

1 BE IT REMEMBERED, that on April 9, 1986, the same
2 being one of the regular judicial days of said court, the
3 above-entitled cause came on regularly for hearing before the
4 HONORABLE RICHARD P. GOLDENHERSH, one of the Judges of said
5 court, at the St. Clair County Building, 10 Public Square, in
6 the City of Belleville, St. Clair County, Illinois.
7 Whereupon the following proceedings were had:

8 (The following proceedings were had in chambers out
9 of the hearing and presence of the jury.)

10 THE COURT: I have reviewed all of these matters
11 that we have been discussing, and at this point in time I am
12 going to reserve ruling on the question that your motion
13 basically that is posed to the court and I want to see if
14 there is any substantial change in these circumstances that
15 have been related to the court. So I am reserving ruling on
16 that and we will proceed with Doctor Cugell today.

17 As far as what we are going to tell the jury, I am
18 not going to tell them anything. There have been a number of
19 times when witnesses have disappeared, witnesses have
20 disappeared and reappeared at some point in time and they
21 will be told something. I don't think I have to tell them
22 anything today. I am not going to tell them anything today.
23 We will call Doctor Cugell back to the stand and we will pick
24 up with Doctor Cugell where we left off.

1 And so at this point in time, I am putting the
2 motion to reconsider and your motion basically on hold. I am
3 reserving ruling on it.

4 MR. HEINEMAN: I am not clear exactly when you say
5 the motion to reconsider, what do you mean, sir?

6 THE COURT: You had filed -- the affidavit that you
7 filed Saturday, I told you Friday that if you filed anything,
8 I would read it, in effect I would treat it as a motion to
9 reconsider my ruling on Friday as far as Doctor Suskind. Mr.
10 Carr made a motion in the argument that we had subsequent to
11 that, in effect, to drop Doctor Suskind for the reasons that
12 he stated in that argument. Those are the two motions that,
13 they have not been formally written down or designated as a
14 motion, per se, but that is basically the way I have treated
15 both your position and your position, so those are the two
16 motions that I am talking about. Those are the two positions
17 that I am talking about.

18 MR. HEINEMAN: As to the question of when Doctor
19 Suskind would come back?

20 THE COURT: Basically that is what we are talking
21 about. So those, when I talk about the two motions, that is
22 what I am talking about.

23 MR. HEINEMAN: With respect to our request to take
24 an evidence deposition --

1 THE COURT: I am glad you reminded me of that. I
2 am denying your request to take an evidence deposition of
3 Doctor Vilter. I don't think it would serve any useful
4 purpose at this point in time. I think on the contrary, that
5 it would be -- it would really -- it would take time away
6 from our proceedings here. We would either have to take time
7 off of trial in order to take the evidence deposition or we
8 would have to take time over a weekend for the evidence
9 deposition and possibly continuance of the evidence
10 deposition, taking another time off of a weekend where time
11 should be spent in preparation for this case, in resting so
12 that one can be ready for this case or taking another day off
13 of trial when one should be trying this case with the jurors
14 present. I think that it is really not a reasonable and
15 expediant expenditure of counsel's time or judicial time to
16 take his evidence deposition and at this point in time, I am
17 denying your motion for leave to take his evidence
18 deposition. I think those are the things that were pending.

19 MR. HEINEMAN: Your Honor, for the record, we had
20 suggested to Mr. Carr yesterday that the jury this morning be
21 told the following statement: "The testimony of Doctor
22 Raymond Suskind has been interrupted for health reasons" end
23 of quote, and that is what we had suggested to Mr. Carr be
24 told to the jury and we would ask the Court on the record to

1 do that today.

2 MR. CARR: Your Honor, we would not agree with that
3 either. As the Court has stated it is going to do, that
4 nothing should be said or the truth should be told the jury
5 that he has not returned so as to complete his examination,
6 that he and his doctor state that he is unable to do so
7 because of his health. Not anything other than that. Either
8 what the Court has suggested, that is nothing at this time
9 and tell them something later on, or that simply stating that
10 he has not returned so as to complete the examination of
11 him. He says he can't return. He and his doctor say he
12 can't return because of his health.

13 THE COURT: At this point in time, I would prefer
14 to tell them nothing. So I am, depending upon what
15 eventually happens, I will tell them something but at this
16 point in time I prefer to tell them nothing. So, both of you
17 can make suggestions at the appropriate time. I am not going
18 to tell them anything. We will resume, rather, with Doctor
19 Cugell.

20 MR. HEINEMAN: Your Honor, for the record, I would
21 just like to state that it would appear that saying nothing
22 would indicate either perhaps that he had been bannished for
23 some reason by the court in light of the difficulties that
24 the Court -- it appeared to the jury that the Court was

1 having with the witness, or it would appear that for some
2 reason he just refused to ever come back and neither of those
3 is the case and, therefore, I am concerned about saying
4 nothing to the jury and what their impression would be?

5 THE COURT: Well, I disagree. I think that saying
6 nothing leaves, under any intention of the situation, it is
7 easier -- depends upon what ultimately happens on this, to
8 make one statement and it will be easier to make that
9 statement if I have not made a prior statement which may be
10 contradicted in the future by circumstances and by this
11 Court's ruling. There have been times when people have
12 appeared and disappeared and there have been times when
13 people have appeared and then disappeared and appeared again
14 and this is not a neophyte jury, obviously. I think -- I
15 don't see any danger of speculation in their mind. It will
16 be resolved way before any time that they will be rendering a
17 decision in this cause and I think that the best way to
18 handle it at this point in time would be to say nothing and
19 proceed. So that is what I am going to do.

20 MR. CARR: I have our response, Judge, to their
21 motion to strike the juror.

22 MR. HEINEMAN: Judge, you said something about
23 substantial changes that could affect this thing with Doctor
24 Suskind. I am just wondering what the Court had in mind.

1 THE COURT: Well, I think it is pretty obvious. We
2 have had a lot of argument about, you know, you have been
3 here through the motions Friday. You wrote the letter
4 Saturday and you were here in the argument Monday and the
5 argument Tuesday. You know what the total circumstance of
6 this situation is. If there is a substantial change in those
7 circumstances, then I am reserving ruling to see if there
8 is. You have been here the same time I have been here. I
9 think you have been here the whole time. I don't keep
10 attendance but I think that you have and I think it is pretty
11 clear from what we have been talking about and what has
12 transpired on Friday, Monday and Tuesday and over the weekend
13 as to what I am talking about. So, we will see if there is
14 any substantial change. Gentlemen, I think the jury is
15 here. I think we should go to trial.

16 (The following proceedings were had in the hearing
17 and presence of the jury).

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

19 THE COURT: Yes, you may.

20 (Bench conference had out of the hearing of the
21 jury.)

22 MR. CARR: One matter I forgot to clear up. If the
23 Court will recall, when I commenced examining Doctor Suskind
24 about incineration and TCDD being formed, Mr. Heineman said

1 it was outside the scope of direct. On February 10, 1986,
2 page 69 or 89, I don't know which, he stated that in response
3 to a question by Mr. Heineman, as being exposed to TCDD, he
4 said, "I was, some of us are still being exposed, via
5 incineration." So, it was in direct testimony and I just
6 wanted to put that in the record at this point in time. That
7 is what I represented that it was in the direct examination.

8 THE COURT: That is 80 something but I can't tell
9 what page it is.

10 MR. CARR: It is on February 10th.

11 THE COURT: Thank you. Okay.

12 MR. MUSGRAVE: Your Honor, Mr. Heineman, of course,
13 was here just a few minutes ago when we were in chambers and
14 obviously I was not here for Doctor Suskind's testimony.

15 THE COURT: That is correct, you were not.

16 MR. MUSGRAVE: And it could have been mentioned and
17 he may have a response. I don't know. All I am saying is I
18 will take back to Mr. Heineman what Mr. Carr has indicated
19 and if there is anything he would like to respond to, I would
20 like to have permission, to get the Court's permission, have
21 him make a response not during court time.

22 THE COURT: Sure.

23 (The following proceedings were had in the hearing
24 and presence of the jury).

1 MR. MUSGRAVE: Doctor Cugell, come forward,
2 please.

3 DAVID CUGELL

4 having resumed the witness stand, being previously sworn,
5 testified further as follows:

6 DIRECT EXAMINATION

7 By

8 MR. JOHN R. MUSGRAVE.

9 Q. Doctor Cugell, you were, of course, I think last in
10 this courtroom back in the first week of February when your
11 testimony was interrupted and I am sure you realize and will
12 remember that you are still under oath and although you are
13 not being resworn, you are still under oath as you were put
14 at that time?

15 A. Yes, sir.

16 Q. Okay. Doctor, we had talked about four of the
17 plaintiffs in this lawsuit by that time that had dots on
18 Doctor Carnow's charts indicating at least by Doctor Carnow's
19 interpretation abnormal pulmonary lung function tests, that
20 being Carol Dominguez, Felix Dominguez, John Dominguez and
21 Michael Dominguez. Is that your recollection?

22 A. Yes, sir.

23 Q. I think we had finished Michael and I would like to
24 move on now to Dorothy Jennings who is another one of the

1 plaintiffs that has dots on Doctor Carnow's charts for his
2 interpretation of pulmonary lung function tests that he says
3 were abnormal. There are four of these that Doctor Carnow
4 references on these charts and there are three different
5 types of named abnormalities within those tests, FVC, the
6 FEF75% and the MVV. I know it has been awhile since we have
7 talked about those things. I am not going to have you
8 explain them generally right now but as we get into these, I
9 may ask you just to kind of refresh the jury's memory about
10 them. I would like to start with the first exam, pardon me,
11 I would like to start not the first exam by date that Doctor
12 Carnow has on here but one that was done before that.

13 Doctor, I have now handed you what has been marked
14 as Defendant's 1712 which is a spirometry of Dorothy
15 Jennings, the first one we have any record of in the records
16 that we have dated November 11, 1981 was done by the Boone
17 Clinic. Is that what was referred on what you have there,
18 Doctor?

19 A. Yes, sir.

20 Q. And can you tell us, Doctor, in reviewing that with
21 regard to the FVC, the forced vital capacity, your opinion as
22 to the findings there with regard to forced vital capacity
23 for Dorothy Jennings on this exam?

24 A. The results of her, the measured values she

1 delivered at this time of 2.87 liters compares very favorably
2 with a predicted value for a person of her age and height of
3 3.08 or 93 percent of the predicted value and that is quite
4 normal.

5 Q. All right, Doctor. Tell us what is forced vital
6 capacity, just briefly if you would, to help refresh the
7 jurors' memory?

8 A. The definition of forced vital capacity is the
9 maximum amount of air that you can exhale following a maximum
10 inspiratory effort. So, you suck all the air in and then you
11 blow it all out until it is all gone.

12 Q. And that is measured in liters and recorded?

13 A. Correct.

14 Q. By the machine that we talked about before? All
15 right. So, her FVC on this exam in November of '81
16 referenced by this test is normal, done by the Boone Clinic?

17 A. Yes.

18 Q. And how about her FEF75%? That is another one of
19 these findings?

20 A. Further down on the page that is shown and the
21 actual value is .77. That means .77 liters of air per
22 second, that is a flow rate. So, her performance on that
23 test was .77 liters per second.

24 Q. All right.

1 A. And the predicted value on this report is 1.74.
2 So, she had less than half of the expected value at the time
3 this test was done on that particular measurement.

4 Q. Now, that FEF75% as opposed to the FVC measurement,
5 are you measuring the same thing or different things just by
6 way of refreshing the jury's memory about that?

7 A. No. The first test we just described is merely a
8 measurement of how much air comes out. The test we have just
9 discussed, the FEF75% is the measure of how fast the air
10 comes out and this particular measure defines that at a point
11 when the lungs are relatively small when most of the air has
12 already been expired, so when the lungs are getting toward
13 the point of being empty, the rate at which the air comes
14 out, of course, is much slower than when the lungs are full
15 and this particular measure of this lady shows considerable
16 reduction of flow of the velocity of air movement when the
17 lungs are small.

18 Q. All right. So the FEF75% is a measure of rate as
19 opposed to volume?

20 A. That is right.

21 Q. The measure of speed at which the air comes out?

22 A. Correct.

23 Q. Now then, is the FEF75% on this November of '81
24 Boone Clinic test, is it normal or abnormal in your opinion?

1 A. Oh, no, it is clearly abnormal.

2 Q. But the FEV was normal?

3 A. Correct.

4 Q. Is that something, is that unusual to have that in
5 a situation, Doctor? Does that tell you anything?

6 A. Well, that pattern of lung function test results is
7 quite typical of certain types of lung impairment. It
8 implies that there is some abnormalities in what we call a
9 smaller subdivisions of the airways. It implies that there
10 is some changes in certain regions of the lung but not in
11 others.

12 Q. All right. We will come back to that, Doctor, as
13 we then look at the rest of these. Now, I want to move on,
14 then, to the next spirometry that we have a record of by
15 chronological date moving forward in time and the first one
16 that appears on Doctor Carnow's dot charts and that would be
17 what I will now hand you. Handing you what now has been
18 marked as Defendant's 1713, this says spirometry from the
19 Boone Clinic done December 14, 1981, on Dorothy Jennings.
20 This would be just what, a little over a month later than the
21 one that you just told us about, is that correct, Doctor?

22 A. Yes, sir.

23 MR. MUSGRAVE: All right. Your Honor, I have
24 copies of this 1713 that I would like to pass to the jury and

1 I do have copies of the earlier one that I could pass at the
2 same time. I would request permission to do that. I would
3 offer both of these into evidence, then, 1713 and 1712.

4 THE COURT: Any objections?

5 MR. CARR: None, Your Honor.

6 THE COURT: Admitted without objection.

7 (Defendant' Exhibits 1712 and 1713 passed to the
8 jury).

9 Q. Now, Doctor, 1713 being the December of '81
10 spirometry, with reference first to the forced vital capacity
11 and that is the top finding on this spirometry, is it not?

12 A. Yes, sir.

13 Q. Looking at the one that is on the left of
14 Defendant's 1713, what is the forced vital capacity and would
15 you comment on whether in your opinion it is normal or
16 abnormal?

17 A. Well, on this occasion, the value is 2.13 liters
18 which is distinctly reduced in comparison with the expected
19 value in the second column of 3.08. So that there is only 69
20 percent of what would be expected for the vital capacity on
21 this particular occasion.

22 Q. Is this reduced, then, from the one done just a few
23 weeks earlier?

24 A. Significantly, yes, sir.

1 Q. And if the jury has that -- and that forced vital
2 capacity I think you told us was 2.87, is that correct?

3 A. Yes, sir.

4 Q. Now, Doctor, attached to Defendant's 1713 is what,
5 sir?

6 A. The second page is a reproduction of the
7 spirograph, that is the tracing recorded by pen on paper at
8 the time the patient does the breathing maneuver and this
9 generally accompanies these efforts so that you can visualize
10 the manner in which the test was performed and that is what
11 is shown on this attached piece of paper.

12 Q. All right. We have a blowup of that tracing that I
13 would like to exhibit to the jury, Doctor, and let me see if
14 I can't find it. Just by way of quick review, we talked
15 about this tracing. This is Defendant's 1663 you identified
16 earlier in your testimony and does it not show where this
17 piece of paper is where the tracing is done when the
18 spirometry exam is done? Just come down and show that to the
19 jury again if you would quickly?

20 A. The paper is applied to this circular drum and it
21 rotates. The pen here inscribes the lines. The lines result
22 from the movement of this container which reflects the volume
23 of air that is blown into it and the speed with which the air
24 moves into this container.

1 Q. Okay. Now, this tracing, then, for Dorothy
2 Jennings on this occasion in December of '81, I would like to
3 have this marked as 1713A. Doctor, I have now placed on the
4 easel what has been marked as 1713A and can you identify that
5 as a blowup of the tracing that is attached to 1713?

6 A. Yes. It is identical.

7 Q. Do I have it right side up? I guess I do.

8 A. Yes.

9 Q. Doctor, can you tell us whether there is anything
10 in connection with this actual tracing and in connection with
11 the FVC that in any way explains the difference between the
12 FVC that was done just a couple weeks earlier and this one
13 that is now reduced?

14 A. Yes. I think the explanation is clearly apparent
15 from an inspection of these records. There are a total of
16 one, two, three, four, six separate individual expiratory
17 efforts recorded here on this same piece of paper. One, two,
18 three, four, five, six. The speed with which the drum
19 rotates is generally set such that these vertical lines
20 represent one second time intervals. This, particular
21 effort, for example, represents a one, two, three, four, five
22 and a fraction second sustained blow.

23 Q. And for that you are talking about the bottom line
24 on this exhibit?

1 A. That is on the bottom line. The rate at which the
2 line rises early in the expiratory maneuver is indicative of
3 how fast the air is moving from the patient into the
4 recording device and when the slope is rather slow and
5 prolonged, then the expiratory effort is sort of dragged out
6 and not coordinated and done in a rapid proper fashion and
7 you can see that the onset in all six efforts shows marked
8 variation. Look here. This one, the air just barely
9 trickles out, whereas here it seems to come out much more
10 rapidly.

11 Q. You indicate that the vertical lines represent a
12 second?

13 A. Correct.

14 Q. I take it, then, that another part of this graph
15 represents the volume?

16 A. The vertical -- the horizontal -- begin again. The
17 vertical lines represent time. The horizontal lines
18 represent volume and the volume values are indicated on this
19 scale here.

20 Q. On the right side there, is that correct, starting
21 down at the bottom?

22 A. Yes. Each.

23 Q. 100 going on?

24 A. Each vertical lines is 200 millimeters. This

1 represents one liter. A thousand milliliters.

2 Q. So what does this show just so this might help pull
3 this together by way of example, what does this show with the
4 difference, if any, on the six different blows between how
5 much air she was expiring in the first second?

6 A. Well, that would be highly variable because of the
7 inconsistent performance as visualized from the onset of
8 these six efforts. The beginnings are all different.

9 Q. Right.

10 A. So that the initial part of this effort which was
11 then sustained for another four or five or six seconds, the
12 initial parts are all different. So measurements made at the
13 beginning can be expected to have considerable variation. In
14 addition, the terminal or the end part of these efforts are
15 quite different and you can see on at least three or four of
16 them that the expiratory effort was terminated while air was
17 still moving from the patient into the recording device. So
18 that we would expect all six of these to have somewhat
19 different volume measurements since the volume was still
20 increasing when the patient decided to quit.

21 Q. What is the patient told in connection with this
22 about when they should quit?

23 A. If the test is properly done, the technician
24 continuously urges the patient on to maximum sustained and

1 continued effort until the technician observes no further
2 increment in volume and then says okay, breathe in.

3 Q. Now, what, Doctor, then is the significance of
4 these various volumes and flow rates and quitting while air
5 is still coming out, if any, in connection with utilizing
6 this spirometry for any diagnostic purpose?

7 A. Well, it casts considerable doubt on the validity
8 of the reported measurement. Lung function tests of this
9 type presume that the numbers reported are the true maximum
10 that the patient is capable of delivering. The vital
11 capacity is defined as the maximum amount of air. If the
12 effort that was expended or that the patient exerted when the
13 test was done no longer represents their maximum, then, of
14 course, the value can't be used as being very meaningful or
15 have much clinical significance.

16 Q. Doctor, with regard to the forced vital capacity,
17 then, that was found two or three weeks later to be different
18 than the one done earlier and given this tracing, can you
19 comment on whether the forced vital capacity in your opinion
20 reflected in this spirometry done in December of '81 in fact
21 in your opinion represents her true forced vital capacity?

22 A. It clearly does not.

23 Q. And why so?

24 A. Because of the appearance of the graphs as we have

1 just discussed and the fact that the value differs so
2 dramatically from one performed just a short time before.

3 Q. Now, Doctor, when you were here before, the term
4 effort dependence was used in connection with these tests.
5 The spirometry, this blowing into this machine. Is this an
6 example of what you mean by a test being effort dependent?

7 A. This is a very clear-cut example. The most effort
8 dependent part of all of these breathing tests is the initial
9 portion of the forced vital capacity maneuver. The most
10 effort dependent, what requires the greatest subject work
11 cooperation is the part that comes out early on in the vital
12 capacity maneuver. Unless they really fill their lungs up
13 and then they really blow out hard, this initial part tends
14 to be, to vary between successive efforts which is exactly
15 what has happened here. On the other hand, the event that
16 occurs when the lungs are nearly empty is much less effort
17 dependent.

18 Q. That was going to be my next question. We have
19 talked then about the FVC but you will remember that back in
20 November of '81, the few weeks earlier, we not only had a
21 normal FVC but you told us an abnormal FEF75%, that is the
22 flow rate?

23 A. Correct.

24 Q. What about the FEF75% in connection with this

1 December of '81 spirometry? First of all, in looking at it,
2 if you have it there, Doctor, how did it compare with what
3 was done in November, some three weeks earlier or so, and
4 after comparing it, tell us whether in your opinion it is
5 normal or abnormal?

6 A. Well, it is clearly abnormal. It is somewhat lower
7 than was previously observed. Because the event which occurs
8 when the lungs are relatively empty are much less effort
9 dependent, the distinction and the differences are not so
10 marked. Now the values are different but both values are
11 clearly abnormal.

12 Q. All right. So, the FEF75% portion of this test, I
13 don't know how else to phrase that, is not as effort
14 dependent as the forced vital capacity?

15 A. Or event occurring at the beginning of the vital
16 capacity.

17 Q. Okay. All right. So, with reference to the FEF75%
18 finding on this December of '81 spirometry and taking into
19 account the November of '81 spirometry, can you rely more on
20 the 75 percent than you can on the FVC finding?

21 A. Well, I think I would say that the FEF75% is
22 grossly abnormal on both occasions. How reliable the
23 individual specific values might be is difficult to judge
24 because the 75 percent number tends to vary but in both cases

1 they are so far from the predicted value that there is no
2 question about their interpretation.

3 Q. Okay. But as to the December of '81 being her true
4 FEF75%, that would be questionable?

5 A. Yes.

6 Q. All right. Now, moving then on to the next
7 spirometry in order of date, we come to the one done in the
8 Carnow 1 exam in August of 1982 and I want to have that
9 marked and have you comment on that, Doctor.

10 MR. MUSGRAVE: Your Honor, Mr. Carr is not going to
11 have any objection. I am just going to pass this to try and
12 move things along if that is all right.

13 THE COURT: Sure.

14 (Defendant's Exhibit 1714 is passed to the jury).

15 Q. Doctor Cugell, you now have in front of you
16 Defendant's 1714 which is the spirometry done in connection
17 with Doctor Carnow's exam in August of '82, is it not, sir?

18 A. Yes, sir.

19 Q. Now, let's first look at the FVC if we could. What
20 is it and compare it, if you would, to the two other FVCs
21 that we have looked at in November of '81 and in December of
22 '81?

23 A. Well, the observed value at this time was 2.41
24 which is considerably closer to the November of '81 result

1 than to the December value and as reported 83 percent of the
2 predicted and that is well within the range of normal.

3 Q. All right, sir. And what about the FEF75% in this
4 case?

5 A. Well, that 1.55 is kind of intermediate between the
6 two prior values. It again is woefully abnormal and well
7 below the predicted value as shown.

8 Q. All right. Now, taking into consideration this
9 spirometry, then, that was done approximately 8 months after
10 the December spirometry, the one that you indicated was a
11 poor effort, does this in any way affect your opinion about
12 the December spirometry, FVC, that you felt was a poor
13 effort?

14 A. Well, in the absence of any serious illness that
15 could have accounted for the poor effort previously
16 discussed, it would seem to further support my interpretation
17 since, with better effort, presumably she gets better
18 results.

19 Q. Does it support your opinion that the December of
20 '81 FVC reading was as a result of a poor effort and not as a
21 result of any abnormality with her lungs?

22 A. Absolutely.

23 Q. Now, you made a comment that in the absence of any
24 evidence of problems, lung problems at the time of that

1 December of '81 spirometry, that that would be your opinion.

2 What did you mean by that?

3 A. Well, a dramatic decline in vital capacity can
4 occur in the presence of a variety of lung diseases,
5 injuries, infections. There is nothing specific about a loss
6 of vital capacity but if it is of the -- a loss within a
7 short time of the magnitude reported here, that is from 2.87
8 on November 9, 1981, to 2.13 on December 14, 1981, for that
9 to occur, there would have had to be something calamitous and
10 something catastrophic happened and it didn't, and
11 furthermore, the subsequent relatively normal value would as
12 we have just said make it quite clear that the low values in
13 December were the result of poor effort.

14 Q. All right. If I understand, Doctor, for the forced
15 vital capacity to drop dramatically in three weeks, if you
16 were to take the values between November and December of '81
17 as reported and accept them as true, you would expect some
18 serious lung dysfunction manifesting itself with clinical
19 symptoms that would be readily observable and found?

20 A. Yes.

21 Q. And what type of symptoms would you expect a person
22 to have with that serious drop in FVC in the short period of
23 time?

24 A. Oh, they could be of any type. They might result

1 because she had a fractured rib, severe pneumonia, fluid
2 collection in the chest. Almost any serious pulmonary
3 problem could produce that much of a decline but emphasis
4 would have to be serious and significant.

5 Q. Doctor, I have here Monsanto's Exhibit 624 which
6 has been previously identified in this case and these are the
7 medical records of Dorothy Jennings, copies of some of which
8 you have already seen here, and deal with the comments with
9 the doctors about what she was complaining about, if
10 anything, when these spirometries were done in November of
11 '81 and December of '81 and I would like to show these to you
12 and turning to page 2 of that exhibit, Mr. Carr, and starting
13 at November 9, 1981, would you review the records as to what
14 was reported, if anything, in November of '81 and December of
15 '81 when the spirometry was done, both of these were done at
16 Boone Clinic, and advise us as to what complaints, if any,
17 she had associated with her lungs and if you would also
18 advise us as to whether those complaints are in accord with a
19 marked drop in FVC in this three week period?

20 A. Well, this is page two. There are three entries.
21 The first one dated November 9, 1981, says, "Was referred by
22 Mr. Seigfreid for evaluation of exposure to the Sturgeon
23 spill".

24 Q. That is November 9, right?

1 A. That is correct.

2 Q. And that is just a couple days before this, well

3 that is the day of the first spirometry?

4 A. That is correct.

5 Q. Any recordation there of any complaints?

6 A. None at all. The next entry is dated November 30,

7 1981, and says "Exposed to the Sturgeon spill. She stated

8 she lives two blocks from the spill site. Following the

9 spill she had flu-like symptoms with malaise, fatigue and

10 shortness of breath associated with non productive cough. It

11 went on to a period of time until she moved to Memphis,

12 Missouri, where her symptoms abated over the next week to 10

13 days. She complains of shortness of breath, marked fatigue.

14 Pulmonary function studies are pending. She will return here

15 in two weeks for follow up".

16 Q. Anything else in December?

17 A. And the final entry dated December 14, 1981, says

18 "Mrs. Jennings' pulmonary function studies continue

19 abnormal. She will see me after the first of the year".

20 Q. Now, is there anything in those records with regard

21 to complaints that she had that would support findings that

22 her forced vital capacity in fact dropped dramatically as it

23 did as opposed to being just a poor effort when she was in

24 there?

1 A. There is nothing there to account for that change.

2 Q. And would that support your opinion that this

3 December of '81 spirometry was a poor effort?

4 A. Yes, it does.

5 Q. How about the FEF75% on the August of '82? Going
6 back now to Doctor Carnow's first exam in August of '82, you
7 told us about the FVC. What about the FEF75%?

8 A. Well, that has been clearly abnormal on all three
9 of the tests that we have discussed.

10 Q. And is it abnormal on this one?

11 A. Yes.

12 Q. And is it more in accord with the November FEF75%
13 or the December FEF75% in '81 as far as volume?

14 A. Kind of in the middle.

15 Q. All right. I would like to move on to the next
16 spirometry, Doctor Cugell, which would be that done in
17 connection with the examination done by the Northwestern
18 doctors on October 25, 1983, approximately a year later and
19 let me have that marked first. You now have in front of you,
20 do you not, Doctor Cugell, Defendant's 1715 being the
21 spirometry done on Dorothy Jennings October 25, 1983, in
22 connection with the Northwestern exam of Dorothy Jennings?

23 A. Yes.

24 MR. MUSGRAVE: I offer it into evidence and request

1 permission to pass copies, Your Honor.

2 MR. CARR: No objection.

3 THE COURT: Admitted without objection.

4 (Defendant's Exhibit 1715 is passed to the jury).

5 Q. Tell us about the FVC, Doctor, as found in October
6 of 1983?

7 A. It is clearly normal. It is better than observed
8 on any of the tests discussed so far.

9 Q. And what about the FEF75% rate finding there? How
10 does that compare with prior exams?

11 A. It continues to be quite abnormal and again it is
12 the same level of performance as previously observed.

13 Q. Doctor Cugell, I am now handing you Defendant's
14 1716 which is the spirometry done then in the Carnow two exam
15 in November of 1983 and I would offer that into evidence,
16 Your Honor, and request permission to pass copies to the jury
17 of that.

18 MR. CARR: No objection.

19 THE COURT: Admitted without objection.

20 (Defendant's Exhibit 1716 is passed to the jury).

21 Q. This would then be approximately a month later than
22 the Northwestern exam?

23 A. Yes, sir.

24 Q. And tell us, if you would, Doctor Cugell, with

1 regard first to the FVC, the forced vital capacity, how does
2 it compare with the others that we have seen here now? I
3 guess we are on our fourth one here, are we not? This would
4 be five?

5 A. Five.

6 Q. All right.

7 A. Well, the forced vital capacity on this occasion is
8 essentially the same as observed in October of '83, perfectly
9 normal.

10 Q. And how about the FEF75%, the portion of the test
11 dealing with rate and flow at the end?

12 A. Well, again, that is grossly reduced and in the
13 general same range of values as previously observed. The
14 actual numbers look a bit different but these, this
15 particular measurement is subject to considerable variability
16 and so I can best categorize this as saying it is grossly
17 reduced and in the same range as all of the other
18 measurements of the forced expiratory flow at 75 percent.

19 Q. Doctor Cugell, you now have another spirometry that
20 I have had marked as Defendant's 1717 done March 24, 1985, on
21 Dorothy Jennings?

22 A. Yes.

23 Q. And could you tell us what the FVC is on that?

24 A. The particular result of 2.93 is very similar to

1 the values previously reported, both by Doctor Carnow and
2 during the Northwestern examination.

3 Q. And is it normal or abnormal?

4 A. Oh, it is completely normal.

5 Q. How does it compare with the other FVCs that we
6 saw, going back to 1981?

7 A. Well, with the exception of the values obtained in
8 December of 1981, those are the values that were the subject
9 of our discussion with the display chart here. They are all
10 essentially the same.

11 Q. All right. And the FEF75%, the flow rate at the
12 end of the expiration with regard to this March of '85
13 spirometry, how is that interpreted, Doctor?

14 A. Again, the 1985 result is a little better than was
15 observed on some of the previous tests but once again it is
16 very grossly reduced from expected and woefully abnormal.

17 Q. All right. So we now have gone through six
18 spirometries, is that right, Doctor?

19 A. Yes, sir.

20 Q. And to try and summarize these with regard to the
21 two areas we have been talking about, I have some charts that
22 I have prepared.

23 Doctor Cugell, first of all, I have had the
24 reporter now mark at Defendant's 1718 a recapitulation, if

1 you will, a summary with regard to the forced vital capacity
2 on these six spirometries. Would you come forward and tell
3 us, number one, have I accurately represented the numbers of
4 these six spirometries that you have just discussed and then
5 with the numbers, if they are accurate here so you can see
6 them all in one place clearly, comment, if you could, on the
7 significance overall, then, of these six spirometries that we
8 have seen in connection with the forced vital capacity?

9 A. The numbers in this middle column which were
10 obtained on the dates shown on the left-hand column are taken
11 from the top line of all of the reports that we have just
12 reviewed. The final column represent the percent of the
13 expected result on each occasion when these tests were done
14 and it is quite apparent from this compilation that these
15 numbers are all well within the expected range of normal with
16 the exception of the results obtained on December 14, 1981,
17 and that is the set of tests which we have discussed and the
18 set of spirograms shown on Exhibit 1713A. The tabulation in
19 this manner re-enforces the previous statement that this must
20 indeed represent poor effort since there would be no other
21 way to account for a normal value a month before or three
22 weeks before this or five weeks before and the normal value 8
23 months later.

24 Q. Now, Doctor, with regard to this 1718, then, the

1 FVC value that I am going to circle in red of December 14th
2 of '81 is inaccurate in your opinion?

3 A. Correct.

4 Q. Now, on Dorothy Jennings' dot charts with regard to
5 forced vital capacity, Doctor Carnow agrees apparently with
6 you. He has no dots for forced vital capacity on any of
7 these spirometries except one, that being 12-14-81. Do you
8 agree or disagree with this finding in that regard?

9 A. Well, I have got to disagree. I can only assume
10 that had he the benefit of the same sequence of results as we
11 did, that he would have made a different conclusion.

12 Q. Well, do you know whether or not he had these Boone
13 County records or not?

14 A. I don't know.

15 Q. Do you know whether he charged these people for
16 reviewing their records when he did these exams?

17 A. I don't know.

18 Q. But if he had reviewed these records, if any
19 competent doctor in pulmonary had reviewed these records, in
20 your opinion would he have reached the same conclusion
21 looking at those tracings?

22 A. I see no alternative. No way he could conclude
23 otherwise.

24 Q. Now, I have had marked -- and this, then, we have

1 talked about the FVC dot that appears on the Carnow charts.
2 Let's move then to the FEF75%. There was two categories and
3 this is the second of them we have gone through and I now
4 have in front of you Defendant's 1719 which is a chart, is it
5 not, that just summarizes the FEF75% actual findings on these
6 six spirometries and shows also the predicted for those
7 findings?

8 A. Yes, sir.

9 Q. And this is -- Now, again, if you would comment in
10 connection with what you have told us earlier now with all of
11 these here so you can see them, the significance of any of
12 all in reviewing all six of these spirometries in connection
13 with the FEF75% area?

14 A. Well, this shows two very distinctive findings.
15 Number one, all of these values for the forced expiratory
16 flow at a point when 75 percent of the vital capacity has
17 been expired, that is what the symbols stand for, the
18 reported values are all very low. Now, there are
19 considerable variation in these reported values but every one
20 of them is very low. And you can see that when the reported
21 value is related to a predicted performance for that patient,
22 that the percentage performance, percent of predicted, is
23 again not 70 percent or 80 percent or borderline, it is
24 grossly reduced. It goes from a low of 24 percent to 44

1 percent. There is no disagreement. There is no ambiguity.
2 There is no uncertainty. These are all bad.

3 Q. Okay. Now, you mentioned that there was a great
4 variation in the FEF75% test?

5 A. Yes, sir.

6 Q. Does that variation that can occur in connection
7 with that portion of the test affect your opinion that these
8 are bad?

9 A. These are so bad that variation would have no
10 bearing on my interpretation.

11 Q. If they were higher up and closer to normal, then
12 variation might become a problem or concern in interpreting?

13 A. Correct.

14 Q. But not here?

15 A. Correct.

16 Q. So, Doctor Carnow does have dots for, I believe --
17 let me just check here. He has four FEF75% dots which would
18 be for these first, well for Carnow 1 and Carnow 2 and I
19 believe the Northwestern and the one outside Boone County.
20 And you would agree that that 75 percent finding is an
21 abnormal result?

22 A. Absolutely.

23 Q. Now, you can take your set then, Doctor. What, if
24 anything, does the -- well, strike that. I think you had

1 mentioned earlier that the FEF75% test tells you something
2 about the small airways?

3 A. Correct.

4 Q. And what does it tell you and what, in your
5 opinion, does it tell you in connection with Dorothy Jennings
6 given these six spirometries that you have reviewed?

7 A. Well, in conjunction with the fact that her vital
8 capacities are normal and her other measures made when the
9 lungs are fully inflated are normal, these measures made when
10 the lungs are nearly empty being so grossly abnormal
11 signifies diseases limited to the small airways, as the term
12 we customarily employ. So that this definitely shows a
13 consistent pattern of abnormalities in the small airways.

14 Q. Doctor, what can cause small airway obstruction?

15 A. The most common, most frequent and basis for this
16 finding is long history of cigarette smoking. It can also
17 occur as a result of infections and bronchitis and flu.

18 Q. All right. Doctor, I would like to now ask you to
19 assume some facts and this first part of the facts that I am
20 going to ask you to assume are from the trial testimony of
21 Dorothy Jennings and also from some records. Doctor, handing
22 you what has been previously marked in this case as
23 Defendant's 628, these are medical records pertaining to
24 Dorothy Jennings from, I believe, the Kirksville, no,

1 Kirksville Osteopathic Hospital back in 1959 and you have
2 previously reviewed these, have you not?

3 A. Yes.

4 Q. And in an inventory of her systems and history that
5 was taken at that time, I am referring you to page 7 of the
6 exhibit, is there anything said there about her smoking
7 history at this time which is January of 1959?

8 A. Yes. The middle of the page under habits, tobacco,
9 one and a half packs cigarettes per day.

10 Q. All right, sir. Thank you. Now, let me hand you
11 what has been marked as Defendant's 624. These I think you
12 just looked at earlier in connection with Dorothy Jennings, I
13 want to refer you to a record of February 7, 1984, where she
14 gave a history at that time in connection with her social
15 habits, it is page U1 of Defendant's 624, and if you would
16 look at that, sir, and under social history, is there any
17 reference to her cigarette smoking history?

18 A. It says quote she smokes one and a half packs of
19 cigarettes per day and has done so since she was 18 or 19
20 years old.

21 Q. Is that consistent with the history that she gave
22 back in 1959 at the Kirksville Osteopathic Hospital?

23 A. Yes.

24 Q. I would like you also then, Doctor, to assume that

1 at trial Dorothy Jennings testified -- this was October of
2 1984, she was 58 years old at that time and at the time of
3 trial, she said she was smoking only half a pack of
4 cigarettes a day and I believe the record you just saw was
5 February of '84, is that right?

6 A. February 7th of '84.

7 Q. This is October of '84. At that time she testified
8 she was only smoking half a pack a day but there were still
9 times currently when she smoked a pack a day and there have
10 been occasions or periods when she smoked one and a half
11 packs a day. She was 58 years old at the time of trial and
12 that she had started smoking somewhere when she was around 20
13 years old, most of her adult life. Now, Doctor, taking those
14 facts into consideration and the statements in those medical
15 records, do you have an opinion as to the cause of Dorothy
16 Jennings' small airway obstruction as indicated by the
17 results of these spirometry tests on the FEF75% portion
18 thereof?

19 A. Yes, I do.

20 Q. And what is that opinion, Doctor?

21 A. This lady has more than adequate history of
22 cigarette use, irrespective of whether we compute it from the
23 1959 records or her testimony at the trial to more than
24 explain the considerable degree of small air flow obstruction

1 and small airway disease that the tests show that she has.
2 She has from 35 to 40 pack years of cumulative cigarette
3 exposure and that is in a person who responds adversely to
4 the effects of cigarette use, more than enough to produce the
5 degree of small airway abnormalities that the test show she
6 has.

7 Q. Now, those small airways, Doctor, you had a chart,
8 I believe, that we looked at earlier, actually a couple, and
9 just to briefly refresh the jury's memory about where those
10 are, you will recall we had looked at Defendant's 1661 which
11 showed the bronchial tree coming down to not the small
12 airways but down into an area where they are getting smaller
13 and smaller, and those small airways are not referenced on
14 this particular exhibit, are they?

15 A. No, they are not.

16 Q. And then we looked at Defendant's 1662 and are the
17 small airways shown on here, then?

18 A. They are demonstrated in a diagrammatic fashion and
19 they begin down here at about the 12 to 14 to 16 generation
20 of successive divisions. The airway is like an inverted tree
21 trunk with successive branches and after 14, 12 to 16
22 successive generations of branching, we get the airways of
23 this size that are generally considered to be in the so-
24 called small category. By common consent, those are about

1 two millimeters in diameter or so. So they are somewhere in
2 here. This is three and a half millimeters. .06
3 millimeters, three and a half millimeters, .6 millimeters.
4 So they are somewhere in here.

5 Q. Now, Doctor, the small airways, are there more of
6 those than there are of any other of the airways in the
7 lungs, the larger airways and the medium size airways and
8 what have you?

9 A. Oh, yes, a great deal many more.

10 Q. Now, and just how is it, if you know or can tell
11 us, what is the physiology? How does cigarette smoking
12 affect these small airways? What does it do to them?

13 A. Well, examination of lung tissue obtained from
14 healthy smokers who succumbed in accidents or who had to have
15 surgery for whatever reason, the lung tissue has been studied
16 extensively and the appearance of the small airways
17 correlated with the information about their smoking and it
18 has been quite clearly shown that an effect that accounts for
19 the abnormal tests we have just discussed is an inflammation
20 in the lining membranes of these small airways. It narrows
21 them and it is patchy and irregular and what you can see
22 under the microscope in these small conducting tubes
23 correlates very well with the test results measured in that
24 patient at another time.

1 Q. Well, do all people that smoke have -- if they
2 smoke over a period of time, this is based upon your
3 knowledge, experience, training, reading, your expert
4 opinion, do all people that smoke or would smoke as much as
5 Dorothy Jennings is reported to have smoked, 30 years, a pack
6 and a half a day, whatever, will they have damage to their or
7 some of their small airways?

8 A. Well, not everyone. Some people are fortunate
9 enough to have an inherent resistance to the adverse effects
10 of cigarette smoke and so the degree of abnormality is highly
11 variable and in sensitive people it can be severe and extreme
12 and after 30 or 40 pack years of smoking, they may have
13 totally disabling if not fatal emphysema and bronchitis.
14 Other people with the same history of cigarette exposure may
15 tolerate cigarette smoke and, therefore, not have any severe
16 degree of disease, but few people will be able to tolerate
17 this much cigarette exposure without some measurable
18 abnormalities.

19 Q. Dorothy Jennings also told us, Doctor, when she
20 testified that at least as far as she was concerned that she
21 had allergies before the spill and that she felt that she was
22 allergic to anything with a disinfectant in it. Weeds --
23 also weeds, dust, molds and soaps and detergents. Would
24 that, if in fact that was true, if that is what she stated

1 and believed and in fact that was true, would that
2 information be of any benefit to you in connecting this
3 cigarette smoking and the small airway obstruction that you
4 have seen here?

5 A. Well, a history of recurrent respiratory symptoms
6 of that type suggesting an allergies and asthma are also
7 associated with some abnormalities in the small airways. It
8 implies that she does have a sensitive tracheal bronchial
9 tree and such people are more likely to develop difficulties
10 as a result of long-term cigarette use than people without
11 that background.

12 Q. Now, when Doctor Carnow was cross examined in
13 connection with Dorothy Jennings about her smoking, he did
14 state in cross examination that if she had been smoking an
15 average of a pack a day since she was 20 years old, that then
16 these dots that he had on her chart for the FEF75% didn't
17 belong there. He said that on cross examination. Would you
18 agree with that?

19 A. Well, I thought the dots merely meant that an
20 abnormality was present. They are abnormal.

21 Q. They are abnormal but what he meant was and, thank
22 you. You have straightened me out on that. He said that if
23 she had been smoking a pack a day for 20 years, then the dots
24 don't belong there because her abnormal FEF75% is clearly

1 associated with her cigarette smoking?

2 A. Oh, I concur with that fully.

3 Q. All right. But on cross examination he also said,
4 Doctor Cugell, that if she had only smoked a half a pack a
5 day since she was 17 or 18 which is what she told Doctor
6 Carnow or at least what was reportedly written down by Doctor
7 Carnow when he saw her in August of '82 irrespective of what
8 she told those other doctors in those reports, that if in
9 fact that was true, then he would say that the small airway
10 obstruction was not as a result of cigarette smoking. Again
11 a half a pack a day since she was 17 or 18. Would you agree
12 or disagree with that?

13 A. I think that is entirely speculative on his part.

14 Q. Can cigarette smoking of half a pack a day for a 57
15 year old woman who started when she was 17 or 18, can that
16 cause small airway obstruction such as exhibited by these
17 spirometries?

18 A. I think it is very likely, particularly in a person
19 with a background of allergies and questionable asthma that
20 she has reported.

21 Q. Doctor, you see a lot of people that have histories
22 of smoking and currently smoking when you are examining them?

23 A. Yes.

24 Q. And is there any way you can comment upon the --

1 well, strike that. Doctor, as I told you at the outset, we
2 had three areas that Doctor Carnow had put dots on these
3 charts. We have talked about two of them. The last one is
4 MVV. Now, I know we talked about this before. It has been
5 awhile. The MVV portion of the test or the MVV test of the
6 six spirometries that I have given you, do any of those
7 reflect the MVV test?

8 A. Only one.

9 Q. And that is which?

10 A. That is the Northwestern test done on October 25,
11 1983.

12 Q. All right. So that would be Defendant's 1715?

13 A. Correct.

14 Q. Now, the MVV is what type of test and if you could
15 relate it to and distinguish it if it is distinguishable from
16 the spirometries that we have been talking about, the blows
17 and the measurements that are connected with that forced
18 vital capacity and the various rates and so on?

19 A. The MVV, and that stands for maximal voluntary
20 ventilation, is another alternative measure of how well, how
21 rapidly air can be moved from, in and out of the patient's
22 lungs. Unlike the single forced expiratory efforts that we
23 have discussed, the MVV is a repetitive procedure and it
24 depends upon the patient performing rapid breathing maneuvers

1 for a sustained period of time. In the case of this
2 particular test as noted on the report, as noted on Exhibit
3 1715, it was conducted for a period of 10 seconds. It is
4 done like this (indicating). The patient is informed what to
5 do. They hold a mouth piece or a device in their mouth so
6 the air that they breathe can be measured and the technician,
7 whoever is administering the test, tells them to start and
8 they start breathing in a pattern that represents the optimum
9 combination of speed and depth of breathing like this
10 (indicating).

11 Q. And they do that for 10 seconds?

12 A. And they do that for 10 seconds and the amount of
13 air that comes out of the patient over that whole period of
14 time is collected and measured and the volume that is
15 reported is multiplied by the appropriate interval so that if
16 the test had been continued for a full minute, they would
17 have, she would have breathed as noted here 70 liters of air
18 which is a substantial bagful of air.

19 Q. Is a different piece of equipment used than what is
20 used in the spirometry?

21 A. No. A modern, light weight, technically suitable
22 spirometers are satisfactory for making this measurement.

23 Q. But it is a separate test done at a separate time?

24 A. A separate test at a separate time and it is

1 dependent -- the results are dependent upon some of the same
2 things that influence the forced vital capacity that we
3 previously discussed.

4 Q. So, is it an effort dependent test also?

5 A. It is very highly effort dependent.

6 Q. Now, Doctor, with reference to, then, Defendant's
7 1715, what was her MVV test and explain that to us the
8 results that you found there?

9 A. Well, over the 10 second time interval, enough air
10 was moved so that with the appropriate calculations, the
11 answer was 70, or 70 liters in a minute. For a woman of her
12 age and her height and her age, the expected result is 93.
13 So, the performance is 75 percent of predicted and that 75
14 percent in the last column is the result of dividing 70 by
15 93.

16 Q. And is there a range that is considered normal when
17 you interpret these tests, Doctor?

18 A. A conventional guide posts that normals include 80
19 to 100 percent of predicted.

20 Q. So, looking solely then at the results of this MVV
21 test, would this be a little low, you might say?

22 A. Correct.

23 Q. Now, Doctor, do you believe or do you have an
24 opinion as to whether her MVV is in fact abnormal?

1 A. Well, there are several bits of information that
2 are really missing here in order to make that determination.
3 For example, we don't know how many times the test was done.
4 If this truly represents the best of several efforts. We
5 don't have a graphic record to see how consistent the
6 breathing pattern was. But we do have the ability to relate
7 the results of this test with the other tests that she did.
8 Now, there is a very convenient --

9 Q. Would this be in the form of some kind of a cross
10 check?

11 A. Well, exactly. It is commonplace before making an
12 interpretation of any lung function test result to look at
13 the pattern, look at the performance of the other tests, look
14 at the other measurements to see if the value you are going
15 to report is consistent with what other results the patient
16 has done.

17 Q. And how would you do that in connection with the
18 MVV then?

19 A. Well, there is a very convenient and standard way
20 that this is done. Since the MVV and the FEV-1, the forced
21 expiratory volume in one second, measure essentially the same
22 thing. There should be clear agreement between those two.

23 Q. All right. Now let me just be sure I understand
24 that. The FEV-1 on Defendant's 1715 is the third reading

1 down, is that right?

2 A. It is the third line, yes.

3 Q. And there is some correlation that should check out
4 between that FEV-1 finding on the spirometry and the separate
5 MVV test?

6 A. That is correct.

7 Q. And why should those -- how are those tests
8 similar?

9 A. Well, they are closely linked because they measure
10 the same breathing function. The ability to move air fast
11 and the conventional correspondence between the two is
12 obtained by multiplying the results of the FEV-1 by 40 and
13 that should give you a number equivalent to the MVV.

14 Q. All right. Now, the FEV-1 we have talked about,
15 FEF75% and the forced vital capacity, tell us just by way of
16 refreshing our memories what the FEV-1 is? What does that
17 measure?

18 A. That measures the amount of air that comes out in
19 the first second of this forced expiratory maneuver that I
20 did before. You take a big breath in and you blow it all out
21 and the first second of that prolonged expiratory effort, how
22 much comes out in the first second of that expiratory effort
23 is the FEV-1.

24 Q. So it is a measurement of volume in the first

1 second, if you will?

2 A. And if you relate volume to time, then you have a
3 measure of velocity or flow rate.

4 Q. So, by multiplying the volume in one second found
5 in the test above there, that is the FEV-1, you multiply that
6 by some number that correlates, you ought to have a
7 reflection of what the MVV should be?

8 A. Correct.

9 Q. And how did that check out in connection with
10 Dorothy Jennings when you did that in reviewing this
11 spirometry, Defendant's 1715?

12 A. Well, if you multiply 2.36 by 40, you get 94 and,
13 therefore, I would expect her maximum voluntary ventilation
14 at the bottom of the page to be 94.

15 Q. Based upon what, in fact, she did on the other
16 test?

17 A. Correct.

18 Q. So, is there -- how does the cross check work in
19 her case?

20 A. It indicates that the maximum voluntary ventilation
21 is well below what would be expected on the basis of her
22 other tests.

23 Q. Now, what type of opinion or what opinion do you
24 have with regard to this finding on the MVV?

1 A. Well, it is clear that this was an improper,
2 inadequate test. In the lung function, as a generality about
3 lung function testing, we pay attention to the maximum
4 values. Lung function tests of this type represent the
5 maximum that the patient can perform. Anything less than the
6 maximum has to be disregarded. We are not interested in test
7 results other than those which reflect the true maximum
8 capacity of the lungs.

9 Q. Now, Doctor, this test was done for the
10 Northwestern doctors by the Moberly Clinic, isn't that
11 correct?

12 A. That is correct.

13 Q. Now, Doctor --

14 THE COURT: Before you get into your next section,
15 is this a good point to break?

16 MR. MUSGRAVE: I believe it is, Your Honor.

17 THE COURT: We will take a short recess at this
18 time and then resume testimony. I would remind you that you
19 are not to discuss this matter among yourselves, with anyone
20 outside the jury panel or as of yet form any opinions or
21 conclusions about the matters on trial. Court is in a short
22 recess.

23 COURT RECESSED:

24 (The following proceedings were had in the hearing

1 and presence of the jury)

2 DAVID CUGELL

3 having resumed the witness stand, being previously sworn,
4 testified further as follows:

5 DIRECT EXAMINATION

6 By

7 MR. JOHN R. MUSGRAVE.

8 Q. Doctor Cugell, we were talking about this MVV test
9 when we broke and I think you had explained to us how you can
10 cross check the MVV with the FEV-1 from the other test. If
11 you can do that or if you can calculate what the MVV should
12 be using the FEV-1. Why do people do the MVV test or why do
13 doctors do it?

14 A. Well, in evaluating lung function on the basis of
15 effort dependent tests, it is advantageous to have separate
16 measures of the same functional capacity. It serves as a
17 check on whether the results are correct or not. It serves
18 as a check on whether the patient really did try. In this
19 particular example, one test was good and one test was poor
20 but in other patients, the reverse might have been the case.
21 The FEV-1 might have been improperly done and the MVV
22 properly done. So that we would have had a means of
23 verifying the patient's effort or the manner in which the
24 test was performed.

1 Q. I see. Then you cannot look or do I understand
2 that you cannot look at the MVV in isolation in determining
3 whether it represents an abnormality of the lungs?

4 A. Oh, I would expand that and say you should never
5 look at any single measure of lung function in isolation.

6 Q. Doctor, looking at Dorothy Jennings' other
7 spirometries and the FEV-1, for instance, the one done in
8 November of '83 and the Carnow 2 exam, Defendant's 1716, I
9 see that that was 2.39, I think that is a nine, or 2.38, 101
10 percent of predicted. Does that correlate with the FEV-1 on
11 the Northwestern pretty well?

12 A. Virtually identical.

13 Q. And the FEV-1 that was done back in November of
14 '81, the very first one that we looked at here today,
15 Defendant's 1712, it reads an actual finding of 2.33 again,
16 101 percent of predicted for that FEV-1?

17 A. Correct.

18 Q. Taking those readings into consideration, does that
19 further -- do those readings in any way affect or change your
20 opinion with regard to these MVV values that was found when
21 the Northwestern spirometry was read, the one that was done
22 by Moberly for Northwestern?

23 A. They only reinforce the opinion I have just stated
24 about the discrepancy.

1 Q. Now, Doctor Carnow has a dot on his dot charts for
2 the MVV done by Moberly for the Northwestern doctors saying
3 it is abnormal. Do you agree that the MVV represents an
4 abnormality of the lungs in any way?

5 A. No. The result is abnormal but in the context of
6 all of the information we have already reviewed, there is no
7 evidence at all to indicate that it represents lung disease.

8 Q. And your opinion for the abnormality of the results
9 on the MVV is what, sir?

10 A. It is quite clearly either inadequate patient
11 effort or some technical factor but it is not related in any
12 way to the status of the lungs.

13 Q. All right. Doctor Cugell, I want to pass now to
14 the area of the other dots that Doctor Carnow had in his
15 charts, not dealing with the result of the lung function
16 test, but with a symptom or complaint, if you will, that
17 Dorothy Jennings had and for which Doctor Carnow put dots on
18 his dot charts. The first ones I want to deal with are
19 complaints or symptoms of shortness of breath that got dots.
20 And the shortness of breath dots are for the Carnow 1 exam,
21 the Carnow 2 exam, for the followup, which you may not know
22 that but in March of '84, Doctor Carnow or one of his
23 associates had conversations with these plaintiffs and if
24 they continued to have certain complaints or symptoms voiced,

1 that is called the followup and if they had those, then
2 Doctor Carnow was of the opinion that it was associated with
3 this chemical spill and he put a dot up there. But the
4 testimony is that that was as a result of the followup and
5 then also she had a complaint at trial with shortness of
6 breath. Those are the four dots we are talking about now.

7 Now, first of all, Doctor, with regard to shortness
8 of breath, can cigarette smoking and a resulting abnormality
9 in the small airways cause a person to experience shortness
10 of breath?

11 A. A mild degree of breathing difficulty certainly can
12 occur particularly at times when there is an additional
13 insult such as an ordinary cold or things that people with
14 perfectly healthy lungs don't notice or some allergies. This
15 in combination with the existing impairment of the small
16 airways can indeed produce a mild degree of breathing
17 difficulty.

18 Q. Now, Dorothy Jennings' FEF75% findings, are they,
19 in your opinion if you have one, bad enough to result in a
20 significant shortness of breath so as to impair her ability
21 to live an ordinary life?

22 A. Absolutely not.

23 Q. Now, Dorothy Jennings told Doctor Carnow when she
24 first saw him in August of '82 with regard to shortness of

1 breath that she noticed musical breath sounds at night and
2 has developed shortness of breath after one block if she
3 hurries or with walking and talking at the same time. She
4 has one flight dyspnea. Dyspnea, of course, as the jury will
5 recall is the shortness of breath?

6 A. Yes.

7 Q. And when she then saw him in November of '83, the
8 only reference to shortness of breath in his report was she
9 has poor wind and avoids the basement stairs in her house.
10 Are those, Doctor, in your opinion significant complaints of
11 shortness of breath would be related to severe lung
12 dysfunction?

13 A. Well, they certainly don't correspond to the level
14 and degree of breathing difficulty that I encounter in many
15 of my patients with serious lung disease. And avoiding the
16 basement stairs, if I can get someone else to go down to my
17 basement, I would do that, too. That does not constitute a
18 significant symptom in my opinion.

19 Q. Now, Doctor, I would like you to assume that
20 Dorothy Jennings testified at trial that she experiences what
21 she considers shortness of breath with activity; that
22 additionally she has had a weight gain since 1978 going from
23 117 pounds to 158 and, of course, you know her age during
24 this period of time in the mid 50s. Do you have an opinion,

1 Doctor, as to whether this shortness of breath that she has
2 related to Doctor Carnow in these reports that I have
3 indicated to you is in any way connected with her cigarette
4 smoking or her dysfunction shown in the small airways by
5 these tests?

6 A. Well, as I have indicated, a mild degree of
7 occasional breathing problems might occur but that with the
8 overall breathing capacity we have reviewed, there is no
9 basis or reason to expect a substantial or significant amount
10 of breathing difficulty or that the symptoms of which she
11 complains represent any serious lung disease. She is, A,
12 getting older; B, overweight; C, as I recall relatively
13 inactive; D, she has small airway disease; and, E, she smokes
14 a bit too much. It seems to me some level of symptoms are
15 more than accounted for by that combination and at most these
16 would be mildly annoying but hardly disabling.

17 Q. But the symptoms or the statements that she made to
18 Doctor Carnow in here, given those factors that you just went
19 through, would any of these statements she made to Doctor
20 Carnow surprise you that she might complain occasionally
21 about shortness of breath?

22 A. Not in the least.

23 Q. Incidentally, the four dots that I mentioned to
24 you, the Carnow 1 exam, the Carnow 2, I have read both of

1 those to you and the trial, I haven't read the testimony but
2 I guess I did because the experience with shortness of breath
3 with activity, the followup, I have checked. Well, I will
4 have to come back to that later. I don't think there was
5 really a mention of shortness of breath in the followup but I
6 wanted to show that to you. The other dots that then appear
7 on Dorothy Jennings' charts with regard to symptoms again,
8 the pulmonary, cardiovascular area is a dot during or in
9 connection with the Carnow 1 exam for wheezing. No other
10 time just appears under the Carnow 1. I would like to read
11 to you what she reported to Doctor Carnow in the Carnow 1
12 exam in connection with wheezing. She has noticed wheezing
13 beginning in the Spring of 1982. And then I think that
14 sentence I read to you earlier where she notices musical
15 breath sounds at night. I read that to you earlier. That
16 might be something else that relates to that. And I believe
17 that is the extent of the complaints mentioned that she made
18 to Doctor Carnow upon which this dot is based.

19 Doctor, is that type of statement enough to make a
20 diagnosis of an abnormality of the lungs as a result of
21 wheezing, in your opinion?

22 A. Well, if it is a rare or one time event, there is
23 no associated abnormal findings either on examination or by
24 laboratory testing, it seems unlikely that that represents

1 any significant serious organic disease.

2 Q. Well, Doctor, there was a place on Doctor Carnow's
3 charts for abnormal lung sounds under physical examination.
4 And there were no findings of abnormal lung sounds on either
5 of the Carnow examinations and you have reviewed the
6 Northwestern examination and there were no abnormal lungs
7 found there either, were there?

8 A. Correct.

9 Q. Given that information, do you believe if she was
10 having a wheeze at that time, that is of any significance,
11 any significance with regard to any dysfunction of her lung?

12 A. Well, wheezing can be a sign of serious disease but
13 if it is, then it is persistent and it is present all the
14 time and it is readily identifiable on examination the fact
15 that she noted it but at none of the examinations was it
16 found makes it a very insignificant complaint in my opinion.

17 Q. Doctor, a person that smokes can -- can smoking and
18 smoking to the degree that Dorothy Jennings' history
19 indicates having resulted in your opinion as you have told us
20 in the FEF findings, the small airway obstruction, can that
21 in and of itself cause an occasional wheezing?

22 A. Absolutely.

23 Q. Doctor, now, when she made this complaint of
24 wheezing, that was in an examination of August 20, 1982, and

1 again there was no physical finding of wheezing. I would
2 like to show you -- let's just mark this. Now I have had
3 marked as Monsanto's 1720, these are records from the Ellis
4 Fischel State Cancer Hospital in Columbia where Dorothy
5 Jennings went to have her breasts examined and in connection
6 with that -- and this, by the way, is dated August 23, 1982,
7 and this would be three days after she saw Doctor Carnow when
8 she made this complaint about wheezing beginning in the
9 Spring of '82. At least as recorded in Doctor Carnow's or
10 his associate's notes. A physical exam was done at that time
11 and beforehand a review of systems was made and referring you
12 to page 2 of this review of systems, would you look under CV
13 and under the respiratory section and under the
14 cardiovascular section there in the review of systems and
15 whether there is any mention of complaints of wheezing, three
16 days later?

17 A. Well,, there is a middle section of this page
18 refers to the respiratory system and separately to the
19 cardiovascular system and it says quote, "The patient denies
20 any chest pain or palpitations or any other chest
21 complaints," and there is no mention of wheezing here
22 anywhere.

23 Q. Now, assuming that that is in fact what happened,
24 that she denied any other, any problems with her chest which

1 would include wheezing, does that in any way further your
2 opinion about this complaint of wheezing that she made?

3 A. Well, clearly it was an inconstant, irregular and
4 infrequent event or it would have been noted on these other
5 occasions.

6 Q. Do you have an opinion as to whether Dorothy
7 Jennings' reported statement to Doctor Carnow that I have
8 read to you is in any way associated with any lung disease?

9 A. Yes, I have an opinion.

10 Q. What is that, sir?

11 A. There is no evidence whatsoever that this lady has
12 any serious lung disease.

13 Q. Okay. Doctor Cugell, that is all the questions I
14 have about Dorothy Jennings and I would like to move on now
15 to Joyce Kemner. Well first again, Doctor Cugell, talk about
16 the dots that appear on Doctor Carnow's charts with
17 connection to the pulmonary lung function tests? There are
18 dots there for four tests, Carnow 1, Carnow 2, Northwestern
19 and the one done at Boone Clinic again and they all involve
20 the same portion of tests, that being the FEV-1 over the
21 FVC.

22 Now, we didn't talk about that earlier today and I
23 know we talked about it a month ago but just briefly before
24 we get into it, could you tell us what is this FEV-1 over

1 FVC? What does it mean and how is it used?

2 A. Well, that is, those letters stand for the forced
3 expiratory volume in one second. That is the initial one
4 second period of this forced expiratory maneuver divided by
5 the forced vital capacity.

6 Q. We have talked about both of those earlier today?

7 A. Yes.

8 Q. But not when they are compared to each other. Why
9 are they compared to each other in this ratio manner?

10 A. The value that results is a percentage because it
11 is one volume divided by another volume and, therefore, you
12 calculate a percentage. This is perhaps one of the more
13 useful measures of breathing capacity in that it determines
14 how, not only how much air that the patient expires but how
15 fast it comes out and how fast the initial beginning part of
16 the vital capacity comes out as opposed to the FEF75% which
17 we have just finished discussing which reflects primarily the
18 rate at which the air comes out when the lungs are small and
19 they are almost empty. Now we are talking about how much air
20 comes out and how fast it comes out when the lungs are big
21 and expiration is beginning.

22 Q. All right. Now, the first spirometry that I want
23 to review with you is the one that was done. It is the
24 earliest one that we have any record of before or after the

1 spill, the one that was done in connection with Doctor
2 Carnow's first exam. Handing you now what has been marked as
3 Defendant's 1721, this is the spirometry done on Joyce Kemner
4 in connection with the Carnow 1 exam in August of '82, is it
5 not?

6 A. Yes.

7 MR. MUSGRAVE: I would offer that in evidence and
8 request permission to pass copies to the jury, Your Honor.

9 MR. CARR: No objection.

10 THE COURT: Admitted without objection.

11 (Defendant's Exhibit 1721 is passed to the jury).

12 Q. Now, Doctor Cugell, the two components then of this
13 ratio, the first of those being the FVC. What is it on Joyce
14 Kemner's August of '82 spirometry?

15 A. Well, this exhibit contains two sets of numbers.
16 In the middle of the page are those that are the most
17 representative test results and at the bottom are the results
18 of three separate measurements.

19 Q. I think you told us, did you not, when you were
20 here earlier that the best of those three separate
21 measurements is taken wherever they may appear in any one of
22 those three tests, is that correct?

23 A. Well, in general, the procedure is to take the best
24 set.

1 Q. The best set, all right. Well, then, looking at the
2 three ones at the bottom, they have three different FVC for
3 three different tests?

4 A. Correct.

5 Q. The one at the top is one of the three down below,
6 being the best of the three?

7 A. Correct.

8 Q. Now, of those three, then, do we have different
9 measurements on the three tests of the FVC?

10 A. All three are different.

11 Q. Now, do you expect some difference in these tests,
12 Doctor?

13 A. Well, yes, you do a little bit. The patient needs
14 to become familiar with the procedure and may do the test a
15 little better on one effort than on another and the purpose
16 of doing multiple determinations is to have some confidence
17 that the results, the best result you get is in fact the
18 best. And current criteria of the Social Security Agency
19 require that the forced vital capacity test be conducted
20 sufficient times to get two results that agree within five
21 percent.

22 Q. All right. And --

23 THE COURT: Before you go into this, let's break
24 for lunch at this point.

1 refer to it, Doctor.

2 A. Thank you. Yes.

3 Q. And, Doctor, these are the publications that you
4 have referred to that you expect the world to rely upon,
5 isn't that correct, sir?

6 A. They were not publications, sir, they were papers
7 presented. There's a difference.

8 Q. Yes, there is a difference. Two of them were
9 presented and one was published, wasn't it, sir?

10 A. That's true, sir.

11 Q. You expect the world to rely upon it, don't you,
12 sir?

13 A. Yes, sir, but you were talking about the AMA
14 report.

15 Q. Doctor, Doctor, you want to answer a question that
16 I haven't asked. Would you direct your attention to what I'm
17 talking about, would you, sir, please, sir?

18 A. I am trying to answer the question you raised
19 originally about the AMA report.

20 Q. Doctor --

21 A. You did raise it, didn't you?

22 Q. Doctor, would you back up please and listen to me
23 just for a moment. Would you do that, sir? Now have we got
24 it established, sir, that you said these things about only in

1 MR. MUSGRAVE: All right, Your Honor.

2 THE COURT: We will break for lunch at this time.
3 We will resume again at one o'clock. I would remind you that
4 the admonishments that I gave you earlier will apply too
5 during this lunch break also. Court is in recess.

6 COURT RECESSED:

7 (The following proceedings were had in the hearing
8 and presence of the jury)

9 DAVID CUGELL

10 having resumed the witness stand, being previously sworn,
11 testified further as follows:

12 DIRECT EXAMINATION

13 By

14 MR. JOHN R. MUSGRAVE.

15 Q. Doctor Cugell, before we proceed with Joyce Kemner,
16 I want to come back a moment to Dorothy Jennings and
17 particularly back to Defendant's 1719 where I had put up the
18 various values for the FEF75% on those six tests. I think you
19 pointed out to me at lunchtime that I reversed a couple of
20 these, had I not?

21 A. Yes.

22 Q. You have the exhibits there, do you not, that are
23 the underlying support for that chart? Let me give them to
24 you, Doctor. Just so we can get this correct, would you just

1 tell me where I went astray here?

2 A. The third item dated 8-20-82, really those numbers
3 belong at the bottom of the page and the final item dated
4 3-24-85 belongs up where the 8-20-82 numbers are.

5 Q. Okay. So if I change this bottom 380, then this
6 would become 24, is that correct?

7 A. Correct.

8 Q. And do likewise then under the FEF actual, the
9 bottom would become 85 and the top would become 55, is that
10 correct?

11 A. Correct.

12 Q. Doctor, do I now have it correct on Defendant's
13 Exhibit 1719, to correspond with the underlying exhibits?

14 A. Yes, sir.

15 Q. And the fact that we have just reversed these, does
16 that in any way change anything that you told us your
17 opinions and conclusions based upon these documents?

18 A. Not in the least.

19 Q. All right. Thank you. Getting back then to Joyce
20 Kemner, Doctor, you have Defendant's 1721 there?

21 A. Yes, sir.

22 Q. And I believe when we broke, we just had you
23 refresh our memories about this ratio of FVC to the FEV-1.
24 Now, this spirometry then, Doctor, I think you were telling

1 us that there were three tests that had been run with regard
2 to the FVC and you were also talking about reproducibility
3 and the standards I believe of the Social Security
4 Administration on reproducibility?

5 A. Yes.

6 Q. Do these three tests that were done meet the
7 standards that you accept as being necessary for reliability
8 of the test with regard to reproducibility?

9 A. No, they do not.

10 Q. And could you point out to us how and why they do
11 not, Doctor?

12 A. Well, the three separate results are indicated at
13 the bottom of the page and demonstrate that the forced vital
14 capacity on effort number one was 3.20, on effort number two
15 was 2.73 and on effort number three was 2.56 and no two of
16 those agree appropriately and just on the basis of the forced
17 vital capacity, they are not acceptable. If you compare them
18 on the basis of some of the other results such as the forced
19 expiratory volume in one second, that is the third line, you
20 have a similar poor agreement.

21 Q. With regard to the FEV-1, it ranges from a high of
22 1.27 to a low of .87?

23 A. Correct.

24 Q. Now, Doctor, would you then be able to rely upon

1 this spirometer in determining if, in fact, there was an
2 abnormal FVC over -- pardon me -- FEV-1 over FVC?

3 A. No, I would not.

4 Q. Doctor, with regard to the findings here on this
5 FEV-1, the low there of .87 or let's take the high of 1.27
6 which is the best that she did, is that markedly low?

7 A. Very markedly low, yes.

8 Q. And if, in fact, that was a true reading, that was
9 the most that she would be able to deliver in that one
10 second, would you expect there to be clinical symptoms and
11 findings associated with that?

12 A. Most certainly.

13 Q. And would they be -- could you describe for us what
14 you would expect to find?

15 A. Well, I think any person age 37 who was five feet
16 nine inches tall and had only 1.27 liters worth of air in the
17 first second of the vital capacity effort would be severely
18 limited in their exercise tolerance and very symptomatic.

19 Q. Now, Doctor, let me then read to you what was
20 reported to Doctor Carnow in August of '82 when this
21 spirometry was done by Joyce Kemner in connection with her
22 pulmonary complaints, if you will. She states that she has
23 some shortness of breath and wheezing. This is not present
24 all of the time but seems to relate just to rain. Odors tend

1 to intensify the problem also. That is the extent of what
2 was recorded when she was examined at the time of this
3 spirometry. Are those symptoms, those complaints compatible
4 with a finding of an FEV-1 of 1.27?

5 A. Not at all.

6 Q. Would that in any way change your opinion as to
7 reliability of this 1721, the Carnow 1 report?

8 A. On the contrary. It supports my interpretation
9 that these are unreliable values.

10 Q. Now, Doctor, what was Joyce Kemner's height on this
11 spirometry done in '82?

12 A. It is listed here as 69 inches.

13 Q. And is height an important factor in connection
14 with determining a predicted value?

15 A. It is the critical factor, yes.

16 Q. It is the critical factor. Why is that, Doctor?

17 A. Because the best -- these predicted numbers are
18 based upon thousands of measurements that were made on
19 perfectly healthy non smoking citizens. The results are
20 related to the age and to the height, and the correlation
21 between results and height is the best correlations that can
22 be made. Therefore, predicted values vary primarily with
23 height, and height is used in conjunction with age and there
24 are different sets for men and women, but height and age are

1 the major factors from which we can predict an expected
2 result.

3 Q. All right. So, if Doctor Carnow had a dot on his
4 chart saying that this spirometry done in August of '82 was
5 abnormal, would you agree or disagree with that?

6 A. Well, the reported numbers are abnormal.

7 Q. But are they reliable so you could as a medical
8 doctor report them as abnormal?

9 A. I certainly would not depend on them for any
10 purpose.

11 Q. All right. I would like to move on to the next
12 spirometry that was done in time which would bring us to one
13 done at Boone Clinic in April of 1983. Handing you now what
14 has been marked as Defendant's 1722, Doctor Cugell, this is
15 the spirometry of Joyce Kemner that was done at the Boone
16 Clinic April 6, 1983, is it not?

17 A. Yes, sir.

18 Q. Now, this again appears as a dot on Doctor Carnow's
19 charts for the FEV-1/FVC ratio. Now, would you, first of
20 all, Doctor, and I note in this particular instance that
21 there was a test done before a bronchodilator was
22 administered and after one was administered?

23 A. Correct.

24 Q. Now, the purpose again I think you told us about

1 that a month or so ago, I guess longer than that, but again
2 just tell us briefly if you could what is the purpose of
3 performing these lung function tests, one with a
4 bronchodilator and one without?

5 A. It is quite commonplace in measuring lung function
6 to monitor the results of the tests, and if they are abnormal
7 or if they show signs of limitation on air flow, to
8 administer a drug that has the capacity to dilate the
9 bronchial tubes and thereby eliminate or reduce this air flow
10 limitation and, in other words, to see if there is a measure
11 of reversibility to the obstruction of air flow to this
12 abnormality that is observed.

13 Q. All right. Now, Doctor, then again with reference
14 to the broncho -- or to the spirometry that was done before
15 the bronchodilator was administered, what was the FVC value
16 and what is your opinion with regard to the FVC as whether it
17 is normal or abnormal?

18 A. Well, the forced vital capacity was 3.56 liters.
19 That is the first number in the first line and that is within
20 the normal range.

21 Q. All right. What about her FEV-1?

22 A. The FEV-1 on the other hand was 1.95 liters and was
23 only 57 percent of the predicted at this time and that
24 clearly is abnormal.

1 Q. All right. Is that value, though, better than on
2 the Carnow 1 as far as the FEV-1, the ones that you felt were
3 unreliable?

4 A. Oh, it is markedly better. Dramatically different.

5 Q. All right. But still abnormal?

6 A. But still abnormal.

7 Q. Now, is her ratio then abnormal, Doctor?

8 A. Well, of course. If you have an abnormal value
9 over a normal value, the ratio necessarily will be reduced as
10 it is in this case.

11 Q. All right. Now, what about after the
12 bronchodilatation on this particular instance? Could you
13 tell us whether there was any change as you have said in
14 connection with the use of bronchodilator after the
15 bronchodilator was administered and the test was then
16 performed again?

17 A. Well, there are some minor differences in some of
18 the numbers but, in summary, there is no change. There is no
19 effect on breathing capacity from this bronchodilator
20 administration.

21 Q. Well, Doctor, let me just ask you some more
22 questions about that. I note, for instance, that the FVC
23 before bronchodilator is 3.56. The test was reported with a
24 bronchodilator being administered first. The FVC is 3.69.

1 Well, that is an improvement, is it not?

2 A. Yes, but that degree of change is so small as to be
3 clinically meaningless and, in fact, is within the
4 reproducibility of the test.

5 Q. All right. And, likewise, I see the FEV-1 and
6 since we are talking about the ratio, I will go to these.
7 The FEV-1 before bronchodilatation was 1.95. After
8 bronchodilatation it was 1.91. It went down a little bit. Is
9 that likewise just as you have told us when it went up and it
10 wasn't really substantially different? When it goes down a
11 little bit, is that essentially no different also?

12 A. It is clearly no different because those changes
13 are almost smaller than we can reliably measure from the
14 spirograms.

15 Q. Then, did the bronchodilator an effect with regard
16 to Joyce Kemner?

17 A. No.

18 Q. Now, Doctor Carnow has testified that in fact with
19 regard to this particular spirometry or these two
20 spirometries, that her pulmonary lung function test was worse
21 after bronchodilatation than it was before. Do you agree or
22 disagree with that?

23 A. I disagree.

24 Q. Is there any basis, based upon this, these two

1 tests before and after bronchodilatation to make such a
2 statement in your opinion?

3 A. Well, I think the numbers clearly show that the
4 changes are so small that they could be plus or minus a tiny
5 amount. These degree of change is so small to be within the
6 limits of ability to measure them and clearly one cannot
7 conclude that it is worse or better. The only logical
8 conclusion is that there is no effect.

9 Q. All right. And what is the height that was
10 recorded at this time for Joyce Kemner?

11 A. At this time she was listed as being 71 inches or
12 two inches taller than on the previous occasion.

13 Q. I would like you now to review the third spirometry
14 in order of date, Doctor. This would be the one done for the
15 Northwestern exam. Handing you now, Doctor, what has been
16 marked as Defendant's 1723. This is the spirometry done in
17 connection with the Northwestern exam, is it not?

18 A. Yes, sir.

19 Q. For Joyce Kemner?

20 A. Yes, sir.

21 MR. MUSGRAVE: I would offer that in evidence and
22 request permission to pass copies to the jury, Your Honor.

23 MR. CARR: No objection, Your Honor.

24 THE COURT: It is admitted without objection.

1 (Defendant's Exhibit 1723 is to the jury).

2 Q. Now, Defendant's 1723, first of all, Doctor, what
3 is the height that is recorded on this when this was done
4 down in Moberly for the Northwestern doctors? What height
5 did they record?

6 A. At the top of the report it says height 61.

7 Q. 61. And, I believe, on the two that we just looked
8 at previously, you told us that in '82 on Carnow 1 it was
9 recorded at 69 and in April of '83 height was recorded at 71?

10 A. Yes, sir.

11 Q. And you have seen and will be reviewing here in a
12 minute some other spirometries which have heights that are
13 more in accordance with which of these two numbers or three
14 numbers?

15 A. Well, clearly the 69 or 71 is correct and that this
16 in all probability was a typographical error, misprint or
17 failure to record the right number or an error.

18 Q. All right. Looking at the predicted values, can
19 you determine if, in fact, they used a height of 61 inches as
20 opposed to being a typographical error and maybe it should
21 have been typed as 71? Did they use the predicted values for
22 71 or 61?

23 A. Well, by typographical, I meant the entry was
24 incorrect. The rest is calculated by the machine

1 automatically so if 61 was entered, then the rest of the
2 computations will be based on that erroneous entry. It is
3 clear that is what happened because the predicted value, for
4 example, let's take the forced vital capacity or the first
5 line shows a predicted value of 3.23 whereas on the previous
6 tests, Exhibit 1722, using the same height but one year
7 younger age, the predicted value was 4.40. So there is an
8 enormous difference and clearly as a result of the use of the
9 incorrect value for the height.

10 Q. So, the shorter height lowers the predicted value?

11 A. Correct.

12 Q. And then would incorrectly tell you what the
13 predicted is in this case?

14 A. That will have the effect of increasing the percent
15 predicted values throughout.

16 Q. Okay. And that would be true also of the FEV-1? I
17 mean, she, in fact, had an FEV-1 that measured 2.15 but it
18 was just not 85 percent of the right predicted value?

19 A. It would have been approximately 60 percent that
20 had the right predicted value been employed.

21 Q. And the FVC in this instance had -- let's say the
22 Carnow 1 was done in '82. Had the predicted value for height
23 71 that was used at Boone Clinic in April of '83, some four
24 months earlier, six months earlier, I should say, had that

1 been used, what would her FVC have been?

2 A. Approximately 75 percent of predicted instead of
3 the stated 102.

4 Q. Now then, are you able, Doctor, to rely upon this
5 spirometer that was done by Moberly for the Northwestern
6 doctors in originating conclusions about the status of the
7 pulmonary lung function test of Joyce Kemner?

8 A. Well, of course. We can, first of all, recalculate
9 predicted values and recalculate percentage numbers. There
10 is no disagreement about the actual performance of the
11 patience. The only thing we are discussing at the moment is
12 what values we compare them to. So that there is no reason
13 to disregard or overlook the performance.

14 Q. And what would the performance tell you using the
15 appropriate predicted values and by using the right height?

16 A. Well, we would have values essentially the same as
17 those observed six months earlier and as noted on Exhibit
18 1722.

19 Q. That would be the Boone Clinic?

20 A. Yes.

21 Q. So you would have a normal FVC and an abnormal
22 FEV-1?

23 A. Yes.

24 Q. And the ratio would thus be abnormal?

1 A. Yes.

2 Q. Doctor, earlier and before when you were here
3 before we talked about John Dominguez and you recall that he
4 had an FVC that was over 100 percent of predicted and he had
5 an FEV-1, I think, was 85 percent of the predicted. Both of
6 those were normal but because of that variation being as it
7 was, his ratio was abnormal?

8 A. That is correct.

9 Q. And you explained to us about the basketball player
10 and the little test that you use to try and trick the medical
11 students with. Does that apply in this situation here
12 because we have got 102 and and 85?

13 A. Well, not at all. First of all, 102 and 85 would
14 be different if we used the proper predicted values so we are
15 not talking about excessively large performance. We are
16 discussing a discrepancy between two results, both of which
17 are in fact abnormal. Contrary to the percentage numbers
18 listed on this report.

19 Q. Now, one other thing with regard to this
20 spirometry. We were talking about the MVV with regard to
21 Dorothy Jennings, I believe?

22 A. Yes.

23 Q. And you were saying that a way to double check it,
24 I believe, was to do what, to multiply the FEV-1 by a certain

1 number?

2 A. Yes. The MVV should equal the FEV-1 multiplied by
3 40.

4 Q. And does it in this instance?

5 A. And in her case it was quite a discrepancy and in
6 this case if you apply that particular rule, you would come
7 up with an MVV value of 82 and, in fact, her performance was
8 81.

9 Q. That would be by taking 40 times the 2.15 which was
10 the FEV-1 value on this?

11 A. My arithmetic needs to be checked but that would be
12 86 instead of 81.

13 Q. Now, we have one other spirometry to look at,
14 Doctor, and let me get that for you. This would be the one
15 that was done in November of '83 in connection with the
16 Carnow 2 exam. Handing you now what has been marked as
17 Defendant's 1724. This is the spirometry done November 11,
18 1983, on Joyce Kemner in connection with the Carnow 2 exam,
19 is it not, Doctor?

20 A. Yes, sir.

21 MR. MUSGRAVE: I offer that into evidence and
22 request permission to pass copies to the jury.

23 MR. CARR: No objection.

24 THE COURT: It is admitted without objection.

1 (Defendant's Exhibit 1724 is passed to the jury).

2 Q. Her height on this November of '83 spirometry is 69
3 inches?

4 A. Yes.

5 Q. Compatible with the 71 and the 69 we had seen
6 before?

7 A. Correct.

8 Q. And her FVC on this occasion, one of the components
9 of this ratio, was it normal or abnormal, Doctor?

10 A. It is excellent, 3.54.

11 Q. And how about her FEV-1?

12 A. Not so good. It is only 71 percent of the
13 predicted value.

14 Q. All right. And her ratio then is abnormal?

15 A. Correct.

16 Q. Doctor, then, we have got four spirometries here,
17 the Carnow 1, the Boone Clinic, the one done for Northwestern
18 and the Carnow 2?

19 A. Yes, sir.

20 Q. Which of those, Doctor, are you able to use and
21 rely upon in reaching any opinion about the status of Joyce
22 Kemner's lung functions based upon these tests?

23 A. Well, having multiple measurements on several
24 occasions is very useful but the single set of determinations

1 that appear most reliable from the numbers in front of me are
2 those done on November 11, 1983, the Carnow 2 exam, because
3 their report includes the results at the bottom of the page
4 of three separate individual patient efforts.

5 Q. All right.

6 A. It was on a basis of a discrepancy between three
7 similar efforts that made me discount the Carnow 1 exam by
8 the same criteria. At this time the three efforts were all
9 very similar. The results were comparable and, therefore, I
10 am much more confident that these do indeed represent her
11 maximum capacity.

12 Q. All right. And so we can know exactly what you are
13 talking about, the three general individual runnings of the
14 tests are shown at the bottom of 1724, numbers one, two and
15 three?

16 A. Yes, sir.

17 Q. And the FVC, how much does it vary between those
18 three tests?

19 A. Well, hardly any. Two percent of predicted is the
20 maximum.

21 Q. As opposed to Carnow 1 where there was a much
22 greater variance, that being Defendant's 1721?

23 A. Varied by 20 percent.

24 Q. And how about the FEV-1? Was there any variance on

1 Carnow 2 between the three tests that was significant?

2 A. Three percent of predicted. Now, whereas
3 previously it went from 28 to 40 percent of predicted.

4 Q. So there was a three percent difference as opposed
5 to a --

6 A. 12.

7 Q. 12 percent. Then based upon the Carnow 1, the one
8 that had this great variance, would you agree with Doctor
9 Carnow who testified that Carnow 1 showed a severe
10 obstructive defect?

11 A. Well, the tests are abnormal but I think you cannot
12 ascribe any clinical significance to it without having some
13 confidence that they truly reflect the patient's condition
14 and we have analyzed the results and concluded that they do
15 not. Therefore, I would not agree with the interpretation
16 based on those numbers.

17 Q. Could you make a medical diagnosis or would you
18 make a medical diagnosis of a severe obstructive defect based
19 upon what was shown to you in Carnow 1 with those varied
20 values?

21 A. No. I would conclude the tests were unreliable.

22 Q. And you note, Doctor, on the Carnow 2 exam, the one
23 that has the values repeated very close to each other, there
24 is a reference written in there, mild obstructive pattern?

1 A. Yes.

2 Q. Would you agree with that?

3 A. Yes.

4 Q. All right. And would you agree that the Boone
5 Clinic, April of '83, with the before and after
6 bronchodilator demonstrated a mild obstructive pattern?

7 A. Yes.

8 Q. Now, that is evidenced by what portion of this
9 ratio that goes into make up the FEV-1 over FVC? What aspect
10 of that is abnormal?

11 A. The numerator of the ratio, namely the forced
12 expiratory volume in one second is the abnormal value whereas
13 the forced vital capacity is okay.

14 Q. And what can cause mild obstructive defects,
15 Doctor?

16 A. Well, that is a characteristic abnormality that is
17 found in all of the so-called obstructive lung diseases.
18 This includes asthma, bronchitis, early emphysema, tumor in
19 the windpipe. Those are the major causes.

20 Q. Has there been any change in the findings with
21 regard to those which evidence this mild obstructive defect
22 in Joyce Kemner over the years based upon these spirometries
23 that you feel are reliable as you so told us?

24 A. Well, we only have data over a year or so period.

1 Q. Over that period, has there been any?

2 A. And over that reliable data, over that one year or
3 eight month, six month period, and all of those are
4 essentially the same.

5 Q. That year period would be what, Doctor, from when
6 to when?

7 A. From the Boone Clinic data that was done, tests
8 were done on April 6, 1983. The Moberly Northwestern test
9 done in October of '83 and the Carnow 2 which was done in
10 November of '83.

11 Q. Okay. I don't have any more copies of this but I
12 do have another one here, Doctor, that we could extend that
13 period to see if there has been any change and let me have
14 this marked. Doctor, handing you now what has been marked as
15 1725, this is a spirometry involving Joyce Kemner dated again
16 March 25, 1985, done by Doctor Carnow's office. This then
17 extends this period of time to March of '85, does it not?

18 A. Correct.

19 Q. All right. Let's compare that, then. How is her
20 FVC in March of '85?

21 A. Essentially identical with that obtained in
22 November of '83.

23 Q. All right. The volume being, do I read that right,
24 of 3.49?

1 A. Or 48, I can't tell.

2 Q. And how about her FEV-1, the other component of
3 this ratio?

4 A. It is 2.08 in 1985 and it is 2.22 in 1983. Again
5 essentially the same.

6 Q. And so, then, putting this into the question that I
7 asked you, over this period of time then that we now have
8 spirometries, has there essentially been any change as
9 evidenced by these lung function tests in this mild
10 obstructive pattern?

11 A. None at all.

12 Q. Now, there again, this one done in March of '75
13 like the one done back in April of '83 was done with
14 bronchodilators being used in a second test, is that correct?

15 A. Correct.

16 Q. And was there any change in her performance on the
17 lung function test in 1985 after the bronchodilator was
18 administered?

19 A. Well, once again there are minor numerical
20 differences but these are far from significant and no more
21 than can be expected from the limitations of the methods of
22 the measurements. So there is no change in either '85 or
23 '83.

24 Q. Same situation in '85 and '83 when the

1 bronchodilator was used?

2 A. Correct.

3 Q. Now, I think I have asked you and you told us
4 generally those things that can cause this mild obstructive
5 pattern. Doctor, let me ask you another question that will
6 incorporate some of the testimony that Linda Kemner or Joyce
7 Kemner gave at trial. Before I do that, I want to show you
8 one other document. I have now had the Court Reporter mark
9 Defendant's 1726. The report of Doctor Greenberger who
10 examined Joyce Kemner and performed skin tests on her to
11 determine whether she had any allergic conditions and you
12 have reviewed that, have you not?

13 A. Yes, I have.

14 Q. And what were the results of the skin tests? That
15 is, what was found, if anything, that she was allergic to?

16 A. Well, the skin tests were positive for multiple
17 things. Specifically trees, grass, rag weed, molds, dust,
18 cat and dog dander.

19 Q. Doctor, then I would like you to assume these facts
20 that at trial she testified, this is in October of 1984,
21 Doctor. That she had allergy troubles, hayfever before the
22 spill in January of 1979; that there had been no change in
23 her allergy problems since the spill; that her allergies
24 began in childhood and again this was done on the 22nd of

1 October of '84, another day. Her allergies began at
2 childhood and they were pretty much the same as before the
3 spill. She felt she was allergic to dust, pollen, that sort
4 of thing.

5 And this testimony was also adduced in the
6 examination. She stated that she and her husband ran a 750
7 acre farm driving tractors and they also bring the harvest
8 over to the grain elevators. She stated that she usually
9 wears a dust mask and maybe even a handkerchief which helps
10 quite a bit but on occasions and especially when she goes to
11 the grain elevator, she will develop wheezing and congestion
12 and will have to sit up all night. Those problems are
13 seasonal in the spring and the fall and that that has just
14 been described to you was testified by her to be an accurate
15 description of her allergy problem that she had had for many
16 years and that wheezing condition is also associated with
17 those allergy problems. That she sneezes a lot and the dust
18 makes her throat clog up or close up and she also gets short
19 of breath and that she tends to wheeze and she makes noise
20 when she breathes. And that those allergy reactions, with
21 those allergy reactions she tends to get a sinus problem and
22 a cough and throat irritation and she gets that whole list of
23 symptoms that come with her allergy attacks and that those
24 allergy attacks have remained the same both before and after

1 the spill of January of 1979.

2 Assuming that testimony, Doctor, and the report
3 there that Doctor Greenberger rendered with regard to her
4 skin sensitivity, do you have an opinion as to whether or not
5 the mild obstructive problems evidenced by the pulmonary lung
6 function tests that you have reviewed for us are in any way
7 related to those complaints and that background?

8 A. Yes, I have an opinion.

9 Q. And what would that be, Doctor?

10 A. Well, I think they are fully and readily explained
11 on the basis of the long history of intermittent allergic and
12 respiratory symptoms that this lady complains of.

13 Q. Now, Doctor, early on when you were first here, we
14 talked about asthma, and asthma, as I recall, being a
15 condition that will come and go?

16 A. Yes.

17 Q. And can be caused by a reaction to something that I
18 irritates your small airways and makes them sensitive to that
19 irritant and go into spasm, is that correct?

20 A. Well, that is one possible location. That needn't
21 be confined only to the small airways.

22 Q. Okay. Can you have an asthmatic condition -- can a
23 person have an asthmatic condition and be in one of those
24 stages where they are not experiencing any symptoms yet still

1 have some findings of abnormality on one of these pulmonary
2 lung function tests even though they are not wheezing and
3 having shortness of breath and feeling a tight sensation in
4 their throat because they are having an asthma attack?

5 A. It is quite characteristic that people with asthma
6 in the symptom free interval have residual, measurable
7 abnormalities in lung function. That is typical for
8 asthmatics.

9 Q. The degree of impairment that is reflected on the
10 spirometries of Joyce Kemner --

11 A. Yes.

12 Q. -- would that be compatible with the person with
13 mild asthma and not experiencing any symptoms at that time
14 that would be suggestive of an asthma attack?

15 A. It is completely compatible for an asthmatic during
16 the symptom free period.

17 Q. Doctor, I think you have also told us in your
18 testimony that the bronchodilators not only used in
19 performing these tests to see if there is any improvement but
20 are those bronchodilators actually used to treat these
21 problems that asthmatic people have?

22 A. Yes. And one of the purposes of incorporating it
23 in the testing procedure is to see if it will be useful as
24 treatment.

1 a very few cases they had these problems? Is that
2 established, sir?

3 A. I wrote this in these three instances, sir.

4 Q. Is it established, sir, that you said these things
5 in these three instances that only in a few cases the workers
6 continued to complain?

7 A. Yes, sir.

8 Q. All right. And, Doctor, it is these -- it is that
9 fact that you want the world to rely upon, isn't that
10 correct, sir?

11 A. Yes, sir.

12 Q. And, in fact, the world has relied upon that,
13 haven't they, sir?

14 A. I don't know if they have.

15 Q. Well, Doctor, your AMA committee relied upon it,
16 did they not, sir?

17 A. Where in the AMA report is it, sir?

18 Q. Doctor, you were a member of the group that wrote
19 the report, you've testified that you're one of the authors
20 of the report, have you not, sir?

21 A. That's true, sir.

22 Q. You are one of the authors of the report, are you
23 not, sir?

24 A. Right, sir.

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

3 FRANCES E. KEMNER, et al.)
4 Plaintiff,)
5 vs.) No. 80-L-970
6 MONSANTO COMPANY,)
7 Defendant.)

8 Before the HON. RICHARD P. GOLDENHERSH, Judge
9
10

11 REPORT OF PROCEEDINGS

12 JURY TRIAL

13 March 7, 1986
14
15

16 APPEARANCES:

17 MR. REX CARR & MR. JERRY SEIGFREID, Attorneys at Law
18 Appeared on Behalf of the Plaintiff.

19 MR. KENNETH R. HEINEMAN & MR. JOSEPH NASSIF,
20 Attorneys at Law
Appeared on Behalf of the Defendant.
21
22

23 MARSHA SCHNIPPER
24 Official Court Reporter

1 Q. Well, we have two occasions, then. Let me back off
2 a minute. Doctor, do you have an opinion as to whether Joyce
3 Kemner has any asthmatic condition?

4 A. Oh, I think she clearly has asthmatic symptoms.

5 Q. The bronchodilators were used on her at least on
6 two occasions in these tests?

7 A. Yes.

8 Q. And didn't change the situation, didn't make it any
9 worse, didn't make it any better as I think you have told us?

10 A. Correct.

11 Q. Is that compatible, Doctor, with her lung function
12 tests showing a mild obstructive pattern and her having a
13 mild asthma or latent asthma of some kind?

14 A. Well, I think one has to consider the natural
15 history of asthma and what happens to people that have been
16 afflicted with it for a long period of time. This woman had
17 allergies, asthma symptoms from childhood. She is now 36 or
18 37 years of age or older. Asthma tends to disappear in young
19 adults or during adolescence in many people. In some,
20 however, it not only persists but slowly increases in
21 severity and it can eventually result in some limited but
22 fixed irreversible alterations in breathing capacity. I
23 think this is a perfect example of the natural history of
24 asthma in a person in whom it did not follow the common