. Now, would you tell us who it was that

1 conducted this study, who participated in it, with respect to
2 the University of Cincinnati, and anybody else that assisted?

3 A. Well, the people involved in the examination itself
4 from the University of Cincinnati included the program
5 coordinator Pamela Winter who had designed the strategy of
6 the examination along with Susan Anthony and Owen Dolen and
7 myself and paid many visits to Nitro before the examination
8 took place. And there was myself as the principal
9 investigator and the responsible person for the examination.
10 Then there were a group of physicians and they included a
11 number of dermatologists, five physicians who were trained
12 and certified in occupational medicine, two scientists from
13 NIOSH, who assisted in the conduct of the nerve conduction
14 velocity part of the study. And two medical officers from
15 the Air Force, who asked to participate because they were
16 preparing the protocol for the Ranch Hand study and they
17 wanted to see how an examination of the size that we did was
18 conducted. Their study was a much larger one involving a
19 larger population and conducted later. There was -- there
20 were four registered nurses. There was in the design of the
21 study, there were two people from the department who are
22 biostatisticians. They were were helpful in the design of
23 the study. There were two persons who did run our pulmonary
24 function laboratory in the department, and they were involved

1 in running the pulmonary function tests at Winfield where the
2 examination was conducted.

3 Q. Excuse me, when you say in the department, you mean
4 --

5 A. In the Department of Environmental Health.

6 Q. At the University of Cincinnati?

7 A. University of Cincinnati. There were four graduate
8 students, sorry, three graduate students, who were trained
9 and assisted in the conduct of the nerve conduction velocity
10 examinations which was supervised by the two people from
11 NIOSH. There was three laboratory technicians and there were
12 six trained interviewers. Among these interviewers there
13 were nurses, and senior graduate students in toxicology, who
14 received training in interviewing before we went to West
15 Virginia, and the business officer for our department, at
16 least in this study, was Mr. Curtaine, who is the senior
17 business manager of the department.

18 Q. Now, was there a particular form that you used in
19 order to conduct the interviews and the physical examination?

20 A. Yes, there was.

21 Q. Let me hand you, sir, what's been marked as
22 Defendant's Exhibit 1704, ask you to examine that and
23 identify it for me, please?

24 A. This is a reproduction of the 29-page form which

1 was used by the examining personnel including the
2 interviewers and the doctors and the people performing the
3 tests. And it includes a large number of items for the
4 interviewer to question about and for the physician to
5 complete including a physician's history as well as the
6 record of his physical examination and the abnormal findings
7 and the impression on diagnosis.

8 Q. Okay. Is that the form used in the Nitro morbidity
9 study?

10 A. This was the form used by the interviewers and
11 examiners at the study that we conducted.

12 Q. Would you briefly tell us, sir, if you would, the
13 kinds of information that that elicited, particularly by the
14 interviewer?

15 A. Well, on the front of this document, and I don't
16 believe it's included in the form that you have here, is an
17 informed consent statement, so that this is really
18 incomplete. It should contain an informed consent statement,
19 which the participant had to read and sign, and it provided
20 us with the agreement for the person to participate in the
21 study, and to understand what the parameters of the study
22 were.

23 Q. This is a requirement by the university, by the
24 Public Health Service, so that that was also part of the

1 form. There is a second page which is, I believe, omitted,
2 and as you see this document starts on item 18 and 19, and it
3 should really start on item 1.

4 Q. All right.

5 A. This is to be complete. And I think that it's kind
6 of necessary to understand what the complete examination,
7 complete form consisted of. The second page, the head sheet
8 is missing, the consent form. The other thing that we need
9 is Page 1 of this questionnaire and that is some of the
10 demographics, name, address, telephone number, social
11 security number, present status, active, retired, terminated,
12 the current department, title, clock number, very important
13 information, and then as this starts on Page 2, we have again
14 the personal data, birthdate, sex, race, ethnic origin,
15 marital status, number of marriages, education. These things
16 are kind of important, and I don't think that one should say
17 well, yeah, that goes on in all records, but if you are to
18 compare two groups, you want to make sure that you compare
19 them with respect to age and education and marital status,
20 because those parameters or those variables can be
21 influential.

22 Then there is an occupational history. And there
23 are really four pages for occupational history, what their
24 job titles were, the department, and main jobs when they

1 started this job, when they worked for Monsanto, and there
2 are 15 lines to indicate, because some of them had worked for
3 Monsanto for many years. We had to find out where they
4 worked and what they were exposed to. So we went back 30
5 years if we had to, and all of their jobs, the job title, the
6 dates, and what they did, and this information was really
7 very important, because it told us whether they were exposed
8 or not exposed. What you did. A work description was really
9 critical and there are 15 different lines for that. Some of
10 them who hadn't worked with Monsanto long could be covered in
11 two lines, but some of them took all the fifteen lines.
12 Then, if they were retired or terminated, what they did
13 since, that was important, too. If they were retired ten
14 years ago and they went into the construction business or
15 were terminated ten years ago and went into the -- into
16 another industry, we had to know what they did in that other
17 industry. And there are a large number of lines for that,
18 and what they did before they worked for Monsanto. So, that
19 the history of the work history was rather critical and to
20 find out what they did before they worked for Monsanto, what
21 they did after they may have worked for Monsanto, and other
22 kinds of employment while they worked for Monsanto, too.

23 Some of the confounding factors that we had to
24 contend with. Some of these people were miners before they

1 came to Monsanto, it's a mining area, and if they had x-ray
2 findings of pneumoconiosis, black lung, or x-ray findings of
3 black lung, it didn't come from the Monsanto job, it came
4 from the mine. So we had to know all of these things. Some
5 of the people who were active did mechanical work on the
6 side, worked the gas station. Or they did farming. Many of
7 them did some farming, and we wanted to find out what they
8 were exposed to on these other jobs, dust, solvents,
9 pesticides, welding, fumes, solder, fertilizer. Were they
10 exposed to weed killers on their other jobs, so that I think
11 you can tell by that that we made every attempt to get a
12 pretty thorough history, and we felt that the interviewer
13 should pay attention to all of that.

14 We were then concerned with the work hygiene at
15 Monsanto. Did they smoke at the work site? Did they eat at
16 the work site? Did they wear long sleeves or short sleeves?
17 Did they wear gloves or aprons or protective sleeves or masks
18 or boots or respirators, eye protection. We wanted to find
19 out what kind of protection they actually used during any job
20 that they had. Not just if they were exposed but any job
21 that they had; whether their clothes were laundered; whether
22 they were laundered at Monsanto or whether they were
23 laundered at home. Did they take advantage of the lockers
24 and the showers that were provided by Monsanto later on in

1 the fifties, and use the personal hygiene facilities. Did
2 they use a waterless hand cleaner? Did they supply the soap
3 themselves. And then we asked them perhaps a leading
4 question, but it really had to be asked, and that was did you
5 ever develop an illness which you believe related to the work
6 at Monsanto. And, in some instances we got the answer yes.
7 And we -- and if yes, where did you work at the time? What
8 type of work and what was the date of onset of your illness?
9 Had to find out how much they smoked. Terribly important.
10 So, we got a history of when they started to smoke. If they
11 smoked cigarettes or a pipe or tobacco. If they now smoked
12 cigarettes at the time of the examination or they smoked in
13 the past and then quit, or they never smoked. And this was
14 an important variable because for many of the health effects
15 that we looked at, many of the like pulmonary function or
16 lipids, we wanted to know if they currently -- if they smoked
17 in the past, or if they never smoked. And that variable
18 happened to be a very useful one, and it is in almost all
19 epidemiologic studies, especially morbidity studies, alcohol
20 consumption. I think we went through this morning why we
21 need to know how much alcohol people drank and we had to
22 establish some criteria for determining if they were drinking
23 a lot or drinking very little. If their drinking habits
24 changed over the time.

1 Then we went into -- this again is important,
2 family history. Some of the problems that these people some
3 of them had, could be traced to their family. It's quite
4 well-known that cardiac complaints often run in families.
5 Problems involving lipid metabolism often run in families.
6 Sensitivity to certain environmental agents may run in
7 families. Whether they have asthma or hayfever, acne
8 vulgaris runs in families. So we wanted to find out if the
9 father, the mother, or brothers or sisters had these
10 problems. Whether they had peptic ulcers or colitis, or
11 heart conditions, including high blood pressure or stroke, or
12 had lipid disturbances that they knew about or diabetes, or
13 liver disease such as cirrhosis or nervous or mental
14 disorders.

15 Then we came to the item of cancer in families and
16 we wanted to know the father, the mother, the brother or
17 sister ever had cancer and what type of cancer they may have
18 had. And we had 18 types specified. Now, I think it's
19 important that we remember this, because in the analysis of
20 the data, in the analysis of the data we analyzed our data
21 according to an international code called SNOWMEN and we
22 analyzed our data and didn't lump all cancers together, we
23 kept them separately. And, we could total them up but we had
24 to know which cancers were involved. And this is not only

1 for family history, but especially personal history, and
2 that's the next item on Page 15, a crystal page in our data
3 bank. A history of skin problems, liver disorders, neuritis,
4 nerve injuries, nervousness, stomach ulcers, bowel trouble,
5 kidney trouble, bladder. But we asked if they had this at
6 any time. Didn't matter whether they had it in 1944 or '43
7 or 1960, but we wanted to know if they ever had it and what
8 year they had it, and was it confirmed by a doctor. And in
9 some instances we had to know what area of the body, for
10 example, if they had dermatitis or acne or abscesses, what
11 area of the body. If they had recurrent infections. It's
12 been known in animals that the immunologic defenses of
13 animals may be altered by TCDD so that we had to ask the
14 question, do you have frequent infections. This would give
15 us a clue as to whether or not they had any immunologic
16 problems from a clinical standpoint. From a clinical
17 standpoint. And again if they ever had emphysema, asthma,
18 pulmonary edema which comes from heart failure, or from a
19 toxic agent, pneumonia, pleurisy, or stroke, and again we
20 asked them if they ever had cancer. And we listed these 18
21 categories of cancer, and asked them in what year it
22 occurred, and what type of cancer they had. Then we asked
23 were they ever hospitalized, if they were what were they
24 hospitalized for, what condition and what hospital. This

1 would give us an indication as to whether or not they had
2 problems which might be related to their job as well. Or did
3 they have a hernia, or a -- were they operated on for flat
4 feet, which is not likely to be occupational, but we also
5 wanted to know if they were ever hospitalized for their
6 chloracne.

7 Then we had a special category of -- we were
8 interested in gastrointestinal things, so we asked a fairly
9 large number of questions about stomach and intestines, then
10 a neurological history, including sleeplessness and
11 nightmares and muscle or joint pains, muscle weakness and
12 dizziness, depression, and then we asked about their sexual
13 history. Now, after -- I have to tell you that for all of
14 these, we again wanted to know if they had it at any time, if
15 they had it last year, or even if they had it in 1930. We
16 wanted to know and identify when they had these problems.

17 And then we had a question on reproduction,
18 marriages, dates, how many children were born alive, how many
19 died within a short period of their births, how many
20 miscarriages or spontaneous abortions they recalled their
21 wives having, how many still births, how many children with
22 birth defects. And if they had problems having a family.
23 Did they want children and couldn't have them. And again the
24 number of miscarriages or still births with individual

1 spouses. Some of them may have had one wife, some may have
2 had more than one wife. Then we wanted to know what kind of
3 medicines they took. That's always very important in
4 determining relationship between whether or not a symptom or
5 a finding may be caused not by the job but by some medicine,
6 some prescribed or not prescribed medication which they might
7 be taking. And in that we asked if they ever had acne and
8 what kind of treatment they might have got for their acne.
9 If they were allergic to drugs or did they ever have any drug
10 reactions. And after that, it's a long history. I don't
11 apologize for taking the time to tell you about it because I
12 think it's important to recognize how thorough this
13 examination was.

14 We then went on to the examination, the physical
15 examination itself. The individual went to a nurse who took
16 vital signs. Vital signs are size, weight, height, blood
17 pressure, pulse, respiration and a general appearance of the
18 individual. Where they were, they looked sick, they looked
19 depressed or they looked well, and we wanted an impression
20 from the person who took the vital signs before the
21 individual went to be examined by the doctor and the doctor
22 took again took an additional history and took a history of
23 skin problems, respiratory problems, dental problems, eye
24 problems, problems involving swelling of nodes, problems

1 involving the respiratory tract, the heart, any other aspect
2 of the thorax. Whether they had any history of
3 gastrointestinal problems, whether they had a history of
4 liver problems. The history of sexual disturbances and
5 libido, again, any time, not just during any restricted
6 period. Any problems in there referable to their skeletal
7 structures, bones, their muscles. Any kidney problems,
8 bladder problems, general problems including reproductive
9 problems, blood vessel problems. Some of these people may
10 have had varicose veins, and those are blood vessel
11 problems. Some of them may have had angiomas of the skin,
12 which are blood vessel dilatations in the skin.

13 Neuropsychiatric history. Then a history of infections, and
14 then the doctor examined the patient or the participant
15 thoroughly, and the skin examination was done by a
16 dermatologist. The skin examination was done by one of the
17 dermatologists. If there was need for an ophthalmologic
18 examination we had a certified ophthalmologist there. And
19 then the doctor usually cited the abnormal findings from
20 history, and abnormal findings from physical examination and
21 then gave in most instances an impression or diagnosis and
22 wrote comments.

23 The individual then could have done before his
24 examination, his or her examination, went to the pulmonary

1 function lab where they did breathing tests, and two very
2 qualified people conducted the breathing tests, and kept a
3 record of it, which was part of the chart. And then nerve
4 conduction velocity tests were conducted, and that was
5 recorded as to what the findings were and then another part
6 of the form had a check for the laboratory tests which were
7 done to make sure that we had in our record that they had all
8 the laboratory tests which we wanted to know done. But the
9 blood samples were taken, urine samples were taken. We took
10 skin biopsies. We took skin scrapings. Since the skin was a
11 critical issue here, we wanted to make sure that the
12 diagnosis of the skin problem was a proper one, and we took
13 numerous biopsies, not only of chloracne, but other skin
14 lesions and some of them were lesions that were suspected of
15 being a skin cancer, or an eczematous lesion like in contact
16 dermatitis. We did cultures of the skin, scrapings for fungi
17 and for bacteria where they were indicated.

18 We took photographs of the participants so that we
19 had a record of them. And, of course, there was a check-off
20 sheet whether they had their x-rays done and they had their
21 EKG's done. This was all done in Winfield although the
22 readings of the x-ray and EKG's were done in Cincinnati.

23 That essentially constitutes the examination of the
24 436, people and everybody got the same kind of examination.

1 Q. Dr. Suskind, who came in and did the urine and
2 blood samples? Who participated in that?

3 A. Well, the urine and blood for the regular
4 urinalyses, the urine chemistries, the blood chemistries and
5 the blood counts, we had technicians who took the blood, took
6 samples of the urine, and they prepared them for shipment to
7 the MEDPATH Laboratory, and the MEDPATH did those, did those
8 analyses. However, we had some special lipid analyses done
9 of blood and they were sent separately to a lipid research
10 center laboratory at the University of Cincinnati and those
11 -- that laboratory used the methods of the National Lipid
12 Research Project, which we felt we needed in order to make
13 sure that the lipid determinations were done correctly and by
14 an extremely well-qualified laboratory, which we have at the
15 University of Cincinnati.

16 Q. Now, did anyone from MEDPATH participate?

17 A. We had a MEDPATH representative who assisted in the
18 -- not only in the collection, but the packing and shipment
19 of the bloods and urines to MEDPATH.

20 Q. What, if anything, Dr. Suskind, was done with the
21 results of this examination?

22 A. Well, the data from the questionnaires and the
23 subject's medical history were coded by assigning --
24 epidemiologic study, you are really not interested in names.

1 You are not interested in who the people are, you are
2 interested in the collective information because you are
3 comparing groups and you are comparing the results in a group
4 with a defined characteristic to a group that does not have
5 that defined characteristic so that the data from these
6 questionnaires and medical history were coded by assigning
7 values to the responses given, and they were coded according
8 to SNOWMED or this is a code using the systemitized
9 nomenclature of medicine system of the International
10 Association of Pathologists. A coding system which is used
11 universally in epidemiologic studies as well as in record
12 keeping. When a hospital record is coded for findings and
13 diagnosis, the SNOWMED system is usually used.

14 Q. Was this --

15 A. I --

16 Q. I'm sorry?

17 A. I say the medical history was usually coded that
18 way and the laboratory data was entered just as received and
19 then keypunched and verified. The numerical data was entered
20 into the computer and the computer data was then compared to
21 the original files for their accuracy and this verification
22 process goes on all the time, if you want to make sure that
23 the computer has received the proper information. And then
24 multiple linear regression analyses were done. When we

1 compared the exposed group to the not exposed group and we
2 compared as I said, we used Chlorance as the variable. Those
3 who had chloracne at any time had a history of Chlorance,
4 those who had a residual chloracne and those who never had
5 chloracne, and multiple linear regression analyses were used
6 to compare the exposed versus unexposed and the chloracne
7 groups with respect to laboratory data plasma lipid levels,
8 pulmonary function levels, all clinical laboratory values,
9 nerve conduction measurements, after adjustment for
10 covariables. Adjustments for covariables were age and
11 smoking and alcohol.

12 Q. With respect to the --

13 THE COURT: Before you get into that next question
14 is this a good point to break? It's about ten to.

15 MR. HEINEMAN: I'm sorry, sure, Judge.

16 THE COURT: We will recess at this time for the
17 day. We will start again tomorrow morning at 9:30. I would
18 remind you as I do on any overnight break that you are not to
19 read, listen to, or watch anything about this case in
20 particular, subject matter in general, in any of the media.
21 Thank you for your attention and cooperation.

22 (The following proceedings were had in Chambers, outside the
23 presence of the jury.)

24 MR. NASSIF: Judge, I was going to explain to you

1 this morning but we didn't have the time --

2 THE COURT: Right.

3 MR. NASSIF: -- That Dr. Suskind has canceled his
4 conflict on -- he's not cancelled the conflict he's just not
5 going to be available at Cincinnati for the seminar on the
6 6th and 7th, but will be there to host it on the 5th and then
7 he has --

8 THE COURT: Run that past me again.

9 MR. NASSIF: If you remember -- I should try to do
10 this in sequence, I'm sorry I'm skipping here. Dr. Suskind,
11 originally we had advised you, would not be available on the
12 20th, 21st and the 5th, 6th, 7th of March.

13 THE COURT: Right.

14 MR. NASSIF: He is now -- he is hosting a
15 conference on the 5th, 6th, 7th. He only has to be the host
16 for the 5th, and I've advised counsel for the plaintiff of
17 those three dates. In other words, February 20th, 21st, and
18 March the 5th and said that he will be available to finish
19 his testimony into March as we need him, subject to the two
20 days that you are going to be gone, the 13th and 14th. He
21 will be here the 17th and the other days of March before that
22 except for the 5th.

23 THE COURT: Wait a second. We are missing some
24 days here. Let me get a calendar so this makes some sense.

1 He had talked about being here the 3rd and 4th not the 5th of
2 -- 7th -- you are saying he can be here the 3rd, 4th, 6th,
3 7th and the rest of March until he's done?

4 MR. NASSIF: Until he's done, subject to your thing
5 on the 13th and 14th.

6 THE COURT: Which would the 13th and 14th, which is
7 when I'm in this conference.

8 MR. NASSIF: Mr. Carr has agreed to withdraw his
9 objection subject to that commitment that I have made to you
10 and I wanted to ask then, Judge, that you withdraw your
11 order.

12 THE COURT: So in other words this is by agreement
13 that he would be gone the 20th, 21st of February, and March
14 5th. He will be available for the rest of the time until he
15 is done?

16 MR. NASSIF: Yes, sir.

17 MR. CARR: It's not by agreement. What I have said
18 is since they have committed him to be here when he's needed,
19 except for those days, that I will no longer object to it.
20 It's up to the Court.

21 THE COURT: Okay. That is agreeable with me also.
22 And, so he will be gone February 20, February 21, and March
23 5th. Okay. I will announce those dates plus those two March
24 dates. I'll just catch up on all the dates for March.

1 MR. CARR: The jury hasn't been told about that
2 24th yet, have they?

3 THE COURT: I don't know, but I will tell them
4 again or tell them for the first time, whatever. And, then
5 he is ours until we are done with him, basically?

6 MR. NASSIF: Yes.

7 THE COURT: Great. Good. I think that cures any
8 problem that I had with him.

9 MR. NASSIF: Okay, Your Honor, thank you.

10 MR. HEINEMAN: No court on the 13th or 14th?

11 THE COURT: I'm on this faculty and I can't get out
12 of it.

13 MR. NASSIF: Those are it? Those are the dates?

14 THE COURT: Yes.

15 COURT ADJOURNED:

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

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

8 Dated this 20 day of February, 1986.
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15 Debra M. Musielak
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1 STATE OF ILLINOIS)
2 TWENTIETH JUDICIAL CIRCUIT) SS
3 COUNTY OF ST. CLAIR)
4

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

10 Dated this _____ day of February, 1986.

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HON. RICHARD P. GOLDENHERSH

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