

1 MR. IGNATOWSKI: Yes, sir. Good morning,
2 Your Honor. Good morning, ladies and gentlemen.

3 THE JURY: Good morning.

4 MR. IGNATOWSKI: At this time the plaintiffs
5 call Dr. John Dement.

6 (Whereupon, witness present.)

7 Whereupon,

8 DR. JOHN McCRAY DEMENT,
9 the witness herein, being first duly sworn to testify the
10 truth, the whole truth, and nothing but the truth, was
11 examined and testified as follows:

12 THE COURT: Be seated, please, and give us
13 your name and professional address, sir.

14 THE WITNESS: Yes. My name is John McCray
15 Dement, and I am on faculty at the Division of
16 Occupational Medicine, Duke University Medical Center
17 in Durham, North Carolina.

18 DIRECT EXAMINATION

19 BY MR. IGNATOWSKI:

20 Q Good morning, Dr. Dement. Could you tell us
21 where do you live, Dr. Dement?

1 A I actually live in Cary, North Carolina, a
2 suburb of Raleigh.

3 Q What is your current job?

4 A I am associate professor again in the
5 Division of Occupational Medicine in the Duke
6 University Medical Center.

7 Q Do you teach at Duke?

8 A Yes, I teach and do research.

9 Q What do you teach?

10 A I teach in the areas of industrial hygiene
11 and epidemiology.

12 Q Now, Dr. Dement, you are the first
13 industrial hygienist to testify, so could you please
14 tell the ladies and gentlemen of the jury what
15 industrial hygiene is.

16 A Well, industrial hygiene is the profession
17 that is involved and charged with identification,
18 evaluation, and control of hazards in the workplace.

19 Q Is it a new science?

20 A No.

21 Q How far back does the practice of industrial

1 hygiene go, Dr. Dement?

2 A Well, sort of the father of occupational
3 medicine and industrial hygiene was Ramazzini in 17th
4 Century.

5 The modern practice of the industrial
6 hygiene dates really to the turn of the century, the
7 first published text in about 1913, 1914 in the United
8 States.

9 Q Now, is toxicology part of industrial
10 hygiene?

11 A Toxicology is a science studied by
12 industrial hygienists as part of their training.

13 Q Now, you also mentioned -- you mentioned
14 epidemiology?

15 A Yes.

16 Q What is epidemiology?

17 A Well, that is the science that studies the
18 distribution of diseases in human populations and
19 tries to determine their causes.

20 Q Is there a certification process for
21 industrial hygiene?

1 A Yes. The certification by the American
2 Board of Industrial Hygiene.

3 Q Are you certified?

4 A Yes, I am.

5 Q And how long have you been certified?

6 A I have been certified to practice since
7 1976.

8 Q Basically what does the certification
9 process involve?

10 A Well, there is a two-part examination.
11 After you have the necessary academic training, you
12 sit for a one-day examination that covers the -- sort
13 of the basic practice, and then after five years of
14 practice in the field of industrial hygiene, you are
15 eligible to sit for a second part of the examination,
16 another one-day examination.

17 If you pass both parts, then you are
18 certified; and then there is a process of maintenance
19 or certification after that.

20 Q And have you maintained your certification
21 in that field?

1 A Yes.

2 Q Now, could you please describe for the
3 ladies and gentlemen of the jury your educational
4 background.

5 A I have a Bachelor's degree in mechanical
6 engineering from North Carolina State University,
7 awarded in 1971.

8 I have a Master's of Science in industrial
9 hygiene from the Harvard University School of Public
10 Health awarded in 1974.

11 I have a Ph.D. in industrial hygiene and
12 epidemiology awarded from the University of North
13 Carolina School of Public Health at Chapel Hill in
14 1980.

15 Q Now, as part of your grant of your degree,
16 your Ph.D. degree, did you have to do a thesis or a
17 research paper?

18 A I had to do a dissertation, original piece
19 of research, yes.

20 Q What was your area of original research?

21 A I studied and did an epidemiologic and

1 industrial hygiene study of an asbestos textile plant
2 located in Charleston, South Carolina.

3 It is the oldest asbestos processing plant
4 in the United States, and I looked at exposures among
5 these populations going back to 1940 and looked at
6 mortality and causes of death and looked at an
7 exposure response, that is, trying to measure how much
8 disease was generated by how much exposure in the
9 workplace.

10 Q Was there a particular type of fiber that
11 was used at that plant?

12 A This was a plant that used a type of
13 asbestos known as chrysotile asbestos. Largely came
14 from Canada.

15 Q Did you publish that particular paper once
16 you had completed your Ph.D.?

17 A Yes. There has been a number of
18 publications based on that research. The original
19 publication back in about 1980, '81, '83 and then some
20 additional follow-up later.

21 Q So you have continued to follow that group

1 of people?

2 A Yes. In a study like this, you follow
3 people over time. The original follow-up period is
4 through 1975.

5 I then later on updated the follow-up period
6 and followed those people through 1990.

7 Q And have you published any other papers in
8 addition to that and those follow-up studies in the
9 medical and scientific literature?

10 A I have published some 50 articles in the
11 peer-reviewed journals and about half or two-thirds
12 have to do with asbestos in some form or another.

13 Q You told us you are on the faculty at Duke?

14 A Yes.

15 Q And do you regularly teach?

16 A Yes.

17 Q What courses do you teach and to what kind
18 of students, Doctor?

19 A Well, I teach courses that deal with
20 occupational epidemiology and environmental
21 epidemiology.

1 The students are in graduate school, and
2 they include doctors and nurses and others.

3 We also have an occupational medicine
4 residency program within our division.

5 That is physicians who want to come back and
6 do a residency in occupational medicine, and I teach
7 to those individuals industrial hygiene and
8 epidemiology.

9 In fact, they have to do a research project
10 as part of their residency, and normally that is done
11 with me.

12 Q So as part of your regular teaching duties,
13 you teach future doctors?

14 A Yes.

15 Q You are not a medical doctor?

16 A No, I am not.

17 Q And you are a Ph.D.?

18 A That is correct.

19 Q Okay. Prior to going to Duke in 1993, what
20 did you do for a living?

21 A I spent between 21 and 22 years with the

1 U.S. Public Health Service as part of the Federal
2 Government.

3 Q And what did you do for the U.S. Public
4 Health Service?

5 A I was first employed in 1971 by the National
6 Institute for Occupational Safety and Health in
7 Cincinnati, Ohio.

8 I spent about 10 years, a little over 10
9 years with that organization.

10 I then spent about a little over 10 years
11 with the National Institute of Environmental Health
12 Sciences, also part of the U.S. Public Health
13 Service.

14 Q What is the National Institute of
15 Environmental Health Sciences?

16 A It is the organization that is part of the
17 National Institutes of Health. It is actually one of
18 the National Institutes of Health.

19 Most of those institutes are located in
20 Bethesda, Maryland.

21 This is the only one of those institutes

1 outside of Bethesda, but that organization is
2 responsible for environmental toxicology research for
3 the Federal Government.

4 Q Now, you also mentioned -- did you work for
5 NIOSH?

6 A Yes.

7 Q And could you please explain to the ladies
8 and gentlemen of the jury what NIOSH is.

9 A Well, it is the National Institute for
10 Occupational Safety and Health. It was created --
11 that organization was created by the Occupational
12 Safety and Health Act of 1970.

13 That act created NIOSH which is the
14 organization responsible for occupational health and
15 safety research and also created the Occupational
16 Safety and Health Administration of OSHA. They are
17 different organizations.

18 OSHA is responsible for developing
19 regulations and enforcing regulations.

20 Q Now, did there ever come a time when you
21 went to work in Morgantown, West Virginia?

1 A Yes. NIOSH had and still has two major
2 research divisions and locations.

3 One is in Cincinnati, Ohio. And Morgantown,
4 West Virginia is division of respiratory research, and
5 I spent a little over two years in Morgantown.

6 Q During the entire course of your work with
7 the government, have you had a major field of interest
8 or research area?

9 A Well, my areas of interest have been
10 occupational lung diseases and occupational cancers,
11 and I have spent a fair amount of that research
12 looking at asbestos and other fibers.

13 Q Now, as part of your work with the
14 government, Dr. Dement, did you become familiar with
15 asbestos and asbestos-related diseases?

16 A Yes.

17 Q Was that part of your training and your work
18 for the government?

19 A Yes.

20 Q When did you first start to learn about the
21 potential hazards of asbestos and exposures?

1 A Well, before completing my Bachelor's
2 degree, I actually worked for two years on a full-time
3 summer and part-time during the winter during the
4 school year with the Environmental Protection Agency
5 and really began to learn a little bit about asbestos
6 at that time, but in 1971 when I joined the Public
7 Health Service on a full-time basis, that is when my
8 intense research began.

9 Q Now, as part of your research and your work
10 for the government, did you do field visits?

11 A Yes.

12 Q And what are field visits?

13 We are going to hear a little bit about
14 industrial hygiene studies during your testimony and
15 some of the devices that have been used and field
16 visits.

17 Could you explain what field visits are?

18 A Well, industrial hygienists in order to do
19 their work have to go to the workplace, so field
20 industrial hygiene involves usually a visit to the
21 work site to assess the types of work being done, and

1 the types of exposures that could occur, followed by
2 designing whatever sampling you wish to do.

3 For example, collecting air samples to
4 measure exposure quantitatively and then based on that
5 you might write a report of your findings with
6 recommendations for improvements to reduce exposures
7 for a worker.

8 Q And have you actually used sampling devices
9 at different locations?

10 A Yes.

11 Q So are you familiar with the different types
12 and the history of the different types of devices that
13 have been used?

14 A Yes, as part of my work, yes.

15 Q And have you actually as a further part of
16 your work and as a result of those field visits
17 actually looked at your asbestos and asbestos fibers
18 under the microscope?

19 A Yes. In 1971 when I worked with NIOSH, I
20 assumed a responsibility for an ongoing study that was
21 started looking at some 30 different

1 asbestos-producing plants, products plants and did
2 industrial hygiene measurements in those studies; and,
3 also, as part of my research, I collected air samples
4 and analyzed those by both optical microscopy and by
5 electron microscopy.

6 Q We have heard about both of those types of
7 microscopy.

8 Are you still doing asbestos research, Dr.
9 Dement?

10 A Yes, I am.

11 Q Have you ever done any work in the area of
12 risk assessment?

13 A Actually, the studies that I have done --
14 published with regard to dose response are on risk
15 assessment.

16 Q Could you tell us what does risk assessment
17 mean?

18 A Well, there are sort of two levels. One is
19 we believe for most toxic materials, including
20 asbestos, that there is a dose response.

21 That is, the longer you are exposed, the

1 more you inhale, the more higher the number of
2 particles get into your lungs, the greater the risk of
3 all of the diseases, including asbestosis and cancer.

4 So in our epidemiologic studies we attempt
5 to quantitate the amount of exposure over a working
6 lifetime for these individuals and then look at the
7 risk among those people. So we measure the risk
8 relative to some -- to the standard population of the
9 United States.

10 Q Now, as part of your government work, have
11 you ever testified before Congress?

12 A Yes. I have -- as part of my work, I have
13 prepared testimony for the director of NIOSH and
14 accompanied he to present that testimony before
15 Congress.

16 Q So are you familiar with OSHA, the
17 Occupational Safety and Health Administration Act?

18 A Yes, of course.

19 Q Okay. And are you familiar with the history
20 of OSHA?

21 A Yes.

1 Q Now, you told us about your peer-review
2 articles and that is, you are still publishing
3 materials in the medical and scientific literature; is
4 that correct?

5 A Yes, sir.

6 Q You mentioned the Collegium Ramazzini or
7 Ramazzini?

8 A I mentioned Ramazzini, yes.

9 Q What is the Collegium Ramazzini?

10 A Collegium Ramazzini is an international
11 society. Ramazzini is considered the father of
12 industrial medicine, but it is a group of people that
13 are nominated to become a member of and includes
14 occupational health professional, industrial
15 hygienists, toxicologists, and physicians around the
16 world who are part of the society.

17 Q And have you ever received any awards from
18 that particular organization?

19 A Well, it is considered an award to become
20 nominated to become a member of it, and I am still a
21 member of it.

1 Q We have seen during the course of showing
2 the jury some documents reference to something known
3 as the American Conference of Governmental Industrial
4 Hygienists.

5 A Yes.

6 Q What is the -- I am just going to use the
7 short term, ACGIH. What is the ACGIH?

8 A It is just a professional organization,
9 professional society.

10 It is a group of people who are industrial
11 hygienists, physicians, toxicologists who are
12 interested in occupational health and belong to an
13 organization.

14 It was established in about 1938 as an
15 organization.

16 Q Now, you mentioned industrial hygienists.

17 Do you have to be an industrial hygienist to
18 be a member?

19 A No. You don't have to be an industrial
20 hygienist per se. You have to be involved in the
21 field of occupational health.

1 Many of the members of the ACGIH are
2 physicians and toxicologists.

3 In order to be a full member, you have to be
4 employed either by government, state or local, or
5 academic institutions.

6 You can be an affiliate member, but not a
7 voting member if you are in the industry.

8 Q Now, the term uses governmental, the title.

9 A That is correct.

10 Q Is it a governmental regulatory agency?

11 A No. It is just a group of people who have a
12 society that to be a member of you have to be either
13 employed by a government or an academic institution.

14 Q And have you ever held any positions within
15 the ACGIH?

16 A I served on the board of directors for four
17 years and through that you are elected and you start
18 as vice-chair, elect vice-chair, chair and then past
19 chair. A four-year period.

20 Q As a member of the organization and as part
21 of the title that you held, did you become familiar

1 with the ACGIH and its history?

2 A As part of that, yes. I have been a member
3 of that organization since early 1970s.

4 Q And you are still a member?

5 A Yes.

6 Q Have you ever lectured concerning asbestos
7 and asbestos disease?

8 A Yes. I still do.

9 Q And has that been both nationally and
10 internationally?

11 A Yes.

12 Q Are you the editor of any book chapters, or
13 have you published any book chapters concerning
14 asbestos and disease?

15 A Yes, I have.

16 Q And how many such chapters do you have to
17 your credit, Dr. Dement?

18 A Oh, three or four book chapters that deal
19 with asbestos or asbestos-related diseases or
20 industrial hygiene, which has some part of that.

21 Q Have you ever been appointed or asked by a

1 court to testify as an expert on asbestos-related
2 disease?

3 A I was involved in a court case in Texas, I
4 think the case was called the Cimino case, and I was
5 asked by the Court to be an expert in industrial
6 hygiene and regulations.

7 Q How long ago was that, Doctor?

8 A I believe that was about 1989 or 1990.

9 Q And have you been a member of what is known
10 as the Federal Asbestos Task Force?

11 A Yes.

12 Q And what basically -- could you just briefly
13 describe what that is or what that was?

14 A Well, various federal agencies are
15 interested in asbestos and how to protect individuals
16 from exposure to asbestos.

17 They meet regularly to try to coordinate
18 their activities and share information, and I was the
19 representative from the National Institute of
20 Environmental Health Sciences to that committee.

21 Q And have you also been a member of the

1 International Association for Research on Cancer?

2 A I have served on that committee, yes.

3 Q And has any of that work involved asbestos
4 and disease?

5 A Well, the IARC has sponsored a number of
6 meetings, and I have participated in those meetings,
7 and I have participated in some of the monographs, but
8 no, not on asbestos on the monograph.

9 MR. IGNATOWSKI: Your Honor, if I may
10 approach, I would like to show the doctor a copy of
11 his CV and offer that into evidence at this time.

12 BY MR. IGNATOWSKI:

13 Q Dr. Dement, I would like to show you what
14 has been previously marked as Plaintiffs' Exhibit
15 Dement 1.

16 (Whereupon, Plaintiffs' Exhibit Number
17 Dement 1 was marked for identification.)

18 (Whereupon, document tendered to witness.)

19 BY MR. IGNATOWSKI:

20 Q Could you please identify that.

21 A It is my CV, my current one dated 3 of '96.

1 Q This is dated March of 1996?

2 A Yes.

3 Q And it has your current publications and
4 recent publications in it?

5 A Yes, it does.

6 MR. IGNATOWSKI: Your Honor, at this time we
7 would offer what has been premarked as Plaintiffs'
8 Exhibit Dement 1 into evidence.

9 THE COURT: It will be admitted into
10 evidence.

11 (Whereupon, Plaintiffs' Exhibit Number
12 Dement 1 was received into evidence.)

13 MR. IGNATOWSKI: Your Honor, at this time
14 we would offer Dr. Dement as an expert in the area of
15 industrial hygiene, asbestos, the epidemiology of
16 asbestos-related disease and also in the areas of the
17 history of knowledge of industrial hygiene and
18 asbestos-related disease.

19 THE COURT: All right. Thank you, Mr.
20 Ignatowski.

21 Mr. McGowan, any voir dire on that issue?

1 MR. MCGOWAN: Yes. Good morning, Your
2 Honor. Ladies and gentlemen, good morning.

3 THE JURY: Good morning.

4 VOIR DIRE EXAMINATION

5 BY MR. MCGOWAN:

6 Q Good morning, Doctor. My name is Tim
7 McGowan, and I think we have met before.

8 A Yes.

9 Q Just a few questions.

10 Doctor, you mentioned that this agency,
11 ACGIH, they have toxicologists that work for them or
12 that are a part of this organization?

13 A Some of the members are, in fact,
14 toxicologists, yes.

15 Q And some of the people who are in this
16 organization are also physicians who deal with people
17 of occupational diseases, aren't they?

18 A I assume so. Many of them are practicing
19 physicians. Some of them are people who have served.

20 Q You don't hold yourself out as a
21 toxicologist, do you?

1 A No. I have training in toxicology, both
2 Masters, but I am not a toxicologist.

3 Q This ACGIH, they have issued numerous
4 publications throughout the years for the whole world
5 to see?

6 A Yes.

7 Q Now, I want to talk about your research for
8 a minute.

9 This was in South Carolina that you did your
10 research on the asbestos plant?

11 A The study which I looked at dose response,
12 yes.

13 Q What was the name of that plant, by the
14 way?

15 A It was known as and at that time was called
16 the Raybestos-Manhattan plant.

17 Q Am I correct that what they did is took raw
18 asbestos and made asbestos-containing products in the
19 plant?

20 A Yes, they did.

21 Q You went around and studied disease

1 incidents in people in certain portions of that
2 plant?

3 A Yes.

4 Q What did you do in Morgantown, West
5 Virginia?

6 A In Morgantown I served as the Deputy
7 Director of the Division of Respiratory Disease
8 Research which is the focal point for NIOSH research
9 for lung disease.

10 Q Did you do any research on coal miners'
11 diseases down there?

12 A I did as part of that, and I am still
13 involved in some of that area.

14 Q Known as black lung from breathing in coal
15 dust?

16 A Yes.

17 Q Too much coal dust?

18 A Obviously, yes.

19 Q Did you do any studies with plasterers?

20 A I think NIOSH has done some health hazard
21 evaluations of plasterers, but I didn't do any work

1 directly.

2 MR. MCGOWAN: All right. That is all I
3 have. Thank you, Doctor.

4 THE COURT: Thank you, Mr. McGowan.

5 Mr. Williams, any questions on his
6 qualifications?

7 MR. WILLIAMS: Yes. Just a couple, Your
8 Honor. Thank you.

9 Good morning.

10 VOIR DIRE EXAMINATION

11 BY MR. WILLIAMS:

12 Q Good morning, Doctor. I think we last saw
13 you down in your office a couple of months ago?

14 A Yes.

15 Q You are not a certified epidemiologist, are
16 you?

17 A There is really not a process or
18 certification per se.

19 MR. WILLIAMS: Thank you, Your Honor.

20 THE COURT: You are welcome.

21 Ms. Tostanoski?

1 MS. TOSTANOSKI: I have nothing, Your
2 Honor.

3 THE COURT: Mr. Doub?

4 MR. DOUB: No, Your Honor.

5 THE COURT: Very well. Dr. Dement will be
6 permitted to testify in the areas offered.

7 MR. IGNATOWSKI: Thank you, Your Honor.

8 THE COURT: You are welcome.

9 DIRECT EXAMINATION (CONTINUED)

10 BY MR. IGNATOWSKI:

11 Q Dr. Dement, were you involved with the
12 United States' first official attempt to regulate
13 asbestos?

14 A Yes, after the first attempt really after
15 the passage of the Occupational Safety and Health Act
16 in 1970, yes.

17 Q And was there a document created in 1970?

18 A Well, NIOSH was created after the act, and
19 the first -- one of the things that NIOSH was charged
20 with doing was creating these review documents that
21 review the world's literature on material recommending

1 an occupational exposure limit and then transferring
2 that over to OSHA.

3 They also make the document available just
4 in the open literature for anybody to read.

5 In 1972, actually starting in 1970, '71, it
6 began to create a criteria document on asbestos, and I
7 participated in that process.

8 Q And OSHA was enacted in the early 1970s?

9 A It was passed in 1970.

10 Q Why was OSHA enacted at that time?

11 A Well, as a realization that greater degree
12 of control in the workplace, it was needed to protect
13 workers' health and safety.

14 It was the first federal entry, serious
15 federal entry into the regulation of the workplace for
16 health and safety.

17 Q Prior to the enactment of OSHA, was there
18 any enforcement methods or procedures that the Federal
19 Government could use?

20 A On a very limited basis. There had been
21 passed what was called the Walsh-Healey Act which was

1 called a public contracts act, and what it said was
2 any organization that had a contract with the Federal
3 Government in excess of I think \$10,000 in value,
4 basically had to have a health and safety program.

5 Again, it only applied to the people that
6 contracted with the Federal Government.

7 In 1970 was the first time that a broad
8 federal power was given for development standards and
9 enforcement standards.

10 Q You are familiar with the original criteria
11 document and later the OSHA document that was written
12 sometime in 1986?

13 A Yes, or a number of documents. NIOSH
14 actually issued three criteria documents on asbestos,
15 '72, '76 and then 1980, and I participated in all of
16 those.

17 MR. IGNATOWSKI: Your Honor, at this time
18 may I have Dr. Dement come down?

19 THE COURT: You may.

20 MR. IGNATOWSKI: I would like to use some
21 overheads.

1 (Whereupon, the witness left the witness
2 stand.)

3 (Whereupon, the documents were published to
4 the jury via the overhead projector.)

5 BY MR. IGNATOWSKI:

6 Q Now, Dr. Dement, Mr. McGowan asked you a
7 question about whether you were a toxicologist, and
8 you told him that that was part of your studies to do
9 some toxicology work; is that correct?

10 You have done toxicology work?

11 A You are required to study human physiology
12 and toxicology as part of your training in industrial
13 hygiene, yes.

14 Q Now, OSHA issued some regulations in 1986?

15 A Yes, they did.

16 Q Did OSHA make any findings about whether
17 asbestos was a toxic material?

18 A They certainly considered it to be one of
19 the most hazardous materials studied thus far.

20 Q Okay. Now, I would like to show you what is
21 page 22612 of the Federal Register.

1 Is this the OSHA document that was enacted
2 and appeared in the Federal Register in June of 1986?

3 A Yes. This is just the Federal Register
4 publication of the final rule.

5 You go through a rule making process which
6 took a number -- actually a number of years in the
7 process to develop this final rule.

8 Q Now, how did OSHA define asbestos?

9 How was it defined within the document?

10 A Well, asbestos can -- is really a term used
11 to describe a number of minerals that occur naturally
12 that are fibrous and have some commercial value.

13 And it defines asbestos here as, asbestos,
14 tremolite, anthophyllite, and actinolite. So it is
15 including what we call the amphiboles, which
16 tremolite, anthophyllite, and actinolite were the
17 amphiboles, as well as chrysotile, which is the
18 serpentine. Really two classifications, amphiboles
19 and serpentines, but it defines asbestos that way.

20 Q Now, the document that was issued in 1971,
21 did that reference chrysotile and the amphiboles

1 specifically?

2 A Yes. And it specifically talks about the
3 regulation for those types of asbestos. Chrysotile is
4 the only serpentine.

5 All of the others, crocidolite, amosite,
6 tremolite, anthophyllite, and actinolite are amphibole
7 asbestos.

8 Q Now, did OSHA make any recommendations or
9 any findings as to whether asbestos was a hazardous
10 material when it issued these OSHA regulations?

11 A Yes, it did. Its own risk assessment
12 clearly demonstrated risk among workers exposed.

13 Q I would like to show you which -- what is
14 page 22615 of the Federal Register, and did OSHA, OSHA
15 in this particular document, make an overview of the
16 health-related diseases and the asbestos-related
17 diseases that one could contract from exposure to
18 asbestos?

19 A This paragraph they talk about the fact
20 that, as we stated before, that asbestos is a
21 clearly -- is a toxic material and clearly has

1 demonstrated detrimental effects on human health and
2 goes on to talk about life threatening diseases,
3 cancers of the lung, cancers of the mesothelial lining
4 of the lung, of the pleura and also gastrointestinal
5 cancer.

6 So those are in its own risk assessment.

7 It considered asbestosis, it considered lung
8 cancer, it considered mesothelioma, and it also
9 considered gastrointestinal cancers to be related to
10 asbestos exposure.

11 Q Now, we have already seen on the first page
12 that OSHA talked about the different fiber types?

13 A Yes.

14 Q They have talked about the hazards from
15 exposure to asbestos?

16 A Yes.

17 Q Did OSHA when it made its findings and
18 issued this final report, make any distinctions
19 between the application of any of those hazards and
20 diseases to those different fiber types?

21 A No. OSHA reviewed, again, all of the

1 literature on the subject and concluded that based on
2 the literature reviewed, all of the types of asbestos
3 were capable of producing each of those diseases.

4 It then regulated them all, and it had made
5 no distinction among chrysotile versus the other types
6 of amphiboles.

7 Q Now, you personally have done work, as Mr.
8 McGowan asked you, about chrysotile and individuals
9 working with chrysotile at that plant; is that
10 correct?

11 A Yes.

12 Q Do you have an opinion, Doctor, with
13 reasonable scientific certainty as to whether
14 chrysotile fibers can cause mesothelioma?

15 A Yes. They can.

16 Q And has part of your research -- has part of
17 your research indicated, your studies at that
18 particular plant indicated, or have you found any
19 cases of mesothelioma in that population group?

20 A Yes. There are clearly mesotheliomas among
21 this population.

1 Q Now, do you also have an opinion, Dr.

2 Dement, as to whether the other fiber types, amosite,
3 tremolite, crocidolite can produce the disease known
4 as mesothelioma?

5 A Of course it can.

6 Q And in your studies, did you also find or
7 did you find any cases of asbestos-related lung cancer
8 in that plant?

9 A We found large increase in the risk of lung
10 cancer among the chrysotile-exposed people, and we
11 found a good dose response, that is, more exposure,
12 the greater the risk.

13 Q And did you find any cases of asbestosis?

14 A A lot of asbestosis, yes.

15 Q Do you have an opinion as to whether all
16 fiber types can cause the disease asbestosis?

17 A Yes, they can.

18 Q We have already heard about what those
19 various diseases are, and I am not going to go through
20 that again with you.

21 In your opinion, Doctor, is asbestos a toxic

1 substance as OSHA has found?

2 A They clearly define it as a toxic substance
3 and, yes, I consider asbestos to be a toxic
4 substance.

5 Q And when you use that term "toxic" as an
6 industrial hygienist, what do you mean?

7 A Normally, as a hygienist we use the word
8 toxic as capable -- it is the ability of a substance
9 to cause harm, so a material can be -- if it is toxic,
10 it is capable of causing harm.

11 Then we talk about a hazard which is a
12 function of being toxic and being exposed. It is
13 toxic and you are exposed, there is a hazard.

14 Q In your opinion, Doctor, are you familiar
15 with reports in the medical and scientific literature
16 of exposure to asbestos and its capability to cause
17 disease?

18 A Thousands of them, yes.

19 Q In your opinion, would it be accurate to
20 say -- were there medical reports in the scientific
21 literature in the '50s concerning the disease

1 asbestosis as it relates to asbestos exposure?

2 A Yes.

3 Q And in your opinion, would asbestosis be a
4 form of harm to the human respiratory system?

5 A Yes.

6 Q In your opinion, with reasonable scientific
7 certainty, would it be accurate to say that asbestos
8 or a product that contained asbestos would be
9 nontoxic?

10 A No. It is not an accurate statement, in my
11 opinion.

12 Q Is it a misleading statement, in your
13 opinion, Doctor?

14 A I think it is, and certainly in a way most
15 people, including most hygienists view the word toxic,
16 yes, it is misleading.

17 Q Now, has there been means and methods -- in
18 the field of industrial hygiene, has there been means
19 and methods of regulating exposure to toxic substances
20 for individuals?

21 A Controlling exposures?

1 Q Yes.

2 A Yes.

3 Q And is that a new science or is that
4 something that has just been developed in 1986 when
5 OSHA passed the OSHA standard?

6 A No. We talked about field of industrial
7 hygiene starting with Ramazzini in the 17th Century,
8 but certainly modern industrial hygiene right after
9 the turn of the century, and techniques and methods of
10 control were well described in that original
11 publication.

12 Q Are you familiar with a document or a
13 publication known as Safety?

14 A Yes.

15 Q And could you just briefly describe -- first
16 of all, not briefly describe, but when was Safety
17 published?

18 A Around 1913, 1914.

19 MR. IGNATOWSKI: Do you have the Safety?

20 MR. SHELLENBERGER: No.

21 BY MR. IGNATOWSKI:

1 Q Could you just briefly describe what type of
2 publication it was and what it discussed?

3 A Well, it is a textbook, and it is published
4 in the United States. It deals with -- it is called
5 Safety.

6 There is a chapter in it that deals with
7 industrial hygiene and in it is -- really the modern
8 practice of industrial hygiene, certainly we have
9 learned a lot more and how to sample things better,
10 but the basic principles of industrial hygiene in
11 terms of how you identify hazards, how you actually do
12 some measurement of hazards and then how you control
13 hazards is all described in there.

14 We have just elaborated on them as time has
15 gone on.

16 Q Could you tell us --

17 MR. IGNATOWSKI: Your Honor, should I
18 continue?

19 THE COURT: Go ahead.

20 BY MR. IGNATOWSKI:

21 Q Could you tell us and briefly describe what

1 some of those methods are for control?

2 A We think of sort of hierarchy of control
3 starting from what we consider best to what we
4 consider least desirable. The hierarchy is like
5 this:

6 If you have a hazardous material and you can
7 substitute a less hazardous material in the process
8 and make the process, just get rid of it and take it
9 out and get rid of it, you have taken away the
10 hazard. It is called substitution.

11 The next most desirable level of control
12 would be the application of engineering controls.

13 That is, to engineer the process in a way
14 that exposures weren't created. You can do that in a
15 number of ways.

16 If you have a process that is creating dust,
17 you can enclose it so the dust doesn't get out into
18 the workplace and expose individuals.

19 You can apply what we call ventilation, that
20 is, you can have an air mover to sort of suck away the
21 dust at the point of generation, like a vacuum cleaner

1 if you are using a saw, for example, suck away the
2 dust, local exhaust ventilation, that controls the
3 dust at the point of generation and doesn't become
4 airborne to those workers.

5 You can also use wet methods. Wet the dusty
6 process, wet the material down, and it produces less
7 dust.

8 The next level of control would be the use
9 of respiratory protection. That is, engineer controls
10 having worked or having been applied. The material is
11 out in the workplace, you have to protect individuals
12 with respirators or breathing masks. And all that
13 does is filter out the contaminants before you have a
14 chance to breathe it.

15 We call that the last defense, less
16 desirable. It is very uncomfortable, and workers
17 don't like working with them, especially long periods
18 of time, leakages around the outside of the masks, and
19 they have to be maintained and they tend to fail and
20 in some cases can, in fact, give a false sense of
21 security because materials like asbestos, you can't

1 taste it, you can't smell it and most cases you can't
2 see it, so it tends not to provide a defense, so
3 overlying all of this is the importance of training
4 workers.

5 That is, to have the knowledge of hazards
6 and the controls that are available to them for
7 protecting themselves, if you have education and
8 training and how that works. And that goes with any
9 of those methods of control we have talked about, sort
10 of substitution.

11 Engineering controls, how to use it, how to
12 use the suction device at your generation point.

13 Q Now, Dr. Dement, all of those things that
14 you have just described, have there been studies and
15 have there been reports in the medical and scientific
16 literature about the application of those particular
17 procedures to the particular substance known as
18 asbestos?

19 A Yes, many of them.

20 Q And are you familiar with a document that
21 was published, I believe, in 1930 by Dr. Merewether?

1 A Yes.

2 Q Could you tell us who -- us, the ladies and
3 gentlemen of the jury and His Honor, who Dr.
4 Merewether was and when this was published?

5 A Dr. Merewether was really a noteworthy
6 researcher, but also was a chief inspector of
7 factories in Great Britain. He published a number of
8 articles dealing with asbestos and the hazards.

9 This particular report talks about the
10 effects of asbestos dust and how to control exposures
11 to asbestos dust.

12 Q So all of the things that you just told us
13 about or most of those things that you just told us
14 about were contained in this document?

15 A This document takes those basic principles
16 and applies them to asbestos and dust exposure.

17 Q Now, did the document -- was this document
18 limited to any type of facility?

19 A Well, he studied the effects of lungs, and
20 he studied in an asbestos textile plant or plants, but
21 the dust suppression in the industry, Dr. Merewether

1 goes on to talk about not only the asbestos products
2 plant, but he talks about individuals who were using
3 those products in the field and how those exposures
4 would occur and how they could be controlled.

5 Q Is that what you have referred to in the
6 past and presently referred to as secondary users?

7 A Well, these are users of products. You make
8 products in the plants and then distribute it out and
9 that is sort of secondary end users, yes.

10 Q Secondary users use which type of products,
11 end products containing asbestos?

12 A Yes.

13 Q Did Dr. Merewether in this actual report
14 published in 1930 discuss both of those?

15 A Yes.

16 Q Manufacturing end products?

17 A Yes.

18 Q And what types of end products did he
19 discuss?

20 A He discussed a wide variety of end products,
21 including some of the asbestos textile products, but

1 he also talked about insulation materials, he had some
2 discussion of the friction products.

3 Q Now, this is page 18 of that particular
4 document, Dr. Dement, and part two, processes giving
5 rise to dust and methods for its suppression.

6 Is this the section where he is talking
7 about end products?

8 A Well, part of this is end product, yes, and
9 part of it is actually in the production materials,
10 yes.

11 Q Okay. And under B, C, and D, B is talking
12 about millboard, paper, asbestos cement sheets, tiles,
13 and other building materials.

14 Would they be end products?

15 A Those can be. I think in this particular
16 part of the report it is primarily talking about the
17 production of those materials.

18 Q Okay. And did he also talk about the
19 production of insulation materials and brake linings
20 and clutch linings?

21 A Yes.

1 Q Now, did Dr. Merewether incorporate into
2 this document the various methods that you told us
3 about for dust suppression?

4 A Yes. He describes in this document the ways
5 in which you can control dust, including ventilation,
6 wet methods as we have talked about.

7 Q Okay. Now, could you tell us, you used the
8 term a few moments ago sane appreciation of the risk.

9 What did you mean by that?

10 A Well, I actually said training and
11 education. Basically, it is important for the worker
12 to know the hazards they face and having to know why
13 they have to use these controls to protect
14 themselves.

15 It is also important that the workers know
16 how to use the controls and how to use wet methods,
17 how to use ventilation, how to isolate the process of
18 containing the dust, so they have to be trained in how
19 to do that.

20 Q You also said the use of respirators was a
21 last line of defense?

1 A Yes.

2 Q When you use the term respirators, what do
3 you mean by respirators?

4 A We refer to it as respirators, respiratory
5 protection, dust masks, if it is dust and all,
6 describing the same sort of things, and these are
7 devices individuals wear on their face.

8 There are many, many different types of
9 them, but basically the idea is filtering the air
10 before you have a chance to breathe it.

11 Q Now, do dust masks -- is there a difference
12 between a dust mask and a respirator, an air supplied
13 respirator?

14 A Depends on what you are calling a dust
15 mask. Some people refer to respirators as dust masks,
16 but, in fact, they are on the market with devices that
17 aren't really respirators. They are simply sort of
18 disposable paper masks that can be bought. They are
19 not approved as respirators for this type of dust.

20 They are not approved like asbestos can
21 cause pneumoconiosis or fibrosis of the lung.

1 They are available, but they are not
2 considered appropriate for this type of material.

3 Q Now, do dust masks or respirators have
4 something that is called a prevention factor?

5 A They have a protection factor, yes.

6 Q Protection factor. Would you please tell us
7 what a protection factor means as it relates to a dust
8 mask or a respirator.

9 A Well, it simply means that concentration of
10 material outside of the mask versus concentration
11 measure inside a mask, so if you have just arbitrary
12 unit, 10 units outside and one unit inside and the
13 protection factor would be 10. It is how much the
14 mask reduces your exposure.

15 Realizing masks don't completely reduce
16 exposures in this case and different types of
17 respirators can have different types of protection
18 factors.

19 The type of mask we are talking about is not
20 very good protection at all, very poor protection.

21 Q You used another phrase wet methods.

1 What do you mean by wet methods?

2 A Dust suppression by wetting down. Sort of
3 like wetting down your dirt road so when cars come by
4 and generate dust.

5 Same principle. If you wet
6 asbestos-containing product that is friable or can be
7 crumbled in your hand, the material, if you put water
8 on it, it sticks together and doesn't tend to come
9 up.

10 Q This Merewether article that we just looked
11 at, was this generally available in the United States
12 in the '30s?

13 A Yes.

14 Q Was this the only article that was appearing
15 from your work for the government, your review of the
16 medical and scientific literature and your acquiring
17 knowledge of asbestos and asbestos-related disease,
18 was this the only article available in the medical and
19 scientific literature up until this time that
20 discussed asbestos and hazards?

21 A No. There were a number of publications

1 preceding the Merewether article. This happens to be
2 just a reference list at the end, but asbestosis was
3 clearly described in the literature before Merewether,
4 way before Merewether.

5 Q Now, based upon your review of the medical
6 and scientific literature and your familiarity with
7 this material, do you have an opinion to a reasonable
8 degree of scientific certainty as to when it was known
9 or established in the medical and scientific community
10 that asbestos was a hazard for human beings?

11 A Well, these articles starting around 1920
12 and go forward. The first case is reported before
13 1920, but mainly by 19 -- the '20s and 1930, it was
14 established that asbestos could, in fact, cause the
15 disease asbestosis.

16 Q Now, you told us about Merewether, and you
17 talked a little bit about manufacturing facilities and
18 end products.

19 Were there appearing in the medical and
20 scientific literature articles that discussed --
21 additional articles that discussed exposure to

1 asbestos and hazards in what you have called secondary
2 users?

3 Not those people in the manufacturing
4 plants, but in the end user situation.

5 A Yes. There were a number of articles in
6 the literature that dealt with asbestosis and
7 secondary users.

8 This is just one article published in 1934.

9 Q This is an article entitled, Pulmonary
10 Asbestosis by Drs. Wood and Gloyne?

11 A Yes. They reviewed a number of cases. Here
12 it says 100 cases. It was a case review, but it was a
13 large case review.

14 Q Now, did Wood and Gloyne discuss what you
15 have referred to as secondary users?

16 A Yes.

17 Q And what type of secondary users were they
18 talking about?

19 Were they talking about actual insulators,
20 or what type of people were they talking about?

21 A Well, in this particular paragraph it talks

1 about a boiler riveter, so it was basically boiler and
2 insulation worker who handled asbestos products as a
3 secondary user.

4 Sort of a secondary user, yes.

5 Q Now, we are going to hear some more of your
6 testimony about the various types of studies.

7 Could you quickly define for the jury, is
8 there a thing known as a case report?

9 A Yeah. A case report is just an observation
10 that might be published in the literature, and this is
11 a case of disease that the author is going to report
12 on, they describe the pathology, they describe the
13 case, the occupation and just report on the case, and
14 surmise that it might be related to exposure.

15 Q Now, is there also something known as an
16 epidemiological or cohort study?

17 A Yes. But before you get there, you have got
18 a case series. This is not a single case. This
19 report is in the analysis of 100 cases, so it is a
20 significant piece.

21 There are all different epidemiologic

1 studies. There are different forms.

2 Cohort study is going to go on and take a
3 group of people called a cohort, just a group and you
4 look at them at a point in time, so they start out
5 without disease and follow them over time and count
6 how many get disease over a period of time.

7 Q And did there continue to appear in the
8 medical and scientific literature additional reports
9 of development of disease as a result of asbestos
10 exposure in additional secondary -- in more secondary
11 users?

12 A Yes. The reports continue to accumulate.
13 If you look at case reports and any case series, this
14 is just a summary of some of those articles, and if
15 you look at starting in 1932, you have insulators,
16 boiler riveter, a welder, insulator, asbestos handler,
17 and these are all considered secondary users,
18 including starting in the '30s and '40s, the
19 shipyards.

20 Q So we are sure, these aren't people that are
21 in manufacturing plants making the product; is that

1 correct?

2 A No, that is correct. These are people who
3 are using the products in the field.

4 Q And, again, were there additional reports
5 that continued to be published in other end users such
6 as aluminum plant workers wearing asbestos aprons and
7 gloves?

8 A Yes.

9 Q Further, plumbers, insulators?

10 A Plumbers, pipefitters and insulators, of
11 course, and there were mentioned shipyard insulators,
12 but these all are case reports in the literature.

13 Q Okay. And they continued to appear in the
14 medical and scientific literature?

15 A And still do in some cases.

16 Q And still do?

17 A Yeah.

18 Q Now -- I am sorry, Doctor.

19 A This goes all the way through 1961, but it
20 is still case reports.

21 Q Now, based upon the medical and scientific

1 literature that you saw, the case reports and the
2 material that you reviewed, do you have an opinion,
3 again, with reasonable scientific certainty as to when
4 it became known in the medical and scientific
5 community that end users as opposed to those
6 manufacturing people, were at risk of developing
7 asbestos-related disease?

8 A Well, the articles started in the '30s.
9 Merewether described the exposures of the end users.
10 The important thing is that it is the asbestos
11 exposure that caused the disease.

12 It doesn't make a difference between the
13 manufacturing plant or end users. The key is the
14 asbestos.

15 So, yes, the same time we started to see the
16 cases in the literature in the mid '30s throughout the
17 time period end users are described and got disease in
18 known exposed individuals.

19 Q And now, Doctor, did there come a time when
20 there started to appear in the medical and scientific
21 literature reports of the association between asbestos

1 exposure and cancer?

2 A Yes.

3 Q And when did those reports first start to
4 appear?

5 A Well, the first report started in 1935, both
6 here in the U.S. and Europe. Separate individual case
7 reports were in the literature.

8 What they did was they looked at workers who
9 presented with asbestosis and then found they also had
10 lung cancer, so the asbestosis and lung cancer
11 coexisted in the same worker, so the case report was
12 in 1935. Those continued to accumulate after 1935.

13 Q Now, are you familiar from your training and
14 experience in your review of the literature with a
15 doctor known as Dr. Hueper?

16 A Yes.

17 Q And are you familiar with a proceeding known
18 as the 7th Saranac symposium?

19 A Yes.

20 Q Did Dr. Hueper appear and -- who was Dr.
21 Hueper, first of all?

1 A Dr. Hueper is a noted cancer researcher. He
2 spent a large part of his career with the National
3 Cancer Institute, part of the U.S. Public Health
4 Service.

5 Q And did he appear and give a presentation at
6 the 7th Saranac symposium?

7 A Yes.

8 Q Now, we are going to hear a little bit later
9 about Dr. Selikoff's 1965 presentations on asbestos
10 and health effects.

11 Was that the first one of that sort, or was
12 the 7th Saranac a symposium like that as well?

13 A The 7th Saranac dealt largely with asbestos,
14 or was in large part asbestos.

15 Q Did Dr. Hueper with your familiarity with
16 that document -- did you show that, Mr.
17 Shellenberger?

18 Did he give a presentation at the 7th
19 Saranac symposium about asbestos and asbestos-related
20 cancers?

21 A Yes. He basically reviewed at that time the

1 published literature up to 1952.

2 Q And did he make an estimate at that time as
3 to the number of people who were exposed to asbestos
4 dust in the United States and the types of products in
5 which it was used?

6 A Yes. Again, he looked at both plants
7 producing as well as the users and estimated about
8 35,000 workers were exposed at that time.

9 Q Now, did he also -- and this is on page 73
10 of that document, counsel -- make a presentation and
11 discuss the coexistence of cancer with asbestos
12 exposure?

13 A This paragraph is where he pulls together
14 that literature. Remember we started out with the
15 reports in 1935.

16 That is the first case report. That is
17 Lynch and Smith. And this case report happens to be
18 the same textile plant in South Carolina that I
19 studied.

20 Q That you studied?

21 A Yes.

1 Q Doctor, Drs. Lynch and Smith, they were
2 doctors at the medical college at South Carolina at
3 Charleston; is that correct?

4 A Yes.

5 Q Where did they report? Was it in the United
6 States literature?

7 A Well, it was published in the U.S.
8 literature, but it is available worldwide.

9 Q Now, did -- there were additional reports?

10 A Yes, many, many reports, associations.
11 People present themselves with asbestosis, and then
12 you look at their lungs either -- most of them at
13 pathology, they die and at the time they have lung
14 cancer and so these cases continue to accumulate in
15 the literature.

16 The last line talked about Holleb, and
17 Angrist reported two additional cases; and both of
18 those happened to be asbestosis and lung cancer in
19 insulators.

20 Q The 7th Saranac symposium, Doctor, that was
21 presented in 1952; is that correct?

1 A Yes.

2 Q In September of 1952.

3 Did Dr. Hueper at that time report on the
4 number of cases that were present in the medical
5 literature about the association between asbestos
6 exposure and lung cancer?

7 A Yes. He tried to pull together that, and he
8 sort of ends with talking about the -- again, Dr.
9 Merewether's publication in the UK.

10 Q And he reported there were at least 60 cases
11 of asbestos cancer of the lung on the record at that
12 time?

13 A That is correct.

14 Q Now, based upon the material that you
15 reviewed, did there continue to be after 1952 reports
16 in the medical and scientific literature reports on
17 asbestos exposure and lung cancer?

18 A Clearly there did. A noteworthy report in
19 1955 a study done by Dr. Doll.

20 Q Who was Dr. Doll?

21 A Dr. Doll is an epidemiologist and noteworthy

1 for his work on asbestos, but also noteworthy for his
2 studies of the relationship between cigarette smoking
3 and lung cancer.

4 He was the first really to make that
5 association in human beings by epidemiologic studies.

6 Q Now, based upon that information and based
7 upon all of the prior information and your continuing
8 review of the medical and scientific literature, do
9 you have an opinion to a reasonable degree of
10 scientific certainty as to when it was established in
11 the medical and scientific community that there was an
12 association between asbestos exposure and lung cancer
13 in human beings?

14 A Well, in my opinion, the material
15 accumulated to a high point that the causal
16 relationship could be established by 1949 when Dr.
17 Merewether made his presentations of cases related to
18 asbestosis.

19 But minimally by 1955 when Dr. Doll did his
20 epidemiologic study and found a large increase of lung
21 cancer among asbestos-exposed population.

1 Q You said Dr. Doll's study was an
2 epidemiologic study.

3 Was it a case series or was it different?

4 A No. Dr. Doll did a cohort study, took a
5 group of individuals and followed them over time and
6 measured the numbers of lung cancers in the exposed
7 population and then compared that with the numbers
8 that you would expect to have these individuals
9 develop lung cancer in the same sort of age and
10 pattern of workers in the general population, so you
11 had an observed numbers of lung cancers and a number
12 of expected lung cancers and if they died at the same
13 rate from lung cancer.

14 Q Now, Dr. Dement, are you familiar with Dr.
15 Selikoff's conference on the biological effects of
16 asbestos?

17 When was that presented?

18 A The conference was held in 1964, and it was
19 published as a proceeding in 1965.

20 Q That was published in something known as the
21 Annals of the New York Academy of Sciences?

1 A Yes.

2 Q And what kind of meeting was that?

3 Was it a meeting where a number of people
4 were invited?

5 A It was an international conference on the
6 health effects of asbestos attended by researchers in
7 the United States and around the world.

8 Q Now -- could you please put that on, Mr.
9 Shellenberger.

10 This is the cover page from that document?

11 A Yes.

12 Q This was published December 31st, 1965?

13 A Yes.

14 Q In the Annals of the New York Academy of
15 Sciences?

16 A Yes.

17 Q Dr. Selikoff was one of the co-chairman and
18 presenter at that particular organization -- or I
19 mean, that particular congregation and meeting?

20 A Yes.

21 Q Now, were any discussions or were there any

1 discussions of the disease entity known as malignant
2 mesothelioma held at that meeting?

3 A A large number of presentations dealt with
4 that disease, yes.

5 Q And we have already heard about the disease
6 malignant mesothelioma, and I don't want to repeat any
7 of that.

8 But this was in 1965?

9 A That is correct.

10 Q Were there any studies or were there any
11 reports in the medical and scientific literature prior
12 to 1965 that discussed that disease malignant
13 mesothelioma?

14 A Well, there were case reports in the
15 literature prior to 1960. But in 1960 a publication
16 by Dr. Chris Wagner, who looked at asbestos miners and
17 millers in a community around the mining and milling
18 process in South Africa, described some 30
19 mesotheliomas among workers in the community and in
20 the family members of workers.

21 So by 1960 the relationship, even though the

1 case reports were established -- also in 1960, again
2 in the United States, mesothelioma among workers in
3 oil refineries was published in an article by Dr.
4 Eisenstadt.

5 Q Are you familiar with a Dr. McVittie?

6 A Yes.

7 Q And did Dr. McVittie give a presentation, a
8 report on a paper at the 1964 conference for Dr.
9 Selikoff?

10 A Yes.

11 Q I am going to show you or I would like to
12 show you a page -- page 132 and 133 of Dr. McVittie's
13 publication.

14 Who was Dr. McVittie?

15 A He was a physician in Great Britain, and
16 actually he is reporting on information from diagnosed
17 asbestosis cases.

18 Great Britain passed a law that required the
19 reporting and recording of cases, so he is reporting
20 on that case series.

21 Q Now, I have highlighted a section in Dr.

1 McVittie's report and did there not appear in the 1965
2 annals reports of asbestos-associated disease in brake
3 lining workers in 1965?

4 A Well, yes. This slide is in workers called
5 brake linings. It doesn't define whether or not it is
6 the producers or users, but they call it brake lining
7 workers.

8 Q Okay. Now, I would like to move on to
9 another area.

10 Your Honor, may I have a second, I would
11 like to ask Mr. Shellenberger a question.

12 THE COURT: Take two.

13 MR. IGNATOWSKI: Two minutes or two
14 seconds?

15 THE COURT: You asked for a second. Give
16 him an inch, and he takes a mile.

17 (Whereupon, pause.)

18 BY MR. IGNATOWSKI:

19 Q Doctor, I would like to move on to another
20 area and you have about two or three more overheads I
21 would like to ask you about, but I would like to ask

1 you general questions first.

2 MR. IGNATOWSKI: Should I ask the doctor to
3 go back to the stand, Your Honor?

4 THE COURT: It would be more appropriate.
5 How long will the general questions take?

6 MR. IGNATOWSKI: They may take about 10
7 minutes.

8 THE COURT: Yes. Let him take his seat
9 then.

10 (Whereupon, the witness resumed the witness
11 stand.)

12 (Whereupon, the documents were removed from
13 the screen of the overhead projector.)

14 BY MR. IGNATOWSKI:

15 Q Dr. Dement, I want to focus on another area
16 that we have touched on a little bit, and that is the
17 American Conference of Governmental Industrial
18 Hygienists.

19 You told us what that organization is.

20 Did they at one time publish what is known
21 as a threshold limit value?

1 A They published a list of -- called threshold
2 limit values starting in 1946.

3 Q I know we all do this, and I am going to do
4 it, too. I am going to call it the TLV.

5 Is that what it became known as, and is that
6 what it was sometimes referred to as in the medical
7 and scientific literature?

8 A Yes.

9 Q Could you please tell His Honor and ladies
10 and gentlemen of the jury what the TLV meant as it
11 related to asbestos and disease.

12 A Well, the threshold limit values were
13 developed by this committee, a volunteer committee of
14 this organization, and basically what the committee
15 did was reviewed literature, reviewed studies and
16 tried to make a vast determination as to where they
17 thought -- where they would recommend not being
18 exposed in excess of.

19 It was simply a guideline for control of
20 hazards in the workplace, a nonregulatory guideline.
21 This is just a voluntary body.

1 Q Now, when the TLVs -- I would like to ask
2 you about the history of the threshold limit values.

3 Did the ACGIH in 1946 create the TLV?

4 A No. Again, they create -- they recommend --
5 have a recommended value, but it is based on review of
6 the literature.

7 In the case of asbestos in 1946, it was
8 based on a 1938 study by Dr. Dreessen.

9 Q Okay. Could you tell us, please, who Dr.
10 Dreessen was and what his -- who he was and then I
11 will ask you what his study was about.

12 A Dr. Dreessen was a researcher in the U.S.
13 Public Health Service.

14 The U.S. Public Health Service existed at
15 that time, not as a regulatory body, but a body to do
16 research.

17 Q And what did Dr. Dreessen do, and what did
18 he study and where?

19 A Dr. Dreessen actually studied a number of
20 asbestos textile mills located in North Carolina. He
21 did what we call a cross-sectional study.

1 That is, he went into the plants, and he
2 took chest X-rays of everybody who was there at the
3 plant at the time.

4 He tried to get some former workers, but for
5 the most part, they were current workers currently
6 employed in the plant. So he looked at chest X-rays,
7 and he tried to relate the percent of workers with
8 disease to exposure, so he tried to estimate their
9 exposure.

10 Q Did any of the workers leave and not -- were
11 not part of the study when Dr. Dreessen did his
12 study?

13 A Yes. North Carolina, and prior to Dr.
14 Dreessen's appearance at the plant, had passed what
15 was called the Dusty Trades Act. And what that act
16 required was it defined people who were employed in
17 dusty trades, and included people in asbestos-
18 producing plants, people who were exposed to silica
19 from rock dust, but it defined dusty trades.

20 What it required was individuals in order to
21 work in those trades had to have an X-ray taken, and

1 it had to be read and then had to have no disease on
2 the chest X-ray.

3 If you had disease, then you were not
4 allowed to work in the industry. You actually had to
5 get a card that said you had an X-ray and that you
6 were allowed to work in the industry.

7 Prior to Dr. Dreessen's study, this law was
8 passed.

9 The first round in the factories that Dr.
10 Dreessen studied, they found a number of workers, over
11 100, that had asbestosis, so they were dismissed and
12 couldn't work in the industry.

13 So when Dr. Dreessen came through, those
14 workers were already gone, so the sickest workers were
15 already dismissed, so his study would be untrue of the
16 risk, and he tried to contact those workers, but he
17 basically was not very successful.

18 Q And did Dr. Dreessen come to any conclusions
19 about the levels of exposure as it relates to the
20 disease asbestosis?

21 A Dr. Dreessen acknowledged the limitations of

1 his study, that is, dismissed workers and that, in
2 fact, workers who were there, many of them had not
3 been employed more than five years or ten years, so he
4 had a short-term exposed population for the most
5 part.

6 Nonetheless, he came up with a tentative
7 recommendation that five million particles per cubic
8 foot of air would be a tentative value for asbestos
9 exposure.

10 Q Now, we heard about five million particles
11 per cubic foot of air.

12 How does five million particles per cubic
13 foot of air relate -- is that visible dust?

14 A Under most circumstances, you can't see that
15 dust level. The particles themselves are so small
16 that you can't see them with your naked eye.

17 You have to have microscopes and in many
18 cases electron microscopes to see them.

19 When you see a visible dust cloud, and we
20 have all seen visible dust clouds, what you are
21 actually seeing is light being reflected off the

1 clouded particles into your eye, so the dust cloud has
2 to -- the number of particles has to be high enough in
3 the dust cloud that that, in fact, occurs.

4 For most dusts, you first start to see that
5 effect when the concentration is about 15 to 20
6 million particles, so at 5 million it is particularly
7 not -- you can't see it.

8 Q If an individual describes a cloud of dust
9 or clouds of dust, in your opinion, as an industrial
10 hygienist with reasonable certainty, would that create
11 a hazardous condition as it relates to asbestos
12 exposure?

13 A Yes. That would indicate that the
14 concentration, if it were an asbestos-containing dust,
15 it would indicate a concentration that was a concern,
16 a great concern.

17 Hygienists would normally use the presence
18 of visible dust as a crude indication of the operation
19 that is really out of control.

20 Q Now, did Dr. Dreessen use any particular
21 type -- strike that.

1 At that time were there different types of
2 instruments that were available to industrial
3 hygienists to measure dusts?

4 A Well, the basic method that was used --
5 there were a couple of devices, but the basic device
6 was called the impinger.

7 Q What is an impinger, and what does it do?

8 A Well, in essence, it is a glass cylinder and
9 looks like a test tube, and you have -- it is like a
10 test tube and then in the middle of this glass
11 cylinder you have a glass pipe that extends down into
12 the median.

13 You fill it with either distilled water or
14 alcohol, and then you suck air through this glass tube
15 in the middle and it bubbles through the liquid, and
16 as it bubbles through the liquid, you collect the
17 particles in the liquid that are impinged into the
18 liquid and collect.

19 You then go back to the laboratory and you
20 take a small portion of that liquid with a pipe head,
21 shake it up and put it on to a microscope slide that

1 has a little indention in it, a well, so you put that
2 drop in there and allow the particles to settle to the
3 bottom for a few minutes and then you count particles,
4 all particles with a low power microscope, and by
5 knowing the amount of air that you have drawn through
6 this device and the particle count, you can express it
7 in millions of particles per cubic foot of air, so you
8 counted all particles that were less than 10
9 micrometers in size, and that was an expression of
10 sort of a relative dust concentration.

11 Q Dr. Dreessen, did he use that procedure in
12 his study?

13 A That procedure had been developed and was
14 actually developed and perfected by the U.S. Public
15 Health Service, and that was the method that was
16 used.

17 Q And you used the term total dust.

18 Does that mean all of the dust particles
19 were counted, not just asbestos dust?

20 A Yes. He counted all particles. The
21 particles would include asbestos particles and

1 nonasbestos particles that would be collected in the
2 air. It counted everything that was there.

3 Q Now, even with the limited number of
4 individuals that were not part of Dr. Dreessen's
5 study, were they long-term employees?

6 A Some of them were certainly longer-term
7 employees than the workers that he eventually studied,
8 yes.

9 Q The ladies and gentlemen of the jury heard
10 the concept of latency.

11 Did the latency factor as it relates to
12 asbestos-related disease have any effect on Dr.
13 Dreessen's study?

14 A Yes.

15 Q Could you explain that, please.

16 A With any disease, there is a period between
17 the time the worker is first exposed to the material,
18 asbestos, and the clinical presentation of the
19 disease, and we refer to that normally as a latency
20 period.

21 Unless you want to do pathology, look at

1 lung tissues, you really can't detect what is going on
2 until you look at a chest X-ray at some point
3 downstream and say this person has disease, so in that
4 time period we call it the latency period.

5 Q Was the individuals that were not part of
6 Dr. Dreessen's study subsequently followed up by Dr.
7 Schall?

8 A Yes. A physician out of Charlotte, North
9 Carolina, tried to locate these individuals that had
10 been dismissed and reevaluate them, look at their
11 chest films and evaluate the workers, and he
12 substantiated the fact that the chest -- this was a
13 local chest X-ray van that North Carolina had sent
14 around and had, in fact, detected a lot of disease
15 among these workers.

16 Q Now, based on that information, were there
17 any, in your opinion, any defects in the methodology
18 or the conclusions that Dr. Dreessen reached based
19 upon his study?

20 A Well, the limitations are the fact that a
21 lot of his workers were short-term workers that had

1 been employed in the industry for short periods of
2 time, and they hadn't really satisfied this latency
3 period that was required for disease, so it is
4 biased. We call it -- the study is biased.

5 Doesn't mean the investigator is biased, but
6 it is biased towards not detecting an effect, and the
7 fact that these workers were dismissed just simply
8 makes that worse.

9 The long-term workers were not there, so he
10 didn't look at them.

11 Q Now, did Dr. Dreessen in his article or in
12 his study, was that a lengthy study, Dr. Dement, Dr.
13 Dreessen's report?

14 A It was a very lengthy report, yes.

15 Q Even in the individuals that he studied and
16 at the exposures below 5 million particles per cubic
17 foot, did Dr. Dreessen find any evidence of the
18 disease of asbestosis?

19 A Yes, he found some evidence of disease.

20 Q So he was reporting on disease even below
21 the five million particles per cubic foot level?

1 A Some of the workers in the population, even
2 exposures below, still presented with some disease, so
3 his value was that he considered it a tentative value
4 until further research could be done.

5 Q Now, in his references -- was there a
6 lengthy set of references that went along with the
7 Dreessen study?

8 A Yes. He has got a very extensive
9 bibliography at the end where he references the
10 published literature up until that time, and it is
11 pretty voluminous.

12 Q Did any of the references in that
13 bibliography refer to occupational cancer?

14 A Yeah. He refers to the 1935 publications
15 that we have talked about earlier demonstrating the
16 relationship between asbestos exposure and cancer.

17 Q Now, did there continue to be in the medical
18 and scientific literature any studies about that five
19 million particle per cubic foot level?

20 A Unfortunately, there are a lot of case
21 reports in the literature, but not a study that tried

1 to quantify the relationship between exposure and
2 disease, and that -- if you look in the literature,
3 there was no new dose response study for many, many
4 years.

5 Q When was the next -- was the next one
6 sometime in 1946?

7 A Yes, in essence about 1946, but that was
8 primarily that study was the Fleischer-Drinker
9 report.

10 That really was not a dose-response study.
11 That looked at exposures and looked at disease, but
12 didn't really try to put the two together.

13 Q Now, what was the Fleischer-Drinker report?
14 What did it report upon?

15 A Fleischer and Drinker did a study, again,
16 another cross-sectional study, go in and do chest
17 X-rays of workers who were there at the time of
18 shipyards, either contract shipyards or naval
19 shipyards.

20 They also measured the exposures, did
21 samplings to measure exposures of insulators to

1 asbestos.

2 Q And what type of findings, what were the
3 findings and conclusions that Dr. Fleischer and
4 Drinker came to when they looked at those workers?

5 A Well, they clearly found cases of asbestosis
6 among this group.

7 Again, unfortunately, their study included
8 very, very few people, very few workers with more than
9 five to ten years of exposure, so they hadn't
10 satisfied the latency requirement either, and they
11 found -- if you look at their exposure values, they
12 found some very significant exposure levels even in
13 the shipyards that had at least some degree of
14 control.

15 Q When you say some degree of control, did
16 the study include references of the use of
17 ventilation?

18 A They described the use of ventilation, at
19 least in some of the processes. They described some
20 wet methods.

21 Q And were the types of workers that were

1 being studied in that 1946 report what you have
2 referred to earlier as secondary users?

3 A Yes.

4 Q So they were not people in the manufacturing
5 side of the business; is that correct?

6 A That is correct.

7 Q And there were reports in the Fleischer-
8 Drinker study of evidence of disease even among those
9 individuals in 1946?

10 A Yes. The investigator concluded it was a
11 relatively safe occupation, but he only studied very
12 few people with long-term exposure.

13 Q You told us that the ACGIH set the TLV in
14 1946.

15 That was about the same time that the
16 Fleischer-Drinker study was reported?

17 A Yes.

18 Q Was the ACGIH five million particles per
19 cubic foot ever intended to be adopted as legislative
20 codes?

21 A No. The committee and the organization, the

1 ACGIH, warned against using these things as legal
2 standards.

3 They put together what they thought were
4 reasonable recommendations, but not as fine lines
5 between safe and unsafe conditions.

6 These values were not to be values that if
7 you exposed above it, would develop disease, but if
8 you exposed below it, you would not develop disease.

9 Q Did the five million particles per cubic
10 foot have any application to carcinogens?

11 A No. The basis of that value was the 1938
12 Dreessen study which was just the chest X-ray evidence
13 of asbestosis.

14 Q Now, Doctor, I am going to move on to
15 another area.

16 MR. IGNATOWSKI: Your Honor, should I just
17 continue on? Okay.

18 BY MR. IGNATOWSKI:

19 Q We have seen some documents that have been
20 entered into evidence against Owens-Corning, and they
21 indicate that there were exposure levels from sawing

1 end products of Kaylo.

2 First of all, are you familiar with the
3 product known as Kaylo?

4 A Yes.

5 Q And are you familiar generally with its
6 composition?

7 A Yes.

8 Q And you are familiar that it comes in both a
9 block and pipecovering form?

10 A Yes, I am.

11 Q Some of the documents that we have seen
12 indicated that at the sawing and finishing edge of the
13 wear product there were exposures in the vicinity of
14 91 million particles per cubic foot.

15 In your opinion with reasonable scientific
16 certainty, is that a hazardous level?

17 A Yes, it is.

18 Q Why is that a hazardous level, Doctor?

19 A Well, given that you are adjusting to the
20 asbestosis, so the five million particles ACGIH value,
21 it is far in excess of that. Those samples are taken

1 in a plant that has local exhaust ventilation for
2 control. So it is not a situation where there is not
3 at least some control, and even in that situation the
4 concentrations are very high.

5 Q If a product such as Kaylo when it was cut
6 and sawed was capable of producing asbestos-containing
7 dust and that dust was visible, do you have an opinion
8 with reasonable scientific certainty as to whether the
9 product was hazardous?

10 A Clearly so. As I have testified, the point
11 you see visible dust, minimally, sort of threshold,
12 minimally 15 to 20 million particles and you don't
13 know how much higher than that you are, but you know
14 at least you are in that threshold.

15 Q Now, are you familiar with an organization
16 known as the Industrial Hygiene Foundation?

17 A Yes.

18 Q And are you familiar with a Mr. Hemeon?

19 A Yes. He was an industrial hygiene engineer,
20 I believe, with that group.

21 Q In 1947 approximately one year after the

1 Fleischer-Drinker study was published and one year
2 after the ACGIH talked about the TLVs -- are you
3 familiar with a document known as the Hemeon report?

4 A Yes.

5 Q And what did Mr. Hemeon talk about as it
6 relates to the threshold limit value of five million
7 particles per cubic foot?

8 A Well, what Dr. Hemeon tried to do was gather
9 information from asbestos products plants mostly
10 which, I think, were textile, trying to gather
11 information on the occurrence of disease among these
12 individuals, but also trying to look at what their
13 exposures were, and he questioned whether or not the
14 threshold limit value of five million particles per
15 cubic foot was protective for asbestosis.

16 Q Now, did the threshold limit value of five
17 million particles per cubic foot, was it ever reduced
18 by the ACGIH?

19 A Well, it eventually was. In 1968 they
20 published a notice of intent to drop that value to 2
21 million particles per cubic foot or 12 fiber PCC, a

1 newer method.

2 Q Now, when the ACGIH adopted or set its five
3 million particles per cubic foot limit, where did it
4 obtain the information in order to set those values?

5 How was that process done?

6 A Well, the ACGIH obviously reviewed published
7 information. It also tried to stimulate submissions
8 to it from unpublished information.

9 It tried to solicit whatever data existed on
10 industrial experience with the threshold limit value,
11 so it tried to solicit data from all sources including
12 the industries.

13 Q Did the ACGIH publish statements of
14 individuals who were part of the organization that
15 indicated that the TLVs were industry values?

16 A Dr. Stokinger in order to try to stimulate
17 his submission tried to publish an article and tried
18 to simulate some industry experience to the
19 committee.

20 Q Doctor, from your review of the medical and
21 scientific literature and your training and experience

1 as part of your government work, have you ever seen
2 anything published in the medical and scientific
3 literature that discusses exposure levels at Owens-
4 Corning Fiberglas' plants?

5 A In the published literature?

6 Q Yes.

7 A No.

8 Q Would that information, in your opinion, as
9 you are familiar with the ACGIH, have been of
10 importance to you as a member of that organization in
11 setting values?

12 A Well, the committee certainly would have --
13 it openly tried to solicit information and certainly
14 information on exposure levels as well as the
15 occurrence of disease among populations was important,
16 yes.

17 Q Have you ever seen any such literature
18 concerning exposure levels at the Owens-Illinois plant
19 where Kaylo was manufactured?

20 A No.

21 Q Published in the literature?

1 A No published data, no.

2 Q Now, are you familiar with what is known as
3 workmen's compensation claims, Dr. Dement?

4 A Yes, I am.

5 Q And are you familiar or have you reviewed in
6 the past the workmen's compensation claims that were
7 filed against Owens-Corning Fiberglas as it relates to
8 asbestos-related disease?

9 A Yes, sir. I have reviewed a list of workers
10 who had filed claims, yes.

11 Q Have you ever seen in the medical and
12 scientific literature any documentation or any reports
13 published by any official or any physician working for
14 Owens-Corning Fiberglas discussing those workmen's
15 compensation claims?

16 A No, I have not.

17 Q And would they, in your opinion, again, as a
18 member of the -- as a former member and present member
19 of the ACGIH, have been of importance to that
20 organization in setting its limits?

21 A Yes, potentially it could have been.

1 Q Why is that, Dr. Dement?

2 A Again, what was solicited by the committee
3 was the industrial experience.

4 If an organization is maintaining exposures
5 below five million particles per cubic foot and
6 nonetheless is seeing disease, then that is very
7 important to the committee.

8 Q I would like to now move on to a completely
9 different area, and I would like to talk with you a
10 little bit about brake work.

11 Are you familiar with brake and friction
12 materials, Dr. Dement?

13 A Yes.

14 Q Have you in the past personally done brake
15 work and clutch work?

16 A Yes, I have. That is part of how I got paid
17 for my undergraduate degree. I was a mechanic.

18 Q Can you tell us when and under what
19 circumstances you were a mechanic?

20 THE COURT: I am glad you explained that
21 last answer.

1 A Well, first of all, my father was both -- he
2 ran a small garage at one time, and he was also a
3 carpenter; and I worked with him in that small garage.

4 And during college I basically worked in the
5 summer and during the school year as a mechanic doing
6 a broad spectrum of work, including brake work.

7 Q At that time when you were doing that work,
8 did you have any knowledge of any asbestos-related
9 hazards?

10 A No.

11 Q Now, did you ever use an air hose as part of
12 your brake work?

13 A Yes, I did.

14 Q And did any of that -- did the use of that
15 air hose create any type of dust or any visible dust?

16 A Yes, it certainly did. It created a dust
17 cloud that you could see.

18 Q How and under what circumstances? How did
19 you use an air hose?

20 A Well, in a garage we used an air hose for a
21 lot of things. Cleaning parts with an air hose was a

1 common practice.

2 For brakes we would pull the brake drum off,
3 and then use the air hose to remove the wear dust from
4 the backing plate, the brake shoes and actually from
5 the hub itself before we started the rebuild
6 operation.

7 Q And you are familiar with that procedure of
8 doing that?

9 A Yes, I am.

10 Q Okay. How about grinding?

11 Have you ever ground or used a grinding
12 machine on new brake products?

13 A Yes. The shop that I worked in had a
14 grinding machine and when we turned the drums, that
15 is, if we took a brake drum off the vehicle and it was
16 scored inside, had ridges cut in it, then you go and
17 you turn that drum and make it bigger to smooth it out
18 and then you have to grind your new brake shoes to fit
19 it properly, so you had to grind it.

20 Q Are you familiar with a term known as
21 chamfering?

1 A Yes.

2 Q What is chamfering?

3 A Well, it is basically the same process of
4 trying to make the lining fit the new curvature of the
5 drum. That was done any number of ways.

6 Historically, back in the '30s and '40s and
7 '50s, you could actually shim the brake linings on the
8 edges to make it fit or in the middle to make it fit,
9 but there were different ways to make it fit the
10 contour of the drum.

11 Q Now, other than the blow out procedure that
12 you described, did the other manipulations of the
13 friction products create any dust when you did those
14 procedures?

15 A Well, in the garage -- first of all, we
16 would take off the hub and blow it out with the air
17 hose.

18 When you took off the drum, you dumped it
19 onto the floor and the material was on the floor and
20 we would have to then come back and sweep it up, and
21 we just used a broom, so we created more dust when we

1 were doing that.

2 All of these operations would create dust.

3 Q Would the use of the grinding and
4 chamfering, would that create dust when you did those
5 procedures?

6 A Grinding created a substantial amount of
7 dust. The machines that we used and typically used
8 had no local exhaust ventilation on them, so when you
9 ground off this material with a grinder, it sheared
10 off and created a dust that became airborne.

11 Q Now, after you finished your degrees and you
12 went to work with NIOSH, were you later part of one of
13 the first attempts to regulate or make recommendations
14 for control of brake dust, debris and those
15 procedures?

16 A Well, as I described before, when I went to
17 work with NIOSH, I assumed some responsibilities for
18 field study of asbestos exposure, both within plants
19 and also we were interested in secondary users'
20 exposures.

21 We actually did a number of studies at the

1 time I was there in garages in and around Cincinnati
2 which we would measure exposures doing this rebuilding
3 operation.

4 We also had a meeting in about '74 or '75
5 concerned about the hazards of brake repair work.

6 We convened a meeting of industry
7 representatives, labors and government in Cincinnati
8 to review the issues and coming out of that meeting
9 were a series of initial preliminary recommendations
10 of how you can reduce exposures of mechanics during
11 brake repair.

12 Q Now, are you familiar with the measures or
13 techniques to control those types of exposure?

14 A Yes. Those have certainly evolved every
15 year, and there are commercially available devices to
16 do that.

17 Q I asked you to review a tape of some of
18 those procedures of methods and control.

19 Would that help you with your testimony
20 today with the jury?

21 A This is the EPA?

1 Q Yes.

2 A Yes.

3 MR. IGNATOWSKI: Your Honor, at this time
4 should I start with the tape or --

5 THE COURT: Why don't we take our morning
6 recess and then start the tape.

7 Members of the jury, don't discuss the
8 matter among yourselves, and we will take our morning
9 recess; and when you come back, we will continue with
10 Dr. Dement's testimony.

11 (Whereupon, jury dismissed -- 10:45 a.m.)

12 MR. WILLIAMS: Your Honor, I notice the
13 candy can seems to be absent.

14 THE COURT: I was looking for it as well,
15 and I think because our normal Clerk is not here --
16 Jill, we have to get the candy bucket out.

17 Mr. Williams is on the verge of falling out
18 as a result of it. He brought it to my attention.

19 MR. WILLIAMS: That is right. Thank you,
20 Your Honor.

21 THE COURT: And Mr. McGowan can be second.

1 MR. MCGOWAN: No, Judge.

2 (Whereupon, laughter ensued.)

3 MR. IGNATOWSKI: Your Honor, I have just one
4 thing.

5 I probably -- as you can notice, I have
6 really gone through and cut down a lot on Dr. Dement's
7 testimony so he can finish today.

8 I only have about another half hour and 45
9 minutes, and I am assuming cross will probably take us
10 passed the lunch hour.

11 THE COURT: It may and may not. I don't
12 know. I am going to wait and listen with the same
13 anticipation you have.

14 We might finish Dr. Dement this morning.

15 MR. IGNATOWSKI: Then we have one or two
16 depositions, and we are going to show a number of
17 documents because that is all we scheduled for today
18 and after our conversations in court yesterday, I went
19 back and I cut what I was going to go through and I
20 did try to severely -- not severely, but I tried to
21 cut it down so it wouldn't be as lengthy as it has

1 been previously, not saying there was anything wrong
2 with it being lengthy, but as my colleague Mr.
3 Flerlage does, which I've got to say I thought was
4 outstanding and I want that on the record.

5 THE COURT: Several of his associates were
6 with him when he was economic with the time estimates,
7 as I am sure Mr. Cantor will verify.

8 What did he say, six minutes, and took him
9 three and a half hours?

10 MS. TOSTANOSKI: Something like that. You
11 learned to never ask again.

12 THE COURT: I will never ask him that
13 question.

14 MR. IGNATOWSKI: Again, because of the
15 Court's concern of the time, I just wanted to make the
16 Court aware of that so the Court knows where we are,
17 and we do have other things we can do this afternoon
18 that will take up some of our time and the additional
19 motions and things that we can argue that need to be
20 dealt with.

21 But I just want to make everybody aware.

1 THE COURT: Okay. Thank you.

2 MR. IGNATOWSKI: Thank you.

3 THE COURT: Okay. We will take a brief
4 recess.

5 (Whereupon, a brief recess was taken --
6 10:46 a.m.)

7 (Whereupon, after recess -- 11:11 a.m.)

8 (Whereupon, in open court.)

9 THE COURT: Please be seated.
10 Let's bring the jury in.

11 MR. IGNATOWSKI: Your Honor, may I ask the
12 doctor to come down?

13 THE COURT: You can ask him to come down.
14 Whether he wants to or not is up to him.

15 MR. IGNATOWSKI: Thank you, Judge.

16 THE COURT: He has got to make his own
17 decisions.

18 MR. IGNATOWSKI: It is your courtroom. I
19 have to ask.

20 THE COURT: He has been here often enough
21 that he sort of knows the routine.

1 THE WITNESS: Yes, sir.

2 (Whereupon, discussion off the record.)

3 (Whereupon, jury present -- 11:12 a.m.)

4 (Whereupon, witness present.)

5 THE COURT: Please be seated, ladies and
6 gentlemen.

7 (Whereupon, the witness left the witness
8 stand.)

9 MR. IGNATOWSKI: May I?

10 THE COURT: Please.

11 MR. IGNATOWSKI: Thank you, Your Honor.

12 BY MR. IGNATOWSKI:

13 Q Dr. Dement, I asked you to come down right
14 before we broke, and now I want to ask you some
15 questions specifically about some slides.

16 Are you familiar with an article by Dr. Rohl
17 that was published in the medical and scientific
18 literature that concerned brake maintenance repair
19 work?

20 A Yes, I am.

21 Q We are going to show that article. It is

1 in evidence as Ford Exhibit Number 83, I believe, and
2 I want to show you that, but first I want to show you
3 what was marked as Dement Exhibit Number 2 which is a
4 slide from that article.

5 Can you tell us if you are familiar and if
6 you have seen this slide before, this picture?

7 (Whereupon, slides were presented to the
8 jury.)

9 A I have seen the slide. It is out in the
10 publication, and I have seen the process before.

11 Q Okay. Is this the process that has been
12 described as -- that you described as blow off or
13 using an air hose?

14 A Yes. What happens is a hub is on the
15 outside of this. This is the brake assembly, and as
16 these brake shoes wear, the material actually collects
17 inside the hub.

18 It also will collect on all of the
19 components. This is called a backing plate, so it has
20 got an accumulation of dust on it and the mechanics
21 before they rebuild that will clean it off, and this

1 is the method that was used at least historically in
2 blowing off with an air hose.

3 Q Can I have that? When we show the film it
4 is not going to be as clear, but I want to point out,
5 what is this piece of material that is right here?

6 A That is actually the brake shoe. That is
7 the asbestos-containing brake shoe.

8 It is comprised of two pieces. One is a
9 metal, the metal backing piece that is made of metal
10 and then on the surface of it is either riveted or
11 adhered by a glue, the friction material, which is a
12 brake shoe and that is what wears as you apply your
13 brakes and it contacts the hub and that wears out and
14 gets thin and has to be replaced.

15 Q And does something go over this portion of
16 the wheel?

17 A Yeah. I am not sure you can -- it is even
18 shown, but there is a hub, it is a round hub that
19 slips over the axle and goes over the shoe, and the
20 hub has a friction surface on the inside, so when you
21 apply the brakes, the shoes are actually expanded

1 inside this hub, and that is what stops your car.

2 Q Now, from your review of the medical and
3 scientific literature and also from your own
4 experience, was this blowout process a procedure
5 commonly done by brake mechanics?

6 A Yes.

7 Q Knowing what you know now, Dr. Dement, based
8 upon your knowledge and training and experience, do
9 you have an opinion as to whether this procedure and
10 this dust cloud creates a hazardous condition for the
11 individuals that are exposed to that dust?

12 A Yes, it does.

13 Q And why is that, Dr. Dement?

14 A This wear material still contains asbestos
15 fibers even though the heat and friction might degrade
16 some of the asbestos to nonasbestos material, but
17 nonetheless, if you look at the wear debris, the dust
18 left behind, it still contains asbestos fibers and
19 also contains a lot of other particles which are
20 breathed in.

21 Q In your opinion, are those particles

1 respirable?

2 A Yeah, these are highly respirable
3 particles. This is a very fine dust because it is
4 created by a friction process.

5 It is grinding that off the surface, and it
6 creates a real fine dust.

7 Q I would like to show you now what has been
8 marked as -- premarked as Dement Exhibit Number 3 for
9 identification only, and are you familiar with this
10 process or procedure?

11 A This person is -- this is sort of a grinder
12 and -- actually it is a belt, and he is applying -- he
13 is belting the edge of a lining and putting it back on
14 and rebuilding a truck shoe. And this is the lining
15 itself, asbestos piece riveting onto a truck. He is
16 grinding it and is going to make its contour.

17 Q And is this also from the Rohl article, Dr.
18 Dement?

19 A This is a photograph on the Rohl article.

20 You can see the debris as he does this. It
21 collects debris all on the work surface, and we clean

1 it off periodically.

2 Q Now I would like to show you what has been
3 premarked as Dement Exhibit Number 4 for
4 identification only.

5 Again, is this another slide from that Rohl
6 article?

7 A Yes, it is. He has got a truck or bus --
8 this is a big shoe -- he has got a truck or bus brake
9 shoe, and this is mostly the friction material; and
10 the other piece is metal, the piece it is riveted to.

11 This process he is grinding on the surface.
12 For these types of shoes sometimes when they got a lot
13 of oil and grease on top of them, they pull off the
14 housing of the hub and if it is okay, they grind off
15 that grease and refurbish them. So this one looks
16 like it has a lot of wear on it.

17 Q Now, Dr. Dement, do you have an opinion as
18 to whether the two pictures depicted in these two
19 slides, Dement Exhibit Number 4 and the one
20 previously, Dement Exhibit Number 3 for identification
21 only, as to whether that process creates a hazardous

1 condition for humans doing that in the vicinity?

2 A Yes, it does. It is a whole grinding
3 process. Normally, in most cases, it was done without
4 any local exhaust ventilation, so the dust was created
5 and was open to the work atmosphere.

6 Q That is all of the slides.

7 Have you at my request, Dr. Dement, looked
8 at the EPA tape that we referred to earlier?

9 A Yes.

10 Q Are you familiar with the procedures used in
11 that particular tape so you can explain them to the
12 ladies and gentlemen of the jury?

13 A Yes.

14 (Whereupon, the slides were removed from the
15 video projector.)

16 MR. IGNATOWSKI: Your Honor, at this time I
17 would like to show our tape, and this will be
18 premarked for identification only as Dement Exhibit
19 Number 5; and, Your Honor, with the Court's
20 permission, I am going to stand over there.

21 Well, I can't stand over there. It won't

1 work.

2 BY MR. IGNATOWSKI:

3 Q Now, this is a film entitled, Don't Blow It,
4 Dr. Dement. We don't have any sound to it, so I have
5 asked you to narrate those portions of the film and
6 describe for the ladies and gentlemen of the jury what
7 is being done in each portion of the film; is that
8 correct?

9 A Okay.

10 Q Okay.

11 (Whereupon, the videotape was played.)

12 BY MR. IGNATOWSKI:

13 Q If you can stop it right there.

14 If you notice, Dr. Dement, there is a device
15 over the wheel of the vehicle?

16 A Right.

17 Q Are you familiar with that type of device?

18 A Yes. This is a commercially available
19 device on the market for controlling that dust.
20 Remember we saw blowing out with the air hose?

21 There are commercially available devices

1 that enclose that process and then connect it by this
2 tube here to a high efficiency vacuum cleaner, so it
3 sucks the air from around inside the hub through this
4 filtration device that collects the dust.

5 He can actually attach here and attach this
6 little air hose if he wants to use an air hose, but he
7 is blowing around and the dust is contained inside
8 this device and sucked into a vacuum cleaning high
9 efficiency that is collecting the dust.

10 Q You mentioned the term enclosure.

11 A Yes.

12 Q Why is enclosure, in your opinion, important
13 in circumstances like that?

14 A Well, remember we talked about some of the
15 historical methods for controlling dust, isolation and
16 enclosure is one of them.

17 What you want to do is you want to capture
18 the dust at the source so that the mechanic himself is
19 not exposed or others who happen to be in the garage.

20 Once the dust is out, it knows no boundaries
21 and can expose anybody who is in there.

1 Q Now, when were procedures we just saw that
2 were depicted on the tape, when were procedures like
3 that instituted or developed?

4 A They began to be developed in the '70s, the
5 early '70s, and certainly it is a commercial market,
6 so those that came on in the early '70s, mid '70s to
7 early '80s.

8 Q Now, you mentioned high efficiency vacuum
9 system?

10 A Yes.

11 Q Does that include use of what is known as
12 HEPA filters?

13 A That is what it means, high efficiency and
14 particular air filter.

15 All it means is a special filter that has
16 the capability of collecting these very, very small
17 particles of asbestos.

18 A regular vacuum cleaner bag that you find
19 in vacuum cleaners, it won't collect these particles
20 very efficiently, they will pass through it. They are
21 very small. The pores, it will go right through.

1 If you collect the dust, you might think you
2 are collecting the dust, but it is going right out the
3 back of the vacuum cleaner.

4 Q Without the use of things like that, again,
5 in your opinion, Doctor, again to a reasonable degree
6 of scientific certainty, are dangerous levels of dust
7 emitted?

8 A Yes.

9 Q And again, in your opinion, to a reasonable
10 degree of scientific certainty, are those levels
11 capable of producing the disease and contributing to
12 the disease mesothelioma in humans?

13 MR. WILLIAMS: Objection, Your Honor.

14 THE COURT: Overruled.

15 A Yes, they are.

16 Q How was it done previously? Was it done by
17 the blowout method?

18 A It was either done by the blow out methods.
19 Some might take a brush and brush the back plate and
20 brush it out.

21 Q What is being depicted -- now, is this

1 portion the drum that you were talking about earlier?

2 A He is taking the hub off and doing what we
3 normally do and now is taking the air hose and blowing
4 out this dust that has accumulated on the linings and
5 on the back part.

6 Q Now, in your opinion, Doctor, is that
7 visible dust, does that create a hazardous condition
8 for the worker?

9 A Yes.

10 Q Why is that? Again, because of the fibers
11 that are released?

12 A Again, because this wear dust still contains
13 asbestos fibers, and it creates an inhalation hazard.

14 Q How does the wear dust get into the drum?

15 A Well, as the drum slides over these brake
16 shoes and brake linings, and as you apply your brakes,
17 the way it stops is by pressing these things to the
18 outside or on the inside of this drum, and that is how
19 your car stops.

20 In the process of applying your brakes,
21 these materials are worn and there is a lot of

1 friction and heat and it wears off the material and
2 that is why you have to go and have your brakes
3 relined periodically and that stuff just accumulates
4 inside the housing.

5 Q Now, you talked about wear dust.

6 Is all of that wear dust asbestos dust?

7 A No, it is not all asbestos dust. Brake
8 linings, first of all, comprise other materials that
9 are part of the mix that goes into making that
10 lining.

11 The percent of asbestos in the original
12 material can be as low as 15 to 20 percent all the way
13 up to 70 percent, depending on who made the lining.

14 Also, the process of braking creates heat,
15 at least contact heat at the point where the lining
16 touches the drum, and that can destroy some of the
17 asbestos in the brake lining and makes it a
18 nonasbestos material called forsterite.

19 It converts it and crystal structure changes
20 and causes intensive heat, but that is not a complete
21 process, so the lining and wear debris still contains

1 asbestos.

2 Q Now, of that are there reports in the
3 medical and scientific literature of people who have
4 done studies of what remains in the drum after this
5 friction process takes place?

6 A Yeah, collected samples of this and looked
7 at them either by -- by some techniques so you can
8 come up with an estimate of percentage of asbestos
9 that is left, and it can be less than 1 percent in
10 some cases, all the way up to 15 percent, so it is
11 quite variable.

12 It depends on how the vehicle was used,
13 whether you see stop and go, whether it is high speed,
14 how it was used.

15 At least some of those are the determinants
16 of the percent asbestos that is left over.

17 Q Now, Doctor, in your opinion, again, with
18 reasonable scientific certainty, is there any
19 threshold dose of asbestos for the development of
20 malignant mesothelioma in humans?

21 A No. Our information with regard to the risk

1 of these diseases, we certainly believe there is a
2 dose response, that is, more a person is exposed, the
3 greater the risk, but we don't know an exposure low
4 enough that there is no risk, and so any exposure has
5 associated with it some risk, and those are the risk
6 models that we use, for example, in the OSHA standards
7 and EPA and risk assessments as well.

8 Q Now, I haven't asked you about a term, and I
9 am going to ask you now.

10 What is aerosolization?

11 A Well, aerosol is just an airborne solid.
12 Aerosol spray, it is a liquid that you spray out of a
13 can, an aerosol, but it is an airborne solid and the
14 way particles get airborne is by many different
15 processes including blowing out the hub here, like the
16 brake or drum and anyway we create aerosol by many
17 processes.

18 We cut and grind the asbestos friction
19 materials and blow out the air hose, so it creates
20 dust in the air and these are usually very, very small
21 particles.

1 MR. IGNATOWSKI: Now, you can hold it right
2 there, Mr. Shellenberger.

3 Q This is a cleanup process?

4 A This is -- I think this is a cleanup
5 process. This is how I remember doing it. You are
6 given a broom and brush up and dry sweep the area and
7 collect the dust.

8 MR. IGNATOWSKI: If you can just hold it
9 there one second, Mr. Shellenberger.

10 Q When you talked about aerosolization and you
11 talked about fibers, do asbestos fibers have something
12 that is called a settling velocity?

13 A Well, they do have a settling velocity. Any
14 particle that you suspend in the air is going to
15 settle.

16 It is going to have a velocity -- settling
17 velocity associated with it. The smaller the
18 particle, the slower the velocity in most cases.

19 Asbestos particles that are generated by
20 these grinding processes are so small in size that
21 you -- first of all, you can't see them with your

1 unaided eye, you only see a cloud of them together,
2 but individually you can't see them, but they are so
3 small in size, that they have very negligible settling
4 velocities in perfectly still air.

5 An example, an airborne fiber that we see
6 looking at an airborne dust sample that is five
7 microns long and 10th of a micrometer in diameter, if
8 you were to suspend that at the height of a ceiling
9 today and seal this room off, absolutely no air flow,
10 nothing, still air, you come back tomorrow about this
11 same time, it would still be airborne and it settles
12 very, very slowly and because it does that, any air
13 currents, people walking down, anything can move these
14 particles from one location to another.

15 Q Now, when we saw the portion about the
16 blowout procedures a few moments ago, when it is blown
17 out, in your opinion, Doctor, is the asbestos dust
18 that is blown out confined to that particular of the
19 area where the blowout is taking place?

20 A No. The person who is doing it is going to
21 have a substantial dose or exposure, but it just

1 travels throughout the work area.

2 Once it is airborne, it settles out very,
3 very slowly, and it is going to travel throughout the
4 area.

5 Q In fact, we are going to be showing what is
6 Ford Exhibit Number 83, I believe, the Rohl article,
7 is there not, in the Rohl article, reports of asbestos
8 fibers floating in the air for distances of at least
9 75 feet?

10 A In that study they measured exposures and
11 also put samples distances away.

12 Q Now, would the same type of process take
13 place during this sweep up of the brake wear debris?

14 A Yes. This is just the resuspended material
15 that is on the floor.

16 Q What do you mean by resuspension?

17 A Well, the material has obviously accumulated
18 on the floor from one process or another. You saw
19 them dump that brake out. I think it was full
20 material when he did that and dumped it on the floor,
21 and it has to be swept up.

1 That material is a fine powder; and if you
2 try to sweep it, it just creates another dust cloud.

3 MR. IGNATOWSKI: We can move on, Mr.
4 Shellenberger.

5 Q Now, is this another type of procedure that
6 is used?

7 A Yes. This is a whole series of commercially
8 available devices similar to the one we saw before.
9 There are just different designs that are used for
10 controlling dust. This one has got, I think,
11 Plexiglass shield in front.

12 It has a shield in the back that you slip
13 the brake off and actually tie it on to the axle
14 behind it and close off the dust. You have the vacuum
15 cleaner, the HEPA vac. That is what he is doing
16 here.

17 Q Again, is that a method of enclosing the
18 dust and preventing any leakage?

19 A That Plexiglas device we saw was the
20 enclosure.

21 This device, rather than using compressed

1 air, is using a vacuum system to try to collect the
2 dust. This is looking at the back. He is putting
3 this over the axle, and he is going to try to seal it
4 up.

5 You usually have a drawstring to draw it
6 tight, but now this device, it is all closed up. And
7 the way he gets into it is he sticks his hands through
8 his pores, they have gloves in it. And he sticks it
9 in and it has gloves built into it.

10 And now he is actually taking the hub off of
11 the drum and now he will use this vacuum cleaner that
12 has got a vacuum cleaner attached to it attached to
13 this high efficiency vacuum and he can vacuum this
14 dust out rather than blow it out. It is just another
15 commercial device.

16 Q In your opinion, Dr. Dement, are procedures
17 like this necessary when brake work of this type is
18 being done?

19 A Yes. For the protection of workers and
20 those in the shop.

21 Q And when were procedures such as this

1 available?

2 A Well, as I said before, these began to be
3 developed in the mid '70s. NIOSH issued an alert in
4 around '75, but before that some procedures have been
5 developed to try to minimize dust.

6 These have evolved over a number of years.

7 MR. IGNATOWSKI: You can move on, Mr.
8 Shellenberger.

9 Q Now, is this another method of just blowing
10 out? Are these brake linings, or are these brake
11 pads?

12 A This is a brake pad.

13 MR. IGNATOWSKI: Hold it right there, Mr.
14 Shellenberger.

15 Q Can you explain for the ladies and gentlemen
16 of the jury what the difference is between the brake
17 lining and a brake pad?

18 A Remember this hub has the inside piece that
19 is dipped inside and the brake shoes actually expand
20 inside to stop the car?

21 A brake -- a disc brake is designed

1 differently. It has a flat disk that rotates and the
2 way you stop your car is that you have brake friction
3 pads on each side and you have a hydraulic system that
4 actually squeezes those pads onto what is called the
5 rotor, and it squeezes it and that is how the car
6 stops. So it applies the friction from the outside
7 in.

8 Q Now, Dr. Dement, in your own personal
9 knowledge and your knowledge and training and
10 experience in the field, did disc pads contain
11 asbestos?

12 A Yes, they did.

13 Q And was it chrysotile type of asbestos
14 primarily?

15 A Yes.

16 Q Now, what is the procedure being done here?
17 Is it almost the same as being done with the
18 brake lining?

19 A Basically the same process, gathering and
20 enclosing them.

21 In this situation, he was using what I think

1 what is called a crevice tool.

2 All it is is sort of like your vacuum
3 cleaner. It has a little device that has a narrow end
4 to get down in real small places.

5 Q Is this what is known as a wet method?

6 A This is an alternative method that some
7 people use, and it is a wet method that you use either
8 a solvent or water with a surfactant in it, soap, to
9 try to wash it down.

10 This is not considered as a factor. First
11 of all, it is not as effective in sort of holding the
12 dust down as an enclosure, but when you use this wet
13 method, after the material dries, even when it may be
14 wet to start with, when it dries, it is still dust.

15 MR. IGNATOWSKI: Hold it there, Mr.
16 Shellenberger, please.

17 Q Dr. Dement, so far we have talked about and
18 you have shown us examples of wet methods.

19 Is that the very same type of procedure that
20 Merewether discussed back in 1930?

21 A Yes. It can reduce dust, but it is not as

1 effective as an enclosure with the vacuum system.

2 Q You also showed us examples on the tape of
3 dust suppression and enclosure.

4 Is that another concept that Dr. Merewether
5 discussed in the medical and scientific literature
6 back in 1930 as it relates to the use of asbestos?

7 A It is. It is the same principle. We are
8 still applying the same principles described after the
9 turn of the century to control the dust to control the
10 occupational exposures.

11 Q Have the industrial hygiene concepts and
12 principles changed in any fashion between 1930 and the
13 time period in the '70s when you said these methods
14 were available?

15 A Well, the same basic principles still
16 apply. We have evolved, hopefully, better equipment
17 in some ways, but the same principles in terms of how
18 you do it, they are the same principles.

19 MR. IGNATOWSKI: You can show the rest of
20 the tape, please, Mr. Shellenberger.

21 Q This is a brush-off procedure?

1 A Yes. This is what we were talking about
2 before. This process either a brushing, dry brushing
3 which is not good because it creates significant
4 exposure, maybe not as bad as blowing off with the air
5 hose, but still creates dust, and some people try to
6 use wet rag to wipe down.

7 It helps, but it is the same problem with
8 the other wet method. It doesn't wet the particles
9 very well to hold the dust down, and after the
10 material dries, you still have to deal with it as
11 dust.

12 Q Now, on this particular portion, they were
13 squirting solvent and wiping with a dry rag.

14 Is that an effective method?

15 A It is better, again, than blowing it out,
16 but it is not nearly as effective as the enclosure.

17 First of all, these particles are real
18 small, and they don't wet very well to start with.

19 It is sort of like, I guess, when you try to
20 mix -- have a mixing bowl and you try to mix a dry
21 powder in the mixing bowl and you put water in and it

1 sort of lays to one side and doesn't mix up well and
2 doesn't wet easily. This wear dust doesn't wet
3 easily.

4 MR. IGNATOWSKI: Now, you can continue on,
5 Mr. Shellenberger.

6 Q Again, this is an example of a shop vacuum.
7 Is that an accepted procedure or a procedure
8 that was utilized and suggested and recommended or
9 not?

10 A No. This is a standard old shop vac that we
11 might go out to Sears and buy and doesn't have the
12 high efficiency filter and doesn't effectively collect
13 asbestos particles.

14 Q Now, is this just another example -- that
15 was another example of the enclosure method?

16 A That is enclosure, and that is the air hose
17 inside of the enclosure.

18 MR. IGNATOWSKI: Is that the end of the
19 tape, Mr. Shellenberger?

20 I think that that concludes the tape.

21 (Whereupon, the playing of the videotape was

1 .concluded.)

2 BY MR. IGNATOWSKI:

3 Q Now, Dr. Dement, besides the blow out and
4 the procedures and the methods that were discussed on
5 the tape that you have explained for the jury, you
6 have already told us about other methods of exposure
7 and they include grinding and sanding and chamfering;
8 is that correct?

9 A Yes. In the other slides, we talked about
10 not only the blowing out process, but the fact that at
11 least historically these are normally ground to fit
12 the new hub.

13 Q Just give me one second, Dr. Dement, if you
14 could just stay here because I am going to go through
15 a number of documents.

16 (Whereupon, the documents were published to
17 the jury via the overhead projector.)

18 BY MR. IGNATOWSKI:

19 Q Now, Dr. Dement, we mentioned a couple of
20 moments ago the Rohl article?

21 A Yes.

1 Q You are familiar with that article?

2 A Yes.

3 Q Did the Rohl article -- first of all, was
4 that published in the medical and scientific
5 literature?

6 A Yes, it was.

7 Q Do you know from your review of that article
8 whether Ford was a cosponsor of the article?

9 A Well, it has acknowledgment, and it is noted
10 by the acknowledgment of the bottom of the published
11 paper.

12 MR. IGNATOWSKI: Your Honor, I am referring
13 to what is already in evidence as Ford Exhibit 83.

14 Q This appeared in Environmental Research in
15 1976?

16 A Yes.

17 Q It was written by Arthur Rohl, Arthur
18 Langer, Wolff, and Weisman and they were part of the
19 Mount Sinai School of Medicine; is that correct?

20 A That is correct.

21 Q Dr. Selikoff, he was part of the Mount

1 Sinai School of Medicine as well?

2 A He was director of the laboratory program,
3 Environmental Sciences Laboratory that these people
4 worked with him.

5 MR. IGNATOWSKI: Now, if you could move to
6 page 112, Mr. Shellenberger, please.

7 I am not trying to rush him, Your Honor.

8 BY MR. IGNATOWSKI:

9 Q On page 112, I have a section underlined or
10 yellowed, in mechanisms of degradation of brake
11 linings during use.

12 What is degradation? Is that what you were
13 telling the jury about the breakdown of the process?

14 A Yes. We talked about the fact that these
15 friction products are subjected to friction inside and
16 it generates heat, so this part of the article talks
17 about the fact that this rubbing between the lining
18 and the hub or the disc creates temperatures or hot
19 spots that can be 800 to 1000 degrees.

20 It is very high, but very localized. It is
21 not the whole brake lining, but just points of

1 contact.

2 Q All right. Now, this study, did it study
3 how much asbestos remained after that type of
4 degradation?

5 A Yeah. They collected a number of samples of
6 the actual wear dust from inside of these devices and
7 looked at them by X-ray diffraction and by electron
8 microscopy.

9 Q Is that the section on extensive study of
10 both the thermal behavior of chrysotile and brake
11 lining composition indicates that chrysotile fiber may
12 survive in the decomposed lining dust?

13 Do you agree with that, Doctor?

14 A Yes. They designed others besides theirs,
15 but theirs was the first to do that.

16 It divides the process and certainly
17 degrades some of it, but in the wear dust still
18 remaining are asbestos fibers. A lot of them are very
19 short fibers, but nonetheless are dust.

20 Q In your opinion, Doctor, with reasonable
21 scientific certainty -- do you have an opinion with

1 reasonable scientific certainty, whether short fibers
2 or those fibers released of that size and other fibers
3 can contribute to the disease malignant mesothelioma
4 in humans?

5 A It is my opinion, yes, they can.

6 Q Now, I would like to show you what is page
7 117 of that report, and it describes -- did the
8 investigators in the article along with Ford's help
9 find out in the article who was using the blow out
10 method?

11 A They surveyed -- this is done in Baltimore
12 and the Washington area. Well, this survey was not.

13 This was done in New York City, but it
14 referenced the Baltimore and Washington survey done by
15 Barry Castleman, and they then designed the study to
16 go back and measure exposures during typical
17 operations.

18 Q So that was one of the things that the
19 surveys were aware of, the method of blow out and how
20 it was being used and the fact that it was being used
21 in Baltimore; is that correct?

1 A Yes.

2 Q Now, did they look at the fiber
3 concentrations and refer to Table 3, and it states
4 that it shows fiber concentrations are high in the
5 operator's area under these conditions, and was that
6 some of the conditions that you saw and the ladies and
7 gentlemen of the jury saw on the tape?

8 A Yes.

9 Q The blow out.

10 A That process that you saw some of the
11 conditions.

12 Q And did they also report that there were
13 concentrations away from where the process was being
14 done?

15 A They did. They measured concentrations at
16 different distances away from that process, all the
17 way to 75 feet away. And at 75 feet, they still had
18 measurable concentrations of asbestos fibers.

19 Q Now, Doctor, from your, again, knowledge,
20 training and experience, your review and your work in
21 the brake and friction product area, did you ever see

1 any warnings on Ford products discussing this
2 potential of brake drum debris and the presence of
3 asbestos?

4 A I never saw any certainly during the time
5 period that I was doing work and during this time
6 period did not.

7 Q Now, it also indicates in the next sentence,
8 background or air sampling during the same operation
9 shows that at least 14 minutes after jet air blowing
10 and up to 75 feet away.

11 A Yes.

12 Q Is that consistent with what you were
13 telling us about, the ability of asbestos to travel in
14 the air and its aerodynamic qualities?

15 A Yes. What happens, you generate this dust
16 cloud, and it settles very slowly. Any movement of
17 air -- normal air currents can move those fibers from
18 point to point.

19 Certainly the closer you are to the source,
20 the higher the concentrations, but it moves the
21 materials throughout the work area.

1 Q And did the article itself indicate that
2 people can be exposed as far as 65 to 75 feet away?

3 A Yes. They are still measurable at that
4 distance.

5 Q Your opinion, again, with reasonable
6 scientific certainty, would that create a hazardous
7 condition for people in that vicinity?

8 A Yes, it can. Again, we know of no threshold
9 for the diseases caused by asbestos and especially
10 mesotheliomas and cancers.

11 Q I would like to now go to I believe it is
12 page 120; is that correct? 119. It is page 119.

13 This is Table 3, Doctor, asbestos
14 concentrations during automobile brake service.

15 Could you, please, explain for the ladies
16 and gentlemen of the jury, one, the operation is
17 blowing dust out of brake drums. And we have seen
18 that on the film and saw that on the slide.

19 A Yes.

20 Q What is being measured here and the number
21 of samples and what this fiber concentration means?

1 Could you, please, explain that.

2 A Well, in essence, what they are doing is
3 collecting samples at different distances during the
4 process that we looked at, using compressed air to
5 clean out a brake assembly.

6 This is just how many samples were collected
7 at each one of these points. This is the average
8 concentration, and this column is the range.

9 So in the immediate breathing zone, that is,
10 from three to five feet of the operator, they had an
11 average of 16 and a range of 6 to 29.8.

12 Q Are they significant levels of fibers?

13 A These are very significant fiber levels.

14 As you move away from that immediate
15 breathing zone, different distances away, the
16 concentrations fall off, but they are still very
17 significant.

18 Q During an average workday, as an industrial
19 hygienist, are there calculations as to the amount of
20 air that a particular individual breaths during a
21 working day?

1 .A Yes. A typical worker during the day if you
2 take their breathing rate and volume, but just a
3 typical worker with moderate level of physical
4 activity, just strenuous, but not sitting down, and in
5 a working day will breathe about 10 cubic meters of
6 air, so it will vary some between individuals, but
7 roughly about 10 cubic meters is how much we breathe
8 in a day.

9 Q How does that translate into the ability of
10 the individual to inhale fibers?

11 A Well, you have to remember we are measuring
12 fibers per milliliter of air, so these are number of
13 fibers. And these are just long fibers, fibers longer
14 than five micrometers per milliliter of air.

15 There are a thousand -- excuse me, a million
16 milliliters in a liter -- or I mean, in a cubic meter,
17 so if you breathe 10 cubic meters of air a day and
18 this concentration is 16, it is actually 16 million
19 fibers per cubic meter in a day.

20 A worker at that concentration would have
21 breathed in 160 million asbestos fibers longer than

1 five micrometers if they worked at that concentration
2 all day.

3 Q Dr. Dement, it is obvious, is it not from
4 the article, that the authors and the sponsors
5 mentioned how much air an individual inhales during
6 that time period?

7 A Yes, they mention 8 cubic meters, but, yes,
8 that is in the same ball park.

9 Q Now, the levels for cleaning brake drums
10 with a dry brush, what were the levels and ranges that
11 they fell into?

12 A Well, with a dry brush, the concentrations
13 are certainly lower, as we mentioned before, than
14 blowing it out with an air hose, but still significant
15 levels with an average of two and a half fibers per cc
16 and upper end of the range of 3.6.

17 There is only two samples, but still a
18 significant exposure.

19 Q Now, you are talking about fibers, and you
20 gave us the ranges.

21 What is the present standard for exposure?

1 A The present occupational exposure
2 standard -- there is really two pieces. One is an
3 eight-hour time-weighted average or eight-hour average
4 exposure is 0.1 fibers per cc, so it is .1. And there
5 is also a ceiling limit that you can't exceed over a
6 15-minute period, and it is one fiber per cc.

7 You have to keep your average down and you
8 can't go over 1 during any period of sampling of 15
9 minutes.

10 Q Are any of these levels we talked about,
11 blowing dust and dry brush in excess of those levels?

12 A These are clearly far in excess of the
13 current standard.

14 Q Now, this article also says that during the
15 beveling of truck brake shoes on a grinding machine --
16 and is that what we showed you on an earlier slide
17 which you showed to the ladies and gentlemen of the
18 jury --

19 A Right.

20 Q -- very high concentrations of fibers were
21 found in the vicinity of the operator.

1 Have you yourself done samples and measured
2 samples of how much asbestos fibers are in the air in
3 garage maintenance facilities?

4 A Yes. And, also, I sampled actually
5 facilities that produced these linings. When it gets
6 to the end, they have to grind them off as well and
7 measured concentrations there. You can generate some
8 very high dust concentrations.

9 Q Okay. Now, I would like to show you what is
10 table -- I would like to show you the next page which
11 is 120.

12 And did the article itself discuss the
13 significance of short fiber chrysotile?

14 A Yes.

15 Q And what did it say about the short fiber
16 chrysotile, and what is the significance?

17 A The significance is this: The method that
18 we still use for counting fibers in the air is called
19 the membrane filter method. It started to be used in
20 about 1970 for regulation.

21 What it does is collects samples on a filter

1 and that is a little filter that you wear on your
2 lapel that goes to the back of a pump and goes to the
3 laboratory and put it on a slide and you count filters
4 and it is higher magnification than before, it is up
5 to 4 or 500 times to see it better, but we are still
6 using low powered magnification.

7 You can only count fibers lower than five,
8 because that is what you can see.

9 When you look at dust fibers of asbestos,
10 irrespective of where it is, textile mills, friction
11 product producing plants or garages, if you look at
12 electron microscopy where you see everything, you see
13 the vast majority of fibers are shorter than five and
14 in this case 95 to 99 percent of the fibers you don't
15 really count them, so you really have just a little
16 index of exposure so the majority you are not
17 counting.

18 You are talking about breathing 16 million
19 fibers in a workday, you have to multiply that by 10,
20 perhaps higher to really know how many true total
21 fibers are breathed.

1 Wear dust is particularly bad because the
2 grinding process degrades the material so you have a
3 predominance of short fibers, so you look at it by
4 this counting method, you are missing nearly
5 everything that is there.

6 That is what it is talking about here. Data
7 suggests that these do produce disease and yet we
8 aren't measuring, so it is particularly a problem for
9 friction material.

10 Q Now, is one of the characteristics of
11 chrysotile, Dr. Dement, that it can break
12 longitudinally?

13 A All asbestos including chrysotile, but what
14 happens is if you look at these fibers under an
15 electron microscope where you can actually see the
16 ultimate smallest fiber, what they look like is a
17 bundle of sticks that are made up of individual little
18 fibrils of the ultimate fiber, but they are bundled
19 together, and that is how they occur in nature.

20 When you apply energy to them, grind them,
21 apply any mechanical energy to them, what you do is

1 two things.

2 It causes this bundle to crush and the
3 individual little fibers to come off, and those are so
4 small you can't see them at all.

5 You also break up lengthwise, so mechanical
6 energy just creates an aerosol of very small fibers.

7 Q What happens is, in effect, one fiber
8 creates many more fibers?

9 A Certainly can. One small fiber creates a
10 lot of small fibers by mechanical manipulation.

11 Q Now I would like to turn to Table 4 which is
12 on page 122. This is a table that concerns asbestos
13 concentrations during truck brake service.

14 A That is correct.

15 Q What were the ranges that were found in the
16 beveling of new linings on truck brakes?

17 A Well, if you look at beveling, which is the
18 grinding process, you are trying to actually bevel
19 edges, and that five samples, the average was 37.3.
20 But they found a range of 23.7 to 72 fibers per cc, so
21 very substantial dust exposure.

1 And also during the process we talked about
2 where if you took off a bus or truck drum and saw that
3 the lining had grease on it but was still thick enough
4 to be reused and just grind it off, so during the
5 renewing you still had significant dust
6 concentrations.

7 You are not taking it off. You are just
8 taking the grease off, not the lining, just taking the
9 grease off the top.

10 Q Now, did the authors along with Ford's help
11 come to certain conclusions in the article?

12 A Yes.

13 Q And did they come to any conclusions about
14 any potential hazards of chrysotile as it is used in
15 friction products such as brake linings, brake pads?

16 A Well, they certainly demonstrated a
17 substantial exposure to chrysotile and, therefore,
18 substantial hazard.

19 They also talk in great length about the
20 fact that these are predominantly short fibers that
21 really by our current method and measurement aren't

1 taken into account, so if they are not taken into
2 account very well.

3 Q Did they also make findings -- and this is
4 in conclusion number 2 -- about the range of the
5 percentage of chrysotile that remained after the
6 thermal degradation that you told us about from the
7 friction process?

8 A In their own studies, they found a range of
9 2 to 15 percent that remained. And that is on a
10 weight basis of the material after the material is
11 subject to the friction in the car with an average of
12 about 3 to 6 percent.

13 Others have found similar ranges, some less
14 than 1 percent, depending on how it was used, up to 16
15 percent.

16 Q The only section I didn't go in was optical
17 microscopy and that is what you explained to the
18 jury?

19 A Yes. The fibers are so small you can't see
20 them with your eye and even when you magnify it 400 to
21 500 times, the fiber is still so small, you still

1 wouldn't pick it up.

2 Q In essence, Dr. Dement, does that in your
3 opinion create a hazard to the individual?

4 A Certainly you can't see them with your eye
5 if you can't see them with a magnification of 4 to 500
6 times.

7 Q I would like to move on to conclusion number
8 5.

9 Again, they refer to the amount of
10 concentration and the fact that there were measurable
11 concentrations how far from the individual? At least
12 75 feet?

13 A Yes. That is the last point they measured,
14 and they also measured concentrations at different
15 time periods after the blowing had stopped and 75 feet
16 and 14 minutes you still could measure the dust
17 concentrations.

18 Q You commented a few minutes ago about the
19 amount of fibers that can be seen and can't see.

20 Didn't they, in fact, in conclusion number 7
21 comment upon that, the amount of asbestos-free

1 exposure is much better because of the --

2 A Yes. They clearly acknowledge that the
3 optical counting methods have severe limitations to
4 seeing all types of asbestos.

5 Q The last page. And did they discuss in the
6 article the amount of individuals who are at risk or
7 who may be at risk for asbestos exposure in automotive
8 repair work?

9 A Well, they tried to make an estimate, and
10 this is going through some available publications on
11 how many mechanics there are in the United States.
12 And they made an estimate that there were 900,000
13 individuals that at least had some potential for
14 exposure.

15 Q In fact, in the article they acknowledged
16 that the Ford Motor Company reviewed the entire
17 transcript; is that correct?

18 A Yes.

19 Q I would like to now move on -- there have
20 been other reports in the scientific literature, and I
21 have just one other that I would like to show you and

1 ask if you are familiar with, and I don't know if I
2 can pronounce the name.

3 Is this a finished study by Kaupinen?

4 A Kaupinen.

5 Q Are you familiar with this particular
6 article?

7 A Yes.

8 Q Does this also refer -- first of all, when
9 was this published?

10 It says May of 1987; is that correct?

11 A I think that is correct, yes.

12 Q Does this contain dust concentration level
13 measurements as well?

14 A Yes. They basically did a similar study,
15 and this was one that was done, a similar study.

16 Q This also references the other potential
17 sources of asbestos exposure such as grinding,
18 beveling, or riveting of new brake linings?

19 A Yes.

20 Q I would like to move it along a little bit,
21 Doctor.

1 I would like to show you what is Table 1,
2 and, again, this is a study of fiber concentration in
3 brake maintenance of trucks and buses?

4 A Yes.

5 Q What were the levels that were found for
6 grindings of brake linings with machine and no
7 exhaust?

8 A Well, when they did that with no exhaust --
9 and that was typically how it was done -- they found a
10 range of 0.3 to 125 fibers per cc.

11 Remember the Rohl article found an upper
12 range to about 72, so they are finding higher
13 concentrations, and the mean or the average
14 concentration was 56, so that is substantial dust
15 concentration.

16 Q Are they, in your opinion, hazardous levels
17 of exposure?

18 A Yes.

19 Q I would like to go on and show you -- this
20 is Table 2, and this is fiber concentrations in brake
21 maintenance of passenger cars.

1 Again with the cleaning of drum brakes with
2 compressed air jet, again, no exhaust.

3 What were the ranges found in that
4 procedure?

5 A If you look at the range, it is less than .1
6 to 8.2 and, again, counting with an optical
7 microscope.

8 This is the same counting method. So you
9 are counting all of the long fibers and average of
10 1.5.

11 Q Now, did this article also comment upon the
12 finding or any findings of asbestos-related disease
13 including asbestosis and mesothelioma in brake
14 workers?

15 A It reviewed the articles. This article
16 talks about six verified cases of asbestosis in car
17 repair workers.

18 At least four of those was during car
19 repair, two of those was other dust exposures. And
20 they also reviewed articles dealing with mesothelioma
21 in car repair workers.

1 Q Now, Dr. Dement, did there come a time when
2 the Federal Government started to express or became
3 concerned over exposures, asbestos exposures in brake
4 mechanic repairmen?

5 A Yes. Jerry Lynch, part of the U.S. Public
6 Health Service, actually did some work in 1969, and
7 then in the mid '70s more concern because of the
8 occurrence and observation of disease and, in fact,
9 exposure and NIOSH convened a meeting of individuals
10 of labor and government sectors to discuss that and
11 one of the output from that was some interim
12 recommendations on how exposures might be reduced.

13 Q Those recommendations weren't mandatory,
14 were they?

15 A No. Those were NIOSH's attempts to put
16 those out for individuals as well as people
17 responsible for occupational health and safety to
18 control these exposures.

19 Q Were you at NIOSH at that time?

20 A I was.

21 Q You were at the meeting?

1 A Yes. I was responsible for convening the
2 meeting and writing the minutes and then writing
3 interim procedures that were part of it.

4 Q Do you know from your own recollection
5 whether representatives of the Ford Motor Company were
6 there?

7 A As I recall, they were, yes.

8 Q I am going to show you a list of attendees.
9 That indicates that you were present on
10 behalf of NIOSH?

11 A Yes.

12 Q Then a Dr. Herb Northrop was present on
13 behalf of Ford Motor Company?

14 A Yes.

15 Q Paul E. Toth, T-o-t-h, was also present on
16 behalf of Ford Motor Company.

17 Does that refresh your recollection?

18 A Yes.

19 Q Now, what was the purpose of the meeting,
20 and what was discussed?

21 A The purpose was to discuss the fact that --

1 first of all, to acknowledge exposure during the
2 process of brake repair.

3 Blowing out process was commonly used, but
4 also in the literature at the time were cases of
5 mesothelioma occurring among auto mechanics and brake
6 repair workers.

7 Mesothelioma is a signal health event. When
8 you see a mesothelioma, you automatically think about
9 an asbestos exposure because so few other materials,
10 so few other causes of mesothelioma, so it is a red
11 flag, so these were carried in auto mechanics and our
12 desire was to try to reduce the exposure and,
13 therefore, reduce risk.

14 MR. IGNATOWSKI: Your Honor, at this time we
15 would offer into evidence Ford Number 69.

16 Is there an objection?

17 MR. WILLIAMS: No objection, Your Honor.

18 THE COURT: 69 will be admitted into
19 evidence.

20 (Whereupon, Plaintiffs' Exhibit Number Ford
21 69 was received into evidence.)

1 BY MR. IGNATOWSKI:

2 Q I would like to show you what is the first
3 page of that invitation and it starts off and it is
4 dated August 8th, 1975, and this is the letter sent
5 out to the various members and individuals.

6 A Yes, it was.

7 Q In fact, did the letter itself discuss the
8 occurrence of mesothelioma?

9 A It tried to review some of the already
10 published information at the time, and there is a
11 series of references on the back of it.

12 Q Did it also indicate that from the
13 literature study and the review of the literature that
14 there was enough asbestos dust to cause disease even
15 after brake degradation?

16 A Based on, again, what we knew in 1975, we
17 felt there was enough exposure to have caused these
18 diseases and, therefore, we made this recommendation.

19 Q Now, I also noted that on the attendees
20 sheet there were individuals from the United Auto
21 Workers.

1 A Yes.

2 Q What kind of workers were they that were
3 present?

4 A These largely were individuals that worked
5 in the plant that made cars. NIOSH -- and it still is
6 NIOSH's policy whenever it holds a meeting like this
7 to try to get all parties involved, labor, management,
8 industry and governmental organizations and whomever
9 we can convene. We always try to get labor and
10 management to the same table.

11 Q Now, there was no indication that any
12 nonunion officials attended any of these meetings, is
13 there?

14 A I don't think it had any, no.

15 Q Okay. Was there any attempt on behalf of
16 NIOSH at this time to encourage manufacturers or
17 suppliers of products, friction products, to warn of
18 any potential hazards?

19 A It was our intent by this process of
20 releasing this alert to provide at least some
21 warning.

1 It was also our desire, although we were not
2 a regulatory -- NIOSH is not a regulatory agency, that
3 this would be widely distributed through the process
4 of distributing materials, but we are not a regulatory
5 agency. We developed it, and it was our hope.

6 MR. IGNATOWSKI: Could you go to the second
7 page, please.

8 . Q In fact, there were certain recommendations
9 made concerning the environmental studies and the
10 observations of mesothelioma in brake repair workers;
11 is that correct?

12 A That is correct.

13 MR. IGNATOWSKI: We can go on to the last
14 page, please. The recommendation page.

15 Q Were these the recommendations, the
16 recommended procedures for brake and clutch
17 servicing?

18 A Yes.

19 Q Why clutch servicing as well, Dr. Dement?

20 A Well, a clutch is a friction material that
21 contained asbestos just like brake linings and, you

1 know, different configuration, but they are
2 nonetheless asbestos-containing friction material and
3 generate dust as well.

4 Q Was there any recommendation -- what was the
5 recommendation in paragraph 1 about warnings?

6 A Well, we wanted the area to be posted with
7 this particular warning, that is, to set aside an area
8 in the shop that was going to be used where brake
9 repair work would be done. So it is a designated
10 area, to post a warning for people who might have
11 occasion to go into that area.

12 It is part of isolation, we wanted the
13 process to be isolated as much as we could.

14 Q Did the proposed sign that was posted warn
15 or suggest that the individual be warned about the
16 potential of asbestosis and cancer?

17 A Yes.

18 Q Was there also in the OSHA document a
19 warning statement that was ultimately enacted?

20 A In 1972, yes, it was.

21 Q Was it any different than the warning

1 statement proposed by NIOSH in this document?

2 A Well, it is not nearly as strong. We wanted
3 to specifically mention asbestosis and cancer.

4 The 1972 standard, because of some
5 negotiation really on what the final one would say,
6 does not say cancer.

7 The industry objected to the word cancer on
8 the label and through the process of rule making it
9 was reduced to at least warn, but not say cancer.

10 Q When you use the term industry objected, who
11 are you talking about?

12 A Well, a lot of industry objected, but the
13 Asbestos Information Association of North America had
14 the strongest objection.

15 Q Okay. Now, again, in paragraph number 2 it
16 talks about air purifying respirator.

17 Respirators you told us was discussed back
18 in 1930 with Merewether; is that correct?

19 A Yes.

20 Q You also mentioned efficiency, high
21 efficiency filter systems and vacuum cleaning and

1 other procedures that could be used.

2 Are these, again, all concepts concerning
3 dust suppression?

4 A Yes. Basically, we are going to this high
5 efficiency vacuum cleaner to try to collect the dust.

6 We are also trying to -- after that is done,
7 to use at least some wetting for whatever residual
8 dust might be there.

9 Q I think we are done with that document.

10 This is page 2. Who was Dr. Wright?

11 A George Wright was past medical director of
12 Johns-Manville. At that time he was, I think, retired
13 and was consulting.

14 Q And did he make any comments about the
15 responsibility of manufacturers concerning their
16 products?

17 A Well, it says what it says. I tried to
18 capture Dr. Wright's discussion.

19 I guess I wrote the minutes of the meeting,
20 so this is what I wrote in 1974 or '5.

21 Q You were the individual that actually wrote

1 these minutes that we are seeing here today?

2 A Yes.

3 Q Now, we can move on to the next document.

4 Doctor, at this time I would like to show
5 you what is premarked as Plaintiffs' Exhibit Number
6 78, Ford Number 78.

7 MR. WILLIAMS: No objection. That is also a
8 Ford defense exhibit.

9 THE COURT: It will be admitted in evidence
10 without objection.

11 (Whereupon, Plaintiffs' Exhibit Number Ford
12 78 was received into evidence.)

13 BY MR. IGNATOWSKI:

14 Q Are you familiar or have you seen this
15 document before?

16 A Yes, I have seen it before.

17 Q And is this -- do you know who this document
18 went to from your familiarity with it?

19 A You know, I can't tell you who it went to
20 specifically. My understanding is that it went to
21 shops, Ford shops.

1 This is a maintenance bulletin, one of their
2 maintenance bulletins.

3 Q Now, the items discussed on this bulletin,
4 are they similar to the items that were discussed in
5 the "Dear Colleague" letter that we just saw?

6 A Yes. It is basically using some of the same
7 control techniques, high efficiency vacuum cleaner,
8 capable of collecting these small particles, and
9 dispose of the material collected and use of a Bureau
10 of Mines approved dust respirator.

11 Q Is that the same thing as a dust mask? Are
12 they different?

13 A They can be used interchangeably.

14 Q Okay. Now, item -- this last item it
15 indicates under no circumstances shall compressed air
16 blow off be used to clean brakes, brake drums,
17 clutches, and associated components.

18 Is that similar to the recommendations that
19 the "Dear Colleague" meeting was making as well?

20 A Yes.

21 Q What is the date of this document?

1 A August of 1973.

2 Q Did Ford discuss any of these proposed
3 recommendations that they have made in August of '73
4 at the 1975 meeting?

5 A I believe so, yes.

6 Q I would like to now move on to -- you told
7 us a little bit, Dr. Dement, about exposure levels and
8 what the current levels are.

9 Has OSHA done any risk assessment, and you
10 told us a little bit about risk assessment earlier,
11 about what diseases can occur at exposures under the
12 present levels?

13 A As part of the rule making process, OSHA has
14 to again review all of the world's literature and
15 develop what they think is an exposure level
16 appropriate to try to protect workers.

17 So they do a risk assessment, how much
18 exposure is related to disease and try to pull all of
19 the published literature together.

20 Q I would like to show you again -- this is
21 the document we originally started off with from the

1 book the Federal Register June of 1986.

2 A Yes.

3 Q Does the OSHA regulations contain risk
4 assessments in this Table 6?

5 A Yes, yes. What they did was come up with
6 their best estimate of risk for their different
7 diseases, and this is their final risk table for at
8 least cancers associated with asbestos.

9 What they did was they said well, given some
10 exposure levels, .1, .2 to 10 and given that you are
11 exposed to that level on a daily basis, that is an
12 eight-hour day for the average concentration and you
13 work for one year, then they calculated how many --
14 for every hundred thousand of people exposed, how many
15 excess deaths would be attributable to the asbestos
16 exposures, so these are deaths over and above what you
17 see in a normal population that would relate to the
18 fact that you are exposed to asbestos.

19 For example, if you have a 20-year exposure
20 to a level of .1 fibers per cc, for every 100,000
21 workers who began that work, you would expect to see

1 139 excess lung cancer deaths, 73 excess mesothelioma
2 deaths, and 13.9 or 14 gastrointestinal cancer
3 deaths.

4 Again, these are excess of what you would
5 expect in the population.

6 The point is even at the current OSHA
7 standard of .1 fibers per cc, there is still risk.
8 Certainly minimized.

9 Look how fast this goes up if you increased
10 exposure, it goes up, but there is still risk.

11 MR. IGNATOWSKI: Your Honor, if I may have
12 a minute.

13 (Whereupon, pause.)

14 MR. IGNATOWSKI: Doctor, if you could just
15 return to the stand, I have about two or three minutes
16 worth of questions, and I think I am done.

17 (Whereupon, the witness resumed the witness
18 stand.)

19 (Whereupon, the documents were removed from
20 the screen of the overhead projector.)

21 BY MR. IGNATOWSKI:

1 Q Now, Dr. Dement, based upon your review of
2 the literature and your familiarity of the OSHA
3 material and your study in this field, do you have an
4 opinion, again, with reasonable scientific certainty
5 as to whether exposure to friction products that
6 released dust after brake wear can cause and
7 contribute to the disease mesothelioma in humans?

8 A Yes. I think clearly those exposures can
9 cause mesothelioma in humans.

10 Q Now, do you have an opinion, again, with
11 reasonable scientific certainty as to whether beveling
12 and sanding and grinding of friction products
13 containing chrysotile asbestos are capable of causing
14 and contributing to the disease malignant mesothelioma
15 in humans?

16 MR. WILLIAMS: Objection, Your Honor.

17 THE COURT: Overruled.

18 A Well, clearly we have reviewed the data
19 showing the high exposure levels, the one study, 125
20 fibers per cc, those are very significant exposures
21 and, yes, those can substantially increase the risk of

1 disease.

2 Q Okay. Now, are you charging -- what are
3 your fees for appearing here today, Dr. Dement?

4 A Well, I personally don't submit a bill. I
5 am a salaried employee, and I am part of our division,
6 and I will go back and submit a bill or Duke will
7 submit a bill, and they charge 325 an hour.

8 Q Thank you very much, Doctor.

9 MR. IGNATOWSKI: Your Honor, I have no
10 further questions.

11 THE COURT: Mr. McGowan, cross-examine,
12 sir.

13 CROSS-EXAMINATION

14 BY MR. MCGOWAN:

15 Q Doctor, this is not the first time you have
16 been in a Baltimore courtroom?

17 A No, sir.

18 Q You have testified numerous times for the
19 Angelos law firm?

20 A Yes.

21 Q You charge the same amount for each time or

1 your university charges the same amount?

2 A The university charges, yes.

3 Q Doctor, you talked about early on a 1986 --
4 was it an OSHA document that talked about asbestos
5 being toxic? Was that OSHA?

6 Do you remember the first thing you talked
7 about this morning?

8 A That was the OSHA document.

9 Q Doctor, am I right that asbestos wasn't
10 always thought to be toxic?

11 A Well, it depends on which document you want
12 to look at.

13 Q All right.

14 MR. McGOWAN: Your Honor, can we approach
15 and use the stand?

16 THE COURT: Sure. We?

17 MR. McGOWAN: The doctor and I. You can
18 stay there, but the doctor and I.

19 MR. WILLIAMS: I was going to go with him,
20 Your Honor.

21 (Whereupon, the witness left the witness

1 stand.)

2 (Whereupon, the documents were published to
3 the jury via the overhead projector.)

4 THE COURT: Would you like someone to help
5 you there?

6 MR. MCGOWAN: Yes. Is Mr. Cantor in the
7 room?

8 (Whereupon, laughter ensued.)

9 BY MR. MCGOWAN:

10 Q Now, Doctor, the jury has heard the name Dr.
11 Gerrit Schepers. I believe Mr. Ignatowski talked
12 about him in his opening statement to the jury.

13 They saw some evidence, some exhibits from
14 Dr. Schepers, and I believe the plaintiffs are going
15 to call him as a witness in this case.

16 MR. IGNATOWSKI: Objection.

17 THE COURT: To the last part?

18 MR. IGNATOWSKI: Yes, sir.

19 THE COURT: I will strike the last part.
20 That is not relevant.

21 MR. MCGOWAN: All right.

1 BY MR. MCGOWAN:

2 Q Doctor, through your study of asbestos, you
3 have reviewed a lot of literature, haven't you?

4 A Yes, sir, I have.

5 Q And you have seen this article before,
6 haven't you? Well, not that way, but this way.

7 Your Honor, may I borrow the --

8 THE COURT: The doctor has mine, and you can
9 keep it. There it is. He has mine, and I don't know
10 whether Mr. Ignatowski's low tech model is working.

11 MR. IGNATOWSKI: I do, but I don't know if I
12 want to let Mr. McGowan use it.

13 THE COURT: That is one less piece of candy
14 you get out of the bucket, Mr. Ignatowski.

15 (Whereupon, laughter ensued.)

16 BY MR. MCGOWAN:

17 Q You have seen this article before, haven't
18 you, entitled, Asbestosis?

19 A Yes, I have seen this article.

20 Q It is report of the section on Nature and
21 Prevalence Committee on Occupational Diseases of the

1 Chest, American College of Chest Physicians.

2 Just take a minute and tell the jury who is
3 the American College of Chest Physicians.

4 A It is another organization of chest
5 physicians similar to the ACGIH. It is not a
6 regulatory body, just a professional organization.

7 Q They are made up of doctors whose primary
8 practice is dealing with diseases of the lung; is that
9 correct?

10 A Yes.

11 Q Like asbestosis? Correct?

12 A Yes.

13 Q Mesothelioma?

14 A Probably initially, but that would be
15 referred to an oncologist after that. They may see a
16 patient and then be referred on.

17 Q You are aware this article is from like
18 1964; is that correct?

19 A I think that is correct, yes.

20 Q This was published for the whole world to
21 see, wasn't it?

1 A Yes.

2 Q And, Doctor, they addressed this issue of
3 whether or not back then, because I don't think anyone
4 could argue with you now that asbestos is toxic, that
5 would be ridiculous now to say it is not, isn't it?

6 You agree with me. Right?

7 A Well, I would agree with you now, and I
8 would agree that back then the interpretation of
9 toxic.

10 Q All right. By the way, were these doctors
11 involved with industry, by any chance?

12 A I don't know exactly who is on the
13 committee. Some of them may have been, some of them
14 may have not.

15 Q Anyone from Owens-Corning write this
16 document?

17 A Not to my knowledge.

18 MR. MCGOWAN: Judge, I am having a problem
19 with this stand here. Just give me a minute.

20 Can I borrow this?

21 MR. IGNATOWSKI: Absolutely.

1 This is page 108.

2 Page 110 they are talking about asbestosis,
3 aren't they?

4 A Yes, they are.

5 Q So two pages later after they say it is not
6 toxic, they are talking about the diseases it can
7 cause and one of them is asbestosis, isn't it?

8 A Clearly they talk about diseases, and they
9 limit their interpretation of toxic to systemic
10 toxicity.

11 Q They actually talk about how you can prevent
12 asbestosis in 1964, don't they?

13 A Yes.

14 Q They say asbestosis can only be prevented by
15 avoiding prolonged inhalation of high concentrations
16 of asbestos particles.

17 Because back in '64 wasn't it thought that
18 the way you get asbestosis is breathing an awful lot
19 of asbestos over a long period of time?

20 Is that what they are saying there, or are
21 they saying something different?

1 A Well, clearly you get more asbestosis if you
2 breathe high concentrations over a long period of
3 time.

4 They didn't -- they didn't establish a
5 threshold by that statement. But clearly you get more
6 disease the longer exposed the higher concentration.

7 Q Doesn't that say prevention?

8 A Yes.

9 Q Do you think it was their thinking the way
10 to prevent it is to keep the levels of dust down?

11 A Of course.

12 Q Now, Doctor, you mentioned something earlier
13 on, this thing called the ACGIH. It is the American
14 Conference of Governmental Industrial Hygienists.

15 Was anyone from Owens-Corning on that
16 committee?

17 A I don't believe so.

18 Q Because industry could not be in that
19 organization, could they?

20 A Well, they couldn't be voting members. The
21 threshold limit value committee, the TLV committee,

1 actually had industrial consultants that served on the
2 committee, but they didn't vote.

3 Q All right. In fact, that was made up of
4 people who were in government; is that correct?

5 That is why it is called Conference of
6 Government --

7 A Partially government. Government and
8 academia. Fair number were from academia.

9 Q You talk about in 1946 they came out with
10 this thing called threshold limit values?

11 A Yes.

12 Q And in 1946 the threshold limit value for
13 asbestos was five million particles per cubic foot;
14 isn't that right?

15 A That is correct.

16 Q Cubic foot is about this big?

17 A That is correct.

18 Q All right. What they said is that you could
19 be exposed to that level over an eight-hour working
20 period, and it was thought to be a safe level.

21 Did they say that?

1 A Well, it is their value and then they go on
2 and say it is not a fine line between safe and unsafe
3 conditions. It is a value based on review of
4 available information.

5 MR. McGOWAN: Boy, does anybody have a piece
6 of gum?

7 (Whereupon, laughter ensued.)

8 THE COURT: We have got some hidden bubble
9 gum here. Do you want to chew some?

10 MR. McGOWAN: Maybe after lunch.

11 (Whereupon, laughter ensued.)

12 BY MR. McGOWAN:

13 Q You are familiar with this article, aren't
14 you, Doctor?

15 A Yes.

16 Q This is from the -- boy, it is so hard to
17 read, but 1953 adopted at the meeting of the American
18 Conference of Governmental Industrial Hygienists, Los
19 Angeles, April 1953.

20 Now, 1953 you were just a little kid,
21 right?

1 A Yes.

2 Q But you later became -- you later became --
3 you were the chair of this organization?

4 A Yes.

5 Q That is a pretty big deal, right?

6 A Seemed like graduating from college again.
7 It is four years of nonpaid work.

8 Q All right. Now, people got together and
9 they thought or well, they knew that there was a lot
10 of things in a lot of workplaces that can cause
11 problems; isn't that right?

12 A Yes, it is.

13 Q Besides asbestos?

14 A Yes.

15 Q And they go on to list all of the
16 substances.

17 In fact, I can't even pronounce half of
18 them, but they have carbon monoxide and all these type
19 of things; is that correct?

20 A Yes.

21 Q And they thought these things are around and

1 a lot of times you just can't prevent it, but what we
2 can do is we can limit the amount of exposure; is that
3 correct, to all of these things?

4 A Yes. Again, they were trying to give
5 guidance in terms of exposure. Not fine lines, but at
6 least guidelines.

7 Q Let's read what they had to say.

8 These values are based on best available
9 information from industrial experience, from
10 experimental studies and when possible, from a
11 combination of two.

12 Am I correct and correct me if I am wrong,
13 what they are saying is back in 1953, based upon
14 everything they have in 1953, not 1996, this is what
15 we think today; is that correct?

16 A Yes.

17 Q This is what is known as state of the art;
18 is that right?

19 A Yes.

20 Q That is why you are here today to testify,
21 that is one of the reasons, right?

1 A That is one area.

2 Q It goes on to say they are not fixed values,
3 but are reviewed annually by the committee on the
4 threshold limit values for changes, revisions or
5 additions as further information becomes available.

6 Threshold limit values should be used as
7 guides in the control of health hazards and should not
8 be regarded as a fine line between safe and dangerous
9 conditions.

10 Let me stop there.

11 Now, that is what you have been saying all
12 along, isn't it?

13 A Yes.

14 Q But then it goes on to say, they represent
15 conditions only within which it is felt that workers
16 may be repeatedly exposed day after day without their
17 health being adversely affected.

18 So what they are saying in the next sentence
19 is based upon what we know in 1953, they can be
20 exposed to these levels, and we feel in '53 that they
21 won't get sick.

1 Isn't that what they are saying?

2 A Yes. And, again, at that time period they
3 were concerned -- the threshold limit value was based
4 on asbestosis, not cancer.

5 Q We now know in 1996 that with all of their
6 good intentions that they were wrong, weren't they?

7 A Yes. Their guidelines, even though they
8 didn't recommend them as fine lines between safe and
9 unsafe conditions, we know that that value was too
10 high.

11 Q Too high.

12 THE COURT: If you are going to change the
13 overhead, let's take our lunch break at this time
14 because the jurors have to go get paid, and then we
15 are going to resume at 1:30.

16 (Whereupon, the documents were removed from
17 the screen of the overhead projector.)

18 (Whereupon, jury dismissed -- 12:30 p.m.)

19 THE COURT: Counsel, if you will be back in
20 your seats at 1:25, we will resume at 1:30.

21 MR. SHELLENBERGER: Yes, sir.

1 THE COURT: Have a good lunch, everyone.

2 (Whereupon, a luncheon recess was taken --

3 12:30 p.m.)

4 (Whereupon, afternoon session -- 1:30 p.m.)

5 (Whereupon, in open court.)

6 THE COURT: Let's bring the jury in,
7 please, and continue with this cross-examination.

8 (Whereupon, discussion off the record.)

9 (Whereupon, jury present -- 1:32 p.m.)

10 (Whereupon, witness present.)

11 THE COURT: Please be seated, ladies and
12 gentlemen.

13 Good afternoon.

14 THE JURY: Good afternoon.

15 THE COURT: We will continue with Mr.
16 McGowan's cross-examination.

17 MR. MCGOWAN: Thank you.

18 Good afternoon, everyone.

19 Your Honor, may we go back up here and
20 resume our positions?

21 THE COURT: Please, please. If you need a

1 pencil, ladies and gentlemen, raise your hand and Jill
2 will give you a sharp one.

3 (Whereupon, the witness left the witness
4 stand.)

5 (Whereupon, the documents were published to
6 the jury via the overhead projector.)

7 MR. MCGOWAN: May I, Your Honor?

8 THE COURT: Please, Mr. McGowan.

9 CROSS-EXAMINATION (CONTINUED)

10 BY MR. MCGOWAN:

11 Q Doctor, I forgot something in my rush to get
12 to lunch. I just want to go back a second.

13 Going back to this article again, the
14 asbestosis article, you are familiar, Doctor, that it
15 was written by a number of people?

16 A Yes.

17 Q And right here is all of the authors of that
18 paper?

19 A Yes.

20 Q This is back in, I guess, '64. These people
21 were considered experts in the field at the time,

1 weren't they?

2 A I know many of them, yes, they were.

3 Q One of them here, the jury has already heard
4 of and they have got some exhibits from him, was Dr.
5 Gerrit Schepers.

6 You are aware of Dr. Schepers, aren't you?

7 A Yes.

8 Q Doctor, are you aware that in the 1965
9 symposium in New York he stood before the whole
10 audience, which was comprised of whom, Doctor?

11 A In '64, it was the International Conference
12 of Researchers.

13 Q Was there one in '65?

14 A The '64 conference.

15 Q Are you aware that he stood before the
16 entire audience and he said at that time that he had
17 doubts that asbestos could cause lung cancer?

18 A I am familiar with his quote, yes.

19 Q So he said prior -- back in the '50s he
20 thought it and '64 he says well, I don't know
21 anymore.

1 That is what he said; is that right?

2 A Yes, he is one person.

3 Q He said, if it does, it only does it in very
4 high doses; isn't that right?

5 A I think he said that, yes.

6 Q Doctor, that is a lot of thinking today,
7 isn't it; with respect to lung cancer you need a great
8 amount of exposure?

9 A I don't agree with that at all.

10 Q You don't agree with that at all?

11 Does someone have the 1992 Victor Roggli
12 textbook handy?

13 I will get that at the break.

14 Doctor, going back to the threshold limit
15 values, and before lunch I had this up there and this
16 is 1953.

17 We are talking about how they list all of
18 the substances that could harm people at work; isn't
19 that right?

20 A Yes.

21 Q They actually had a category, didn't they,

1 Doctor, for what was known as toxic dusts, didn't
2 they?

3 A Yes. Fumes and mists. There was a general
4 category.

5 Q Now, asbestos causes problems because of the
6 dust that gets in the air and eventually can get into
7 our lungs?

8 A That is correct.

9 Q So they actually had toxic dusts; isn't that
10 what that says right there?

11 A Yes, these are materials that are thought to
12 be systemic toxins.

13 Q All right. They list a whole bunch of
14 materials?

15 A Right.

16 Q And it goes on to the next page, and it ends
17 up over here.

18 Now, Doctor, am I correct that the ACGIH
19 back in the '50s didn't list asbestos under toxic
20 dusts?

21 A It is just a category. It still lists them,

1 just under mineral dust. It is a mineral.

2 Q It is a mineral and it has asbestos, right?

3 A Yes.

4 Q It has five million particles per cubic
5 foot?

6 A That is correct.

7 Q This is the same threshold limit value that
8 the ACGIH had in 1960s; isn't that right?

9 A That is correct.

10 Q I have them here, but if I were to put them
11 up, you would agree with me that it said the same
12 thing in 1960?

13 A It didn't change until '68.

14 Q It said asbestos dust, five million
15 particles; isn't that right?

16 A It is still categorized as a mineral dust.

17 Q Now, the ACGIH, they didn't put asbestos
18 under toxic dusts.

19 They weren't trying to mislead anyone, were
20 they?

21 A No, again, they were trying to categorize by

1 systemic toxicity.

2 Hygienists and, for that matter, a lot of
3 pulmonologists consider toxicity meaning capability of
4 doing harm. It doesn't mean systemically.

5 Q The bottom line, when they had the chance to
6 put it under toxic dusts, they chose not to?

7 A Even though we agree it is toxic, it is
8 still a mineral dust because it is a mineral.

9 Q I want to jump around a little so I can keep
10 you up here instead of keeping you from going back and
11 forth, if you don't mind.

12 Doctor, this is 1966 I want to move ahead
13 to.

14 You said in 1964 there was this worldwide
15 symposium; is that correct?

16 A That is correct.

17 Q Tell the jury who was there, what type of
18 people. Not every single person.

19 A Oh, I couldn't do that.

20 It was an international meeting where people
21 from around the world were invited and requested to

1 . come and present and discuss the issue of asbestos
2 held in New York City.

3 Q They had some of the best doctors from
4 around the world there; is that correct?

5 A Yes, very formidable group, yes.

6 Q They had some industry people there; is that
7 correct?

8 A Yes.

9 Q They had representatives of labor, didn't
10 they?

11 A A few.

12 Q All right. Now, we have heard a lot about
13 Dr. Selikoff for the last couple of weeks.

14 He published the results of that in 1965,
15 didn't he?

16 A That is correct.

17 Q And I believe it was December 31st, 1965?

18 A I think that is correct, yes.

19 Q It got on the streets in 1966, early 1966?

20 A For all practical purposes, yes.

21 Q All right. In fact, he did more than that

1 in 1966.

2 He was writing about the dangers of asbestos
3 in newspapers, wasn't he?

4 A He was trying to get the information out,
5 yes.

6 Q The plaintiffs, I believe, are going to
7 offer this into evidence, and I don't know if they
8 have yet.

9 It is Plaintiffs' Exhibit 344. But this is
10 what he was doing. This is the Wall Street Journal
11 and it is March 6, 1966 article.

12 You have read this before, haven't you?

13 A Yes.

14 Q You have seen it?

15 A Yes, I have.

16 Q Now, this is after he was starting to do a
17 lot of his studies, and he was reporting the findings
18 of those studies, wasn't he?

19 A He was starting to report some of his
20 earlier work, yes.

21 Q The people he was studying were the

1 insulators, the people who were applying asbestos
2 insulation?

3 A At that time, yes.

4 Q At that time.

5 Doctor, even after the preliminary results
6 of the study, didn't he even say that asbestos was a
7 marvelous material back in 1966?

8 A I mean, yes, it had many applications.

9 It had found its way into thousands of
10 products, yes.

11 Q You don't agree with that today, that it is
12 a marvelous product?

13 A Depends on how you want to define it. It
14 certainly had a lot of applications.

15 From an industrial use, yes, it had a lot of
16 uses. From a health perspective, no, it is not a
17 marvelous product.

18 Q If you are walking down the street, if
19 someone said Dr. Dement, is asbestos a good product or
20 marvelous product, you would have to say no?

21 A You would have to ask me --

1 Q In 1966 he is talking about asbestos being a
2 marvelous product, isn't he here?

3 MR. IGNATOWSKI: Objection, Your Honor.

4 THE COURT: Overruled.

5 Q Do you want me to read it?

6 Dr. Selikoff declares that asbestos was a
7 marvelous material, but we have to learn how to use it
8 and live with it.

9 That is not true today, we shouldn't live
10 with it or use it?

11 A I think you can. It is still used to some
12 extent today.

13 Q Doctor, the point I am making is that
14 medicine and science and our knowledge of asbestos and
15 what it can do has changed over time, hasn't it?

16 A Certainly has, yes.

17 Q You spoke about a study on direct
18 examination called the Fleischer-Drinker report.

19 A Yes.

20 Q Will you tell the ladies and gentlemen of
21 the jury who Fleischer was and who Drinker was?

1 A Fleischer is relatively unknown.

2 Q Okay. Who is Philip Drinker?

3 A Philip Drinker was a professor of industrial
4 hygiene at Harvard School of Public Health, a well-
5 noted industrial hygienist who contributed to
6 occupational health.

7 Q Back in 1940s he was considered probably one
8 of the worldwide experts on lung disease and things
9 like that?

10 A He is not a pulmonary physician, he is an
11 industrial hygienist basically. And in the areas of
12 industrial hygiene and dust control is where he is
13 most noted.

14 Q Wasn't he the same guy who invented the iron
15 lung?

16 A It is a mechanic device. He is not a
17 physician.

18 Q He was recognized in those circles as an
19 authority, he was highly respected?

20 A He clearly was.

21 Q You spoke about it on direct examination,

1 but I got the actual study here that he spoke about.

2 A All right.

3 MR. McGOWAN: Excuse me, Your Honor. May I
4 ask, am I blocking anyone's way here?

5 BY MR. McGOWAN:

6 Q This is the report, isn't it?

7 A Yes, this is the report.

8 Q Health survey of pipecovering operations in
9 constructing Navy vessels and there is Fleischer and
10 there is Drinker, so it is commonly referred to as the
11 Fleischer-Drinker report, right?

12 A It is, yes.

13 Q They kind of forgot about the guys in the
14 middle here?

15 A Yes.

16 Q Tell the jury what he was actually trying to
17 do with his study that he did back in the '40s.

18 A Well, I regard this largely as an industrial
19 hygiene study.

20 He went into the Navy shipyards, both Navy
21 operated and contract yards, and tried to measure dust

1 exposures.

2 They also did what we call a cross-sectional
3 health survey.

4 He went in and did chest X-rays on people
5 who were there at the time, so people who had already
6 left weren't X-rayed.

7 Q Okay. Nonetheless, he was trying to see and
8 determine whether or not, as it says in the first
9 paragraph, whether or not these people, these
10 pipecoverers, asbestos pipecoverers were getting sick
11 in the Navy yard.

12 Is that what he was saying?

13 A One of the objectives, yes.

14 Q He says in the first paragraph, talks about
15 that it was a well-known industrial hazard.

16 Asbestosis was well-known at that time in
17 '46, wasn't it?

18 A Yes, it was.

19 Q That is not just by industry, but it was by
20 labor, correct?

21 MR. IGNATOWSKI: Objection.

1 THE COURT: Overruled.

2 A I am not following your question.

3 Q Let's read the first paragraph.

4 An industrial health inspection of an
5 important U.S. Navy contract yard indicated that
6 dustiness from miscellaneous pipecovering operations
7 was considered -- was considerable and that a few of
8 the employees had what appeared to be asbestosis.

9 This is a well-known industrial disease
10 caused by only one thing, prolonged breathing of
11 asbestos dust.

12 When it says well-known, that was well-known
13 by the scientific community, wasn't it, at that time?

14 A It was well-known based on the published
15 information.

16 Q It was well-known by government at that
17 time, wasn't it?

18 MR. IGNATOWSKI: Objection.

19 THE COURT: Overruled, if he knows.

20 Q Do you know?

21 A Certainly the Public Health Service had

1 knowledge of asbestosis.

2 Q And it was well-known by labor, wasn't it?

3 A I couldn't tell you that.

4 Q Doctor, you are telling the jury that you
5 did a review of the literature going back to 1920s and
6 '30s, aren't you?

7 A Right.

8 Q You talked about one study this morning,
9 Merewether?

10 A Right.

11 Q That was 1930?

12 A That is correct.

13 Q Are you aware that in 1930, that article was
14 published in the Asbestos Trade Workers magazine?

15 A No, I am not.

16 Q Did you ever testify to that before?

17 A I haven't reviewed that article in that
18 journal.

19 Q But are you aware that that same publication
20 was published in something called Asbestos?

21 Do you know what Asbestos is, the magazine?

1 A That is not a worker's journal. Asbestos
2 magazine is a trade journal. It is not for workers.
3 It is for manufacturers largely.

4 Q Are you aware it was published in
5 Philadelphia in the 1930s and went out to asbestos
6 workers?

7 MR. IGNATOWSKI: Objection.

8 THE COURT: He has answered the question.

9 MR. MCGOWAN: Okay. I will move on.

10 BY MR. MCGOWAN:

11 Q Was it well-known to government?

12 A Yes, we, the government, knew about it.

13 Q That is the first page and it goes on for
14 about 16 pages, doesn't it?

15 A I will take your word for 16 pages. It is a
16 long article.

17 Q I am going to go to the last page.

18 After he did this study, he published this
19 study, didn't he, for the whole world to see?

20 A Yes.

21 Q He came up with some conclusions, didn't

1 he?

2 A Yes.

3 Q Let's go over the conclusions, because you
4 didn't mention these during your direct examination,
5 and I want to take a minute doing it.

6 You can comment if you want on each one of
7 them as I go along.

8 The character of the asbestos pipecovering
9 industry on board naval vessels is such that
10 conclusions drawn from other asbestos industries such
11 as textiles cannot be applied.

12 Now, explain what that means to the jury.

13 A Well, pipecovering and the work with pipe
14 insulation materials involves operations such as
15 cutting, applying that are sporadic, so the dust
16 concentrations would peak out during cutting and
17 sawing and place the materials in place and they will
18 fall.

19 So you have a very cyclic characterization
20 of exposure. You have high peaks followed by lower
21 exposures.

1 Textile operations are more continuous,
2 continuous process of producing materials. Certainly
3 are variations, but more steady than pipecovering.

4 Q Does that have something to do with dose
5 response?

6 A It can, but mainly the characteristics of
7 the exposure, not so much the dose response at this
8 point.

9 Q The more you are exposed, the greater the
10 likelihood of disease, the less you are exposed, the
11 least likely you are to develop disease?

12 A That is correct on a cumulative exposure
13 basis. This talks about cyclical nature of work.

14 Q What he is saying is that studies from the
15 textile industry shouldn't be applied to
16 pipecoverers?

17 A Well, he raises that as a possibility.

18 Q I am sorry, go ahead.

19 A Back in his article he talks about the basis
20 for that conclusion and it is largely characteristic
21 of the work.

1 Q This morning you were talking about diseases
2 back in the '20s and '30s.

3 They were studies based upon the asbestos
4 textile industries, weren't they?

5 A The Dreessen study was an asbestos textile
6 industry, yes.

7 Q In fact, right down here, he cites Dreessen,
8 doesn't he?

9 A Yes.

10 Q He knew about Dreessen and he knew it was a
11 textile factory, correct?

12 A He did.

13 Q He says don't draw the same conclusions.

14 Number 2. The operations of band saw
15 cutting, grinding, cement mixing and installation on
16 board ship should be equipped with exhaust ventilation
17 to keep the total dust concentration low.

18 That is going back to what you said this
19 morning, dusty operations, ventilate; isn't that
20 right?

21 A That is correct.

1 Q He said that in 1946.

2 Number 3. The incidence of asbestosis among
3 pipecoverers in the shipyards studied was low, 0.29
4 percent or 3 cases out of 1,074.

5 In view of the nature of shipyard
6 pipecovering work, this low incidence is not
7 surprising.

8 Am I correct, what he is saying here, he
9 didn't find much based upon what he studied at that
10 time?

11 A Yes. In the direct examination we talked
12 about the fact he had very few workers with long-term
13 work.

14 Q We will get to that in a minute.

15 Number 4. Since each of the three cases of
16 asbestosis had worked at asbestos pipecovering in
17 shipyards for more than 20 years, it may be concluded
18 that such pipecovering is not a dangerous occupation.

19 Is that what he concluded, Doctor?

20 A Yes, that is his statement. I guess that
21 depends on what you call dangerous.

1 Q 1996 we can no longer say that, can we?

2 A Anybody reviewing that article back in that
3 time period recognized the lack of long-term workers.

4 Q All right. Let's talk about that.

5 This was published in 1946?

6 A That is correct.

7 Q Was there any published literature in the
8 1940s that criticized him?

9 A Not that I found. This article, you don't
10 find this referenced again until the '60s.

11 It is not an article that anybody ever
12 referenced.

13 Q Well, you can take your seat, Doctor.

14 (Whereupon, the witness resumed the witness
15 stand.)

16 (Whereupon, the documents were removed from
17 the screen of the overhead projector.)

18 BY MR. MCGOWAN:

19 Q I want to get back to that again, Doctor.

20 1940s there was nothing in the world
21 literature that you found that actually criticized

1 that conclusion that asbestos pipecovering was a safe
2 occupation; am I right?

3 A There is really no other publications and,
4 again, that is not an article that you see referenced
5 in other publications until really Dr. Selikoff.

6 Q All right. So in the 1950s no one came out
7 in the world literature and said hey, this Fleischer-
8 Drinker report is all wrong?

9 No one did that in the '50s, did they?

10 A There is no published information. I think
11 the readers of the article can read the article itself
12 and realize the strengths. And there are some
13 strengths and some limitations.

14 Q It wasn't until Dr. Selikoff in the mid '60s
15 said wait a second, asbestos pipecovering may be
16 dangerous; isn't that right?

17 A Dr. Selikoff certainly studied pipecoverers
18 in the '60s.

19 That is the first time it was really studied
20 in detail after '46.

21 Q He said this five million particles is

1 probably too high, didn't he?

2 A Well, actually he surmised that it could be
3 the case, but his earlier studies had no exposure
4 measurements.

5 He is just looking at the occurrence of
6 disease and didn't have data on exposure levels.

7 Q Wasn't he the man in 1968 that said we
8 should lower from 5 million to 2 million particles?

9 A Well, he was one of the voices, but actually
10 a study by Dr. Cooper of insulation workers formed at
11 least part of the basis of that.

12 Q Okay. Now, Doctor, I want to move back in
13 time.

14 You talked to the jury this morning about
15 this publication safety in 1913?

16 A Yes.

17 Q Do you have a copy of the book with you
18 today?

19 A No, I don't.

20 Q I did have a copy of it, but you read the
21 book; am I correct?

1 A Yes.

2 Q You know that I read the book.

3 Am I correct that nowhere in that entire
4 book does the word asbestos appear?

5 A That is correct. It was published in 1913
6 and it is a book on general principles of industrial
7 hygiene control.

8 The first cases of asbestosis hadn't
9 occurred at the time the book came out.

10 Q You didn't mean to suggest to the jury this
11 morning that, in 1913, these things called
12 substitution and respiratory protection was in
13 reference to asbestos?

14 A No, they were only certain examples. Places
15 they only used examples of specific materials.

16 It was simply a book on methods of control
17 in industrial hygiene guide and not necessary to any
18 one material.

19 Q That is the same book that said we shouldn't
20 give people with big machines beer --

21 MR. IGNATOWSKI: Objection.

1 A I think that was one area. Some companies
2 did.

3 Q And people lost their fingers and hands and
4 stopped the beer breaks, didn't they?

5 MR. IGNATOWSKI: Objection.

6 THE COURT: I don't know what relevance that
7 has, but I enjoyed it.

8 BY MR. MCGOWAN:

9 Q Doctor, I am trying to illustrate our
10 understanding of industry and hygiene changed over
11 time; isn't that right?

12 What is considered safe today or what was
13 considered safe back in the '20s and '30s isn't
14 necessarily considered safe today; isn't that
15 correct?

16 A They had, certainly, knowledge of a level of
17 hazard, the dose response. We had information that is
18 evolving and that book has principles of control, it
19 had nothing to do with safe levels.

20 Q The point I am making, we wouldn't give beer
21 to people using heavy equipment today, would we?

1 A Probably not intentionally.

2 MR. IGNATOWSKI: Objection.

3 Q All right.

4 I want to move on to the Dr. Merewether
5 study back in 1930, and, again, we all know he is
6 dealing with the asbestos factory.

7 Am I right, Doctor, after that was published
8 for the whole world to see, that asbestos wasn't
9 banned?

10 A No, it is still not banned.

11 Q Right.

12 Am I correct that, as a result of that act,
13 England passed what is known as the Factory and
14 Workshop Act?

15 A Actually, I think that preceded Merewether's
16 publication.

17 Q Basically what that said is when you are
18 working with asbestos in dusty areas, you have to keep
19 the dust levels down?

20 A Yes, they passed a law that tried to control
21 dust within factories.

1 Q Doctor, you said something again to me this
2 morning about the threshold limits not being directed
3 at cancer.

4 What did you mean by that?

5 A Well, the original threshold limit value in
6 1946 and actually through 1968 was based on this
7 Dreessen study, this cross-sectional study of the
8 textile industry.

9 The outcome of that study was chest X-ray
10 evidence of asbestosis, not cancer.

11 Q But, Doctor, am I correct that the thinking
12 at that time all the way up into the '60s was, if you
13 prevent asbestosis, you present an increased risk of
14 lung cancer?

15 A I don't think that is correct at all.

16 Q Let's go back, Doctor.

17 You are telling the jury this morning that
18 in 1935 there was reported cases of lung cancer among
19 asbestos workers?

20 A There were case reports. There was no
21 available information on the dose response for

1 cancer. That is, how much exposure would have related
2 to so much risk.

3 Q All right. Doctor, this kind of information
4 was available for everyone to see; isn't that
5 correct?

6 A The data were published, yes.

7 Q This American Conference of Governmental
8 Industrial Hygienists was made up of physicians and
9 industrial hygienists like yourself; am I correct?

10 A Yes.

11 Q They had this information available to them,
12 am I correct?

13 A That is correct.

14 Q Are you trying to tell the jury that they
15 were concerned about people getting asbestosis, but
16 they weren't concerned about people getting lung
17 cancer?

18 A I didn't say that. The issue was this:
19 The committee reviewed the information
20 available, and the available information on dose
21 response only dealt with asbestosis.

1 Certainly lung cancer has a dose response.

2 Certainly, if you reduce exposure, you
3 reduce the risk. But the fact of the matter is that
4 the risk estimates weren't based on lung cancer.

5 Q So you are telling the jury, then, they just
6 said to heck with cancer, we will only protect people
7 against asbestosis?

8 A That is not what I said.

9 I said the available information of dose
10 response, that is what they considered it was for
11 asbestosis.

12 Q Doctor, the early cases you reported of lung
13 cancer were only people who had asbestosis, the
14 disease asbestosis first; is that correct?

15 A Yes, the case reports were people who had an
16 autopsy, and when they did an autopsy they found
17 occurrence of lung cancer also in the same lungs. And
18 that is how they identified cases that were exposed.

19 Q Doctor, isn't it true that the risk of lung
20 cancer in asbestos workers is very low if you don't
21 smoke?

1 That is thought today; isn't that correct?

2 MR. IGNATOWSKI: Objection.

3 THE COURT: Overruled.

4 A Depends what you call low. Certainly there
5 is an increased risk if you smoke.

6 If you are exposed to asbestos, they act
7 together to greatly multiply the risk, and it reduces
8 the risk for those who don't smoke.

9 Q You have read the work of Dr. Selikoff,
10 haven't you?

11 A Yes.

12 Q Are you aware that, even back as far as
13 1967, he addressed the entire Asbestos Workers union
14 hierarchy, didn't he?

15 MR. IGNATOWSKI: Objection as to --

16 A He addressed members of the union.

17 THE COURT: Overruled.

18 Q At Chicago their annual convention?

19 A That is correct.

20 Q There were representatives of the Asbestos
21 Workers union from all over the country?

1 A That is correct.

2 That is how he did his study, worked with
3 the union to do his study.

4 Q There was no surprise to labor that asbestos
5 can cause this disease?

6 MR. IGNATOWSKI: Objection.

7 THE COURT: Sustained.

8 Q Are you aware in 1967 he stood before the
9 union leadership and said, if you quit smoking
10 cigarettes, you can wipe lung cancer out in your
11 entire trade?

12 MR. IGNATOWSKI: Objection.

13 THE COURT: Overruled.

14 A I forgot the exact words.

15 I agree with the statement that Dr. Selikoff
16 made that -- with regard to the risk of an asbestos
17 worker if they smoke. And he certainly was right in
18 trying to encourage asbestos workers to not smoke.

19 MR. MCGOWAN: May I approach, Your Honor,
20 the witness?

21 May I approach?

1 THE COURT: You may.

2 BY MR. MCGOWAN:

3 Q Doctor, you have seen this exhibit before,
4 haven't you?

5 (Whereupon, document tendered to witness.)

6 A Yes.

7 Q Would you read the title to the jury?

8 A It is the report of the proceedings of the
9 21st convention of the International Association of
10 Heat and Frost Insulators and Asbestos Workers.

11 Q All right. Doctor, this was a transcribed,
12 just like we are doing over here, speech of Dr.
13 Selikoff, wasn't it?

14 A Yes.

15 Q Would you read the portion that I have
16 outlined, please, to the jury.

17 MR. IGNATOWSKI: Objection.

18 THE COURT: Overruled.

19 A Just sort of out of context, but I will read
20 it.

21 It says, but this information -- and I don't

1 know what this is -- is of tremendous importance. It
2 is almost like saying if you work in a diamond
3 factory, you shouldn't smoke.

4 Cancer of the lung, people wiped out in your
5 trade and people wouldn't smoke cigarettes, period.

6 Q But he went on further in later years,
7 didn't he, talking about the risk of lung cancer among
8 asbestos workers, didn't he?

9 A He studied it in quite more detail.

10 Q In fact, in 1968 he published an article in
11 JAMA, which is the Journal of the American Medical
12 Association?

13 A That is correct.

14 Q Well respected journal?

15 A Yes.

16 Q And didn't he say in 1968 that there is
17 really no increased risk of lung cancer in asbestos
18 workers who don't smoke?

19 A He points that out.

20 He also points out in his study that he had
21 so few workers that didn't smoke, that he didn't have

1 enough statistical data to really address that in
2 great detail.

3 He has a later study that did in '79.

4 Q 1973 he talked about it, didn't he?

5 A Yes.

6 Q Again, he said, if you don't smoke, lung
7 cancer is really uncommon?

8 A That is true, that is very true.

9 Q I am not going to belabor the point, because
10 there is no lung cancer here, but there is medical
11 authorities all over the world who feel if you don't
12 have asbestosis and don't smoke, you will not get lung
13 cancer from asbestos; isn't that right?

14 MR. IGNATOWSKI: Objection.

15 THE COURT: Sustained.

16 MR. McGOWAN: One moment, Your Honor.

17 (Whereupon, pause.)

18 BY MR. McGOWAN:

19 Q You talked about the mesothelioma and you
20 mentioned in 1960 Dr. Wagner found the high incidence
21 of mesothelioma in South Africa; isn't that right?

1 A That is correct.

2 Q Am I correct that he found that in the area
3 where they mined blue asbestos or crocidolite
4 asbestos?

5 A That is correct.

6 Q And am I correct that that is really the
7 first time there was a link between asbestos and
8 mesothelioma?

9 A No. There were literature prior to that
10 time that described that possible association.

11 Most researchers agree that in 1960s is the
12 date the causal relationship was established.

13 Q We heard from Dr. Brody and he basically
14 told us that is when it was discovered; is that the
15 same thing?

16 MR. IGNATOWSKI: Objection.

17 THE COURT: Overruled.

18 A I am not sure what Dr. Brody means by
19 discovered.

20 As an epidemiologist that is what we refer
21 to as having sufficient information that is present

1 that you say this exposure causes this disease rather
2 than just associated with it or seen in workers, but
3 causes it.

4 Q In 1960 there were other areas that mined
5 amosite?

6 A Yes.

7 Q There were areas that mined crocidolite,
8 wasn't there?

9 A Yes.

10 Q He didn't find incidence of mesothelioma,
11 did he?

12 A Not at that time.

13 Q I believe the connection of amosite and
14 mesothelioma occurred in 1972; isn't that right?

15 A The detailed study, the 1964 annals, they
16 talk about ample reference to animal studies being
17 carcinogenic.

18 Q Am I correct, it was 1972 before the
19 causation was proved?

20 A Or a study was made, yes.

21 Q You talked about Dreessen in your direct

1 examination, and that is the 1938 study that he did?

2 A That is correct.

3 Q That was published in the worldwide
4 literature?

5 A That is correct.

6 Q I think it was called Public Health Bulletin
7 241?

8 A I think that is the number, yes.

9 Q Dr. Dreessen basically said if you control
10 the amount of dust in the asbestos factories, people
11 shouldn't get sick; isn't that what he said?

12 A He came up with this five million particle
13 tentative value based on his study.

14 Yes, that was his study, but I think that is
15 an oversimplification of his conclusion.

16 Q Then in 1946 this ACGIH adopted the TLVs
17 based on that, didn't they, Doctor?

18 A Yes, it was the only published information
19 on exposure and response.

20 Q And you told the jury that that did not have
21 the effect of law on it at all, the ACGIH, did it?

1 A No, it is still a recommendation by a
2 voluntary body of people.

3 Q You were aware at that time that states
4 adopted it and made it law, didn't they?

5 A Some states did, even though the ACGIH
6 discouraged their use as regulation, some states
7 adopted them as regulation.

8 Q The State of Maryland in the 1940s adopted
9 that, didn't they, and made it law?

10 A They adopted all of the threshold limit
11 values, as I recall.

12 Q They basically told employers they had to
13 keep the dust levels to a certain level, didn't they?

14 MR. IGNATOWSKI: Objection.

15 THE COURT: Overruled.

16 A It was their law. I can't tell you how they
17 enforced it, but it certainly was adopted.

18 Q The State of New Jersey where Kaylo is made,
19 they adopted it, didn't they?

20 A Yes.

21 Q In fact, you told the jury today you know

1 something about Owens-Corning and Kaylo.

2 You are aware the State of New Jersey would
3 come in and check their plants?

4 A Yes.

5 Q It was too high and they could even fine
6 them if it was too high, couldn't they?

7 A I am not sure about the ability to fine.
8 They could certainly go back and make recommendations
9 for control.

10 Q You are aware that the State of Ohio adopted
11 it and made it law and made it five million particles
12 per cubic foot?

13 A Yes.

14 Q Doctor, Mr. Ignatowski asked you about Kaylo
15 dust studies at the Berlin plant?

16 A Yes.

17 Q You talked about the sawing operation that
18 was 91 million particles per cubic foot of dust; isn't
19 that right?

20 A Yes.

21 Q Are you aware that 85 percent of that dust

1 was not asbestos?

2 A Well, Kaylo is not 100 percent asbestos, but
3 the five million particle standard is for asbestos-
4 containing dust, so it is the right number.

5 Q Can you tell the jury the type of operation
6 going on in that one area of the plant where they got
7 that high level?

8 A As I recall, they were cutting and
9 processing what was called flatware in that area.

10 Q Can you tell the jury, was that just one
11 shift?

12 A I don't know how many shifts the plant
13 operated.

14 Q Are you aware that was a 24-hour operation?

15 A Makes no difference. The samples were
16 collected on one shift.

17 Q Are you aware that they cut 10,000 pieces of
18 that flatware a day?

19 A Yes, I have heard about that operation.

20 It was also done with local exhaust
21 ventilation at the saw, so there was at least some

1 controls in place.

2 Q Do you have any understanding that Mr.
3 Vandergucht was actually in that kind of setting where
4 they were cutting 10,000 pieces of Kaylo a day?

5 A I have not reviewed these people's
6 occupational histories, so I couldn't tell you.

7 Q Are you aware that they did dust studies all
8 over the plant and they were not nearly that high?

9 A No, other values were less. Many of them
10 above five.

11 Q That was total dust, wasn't it?

12 A Just as it should be measured, total dust
13 relative to five million standards.

14 Q Mr. Ignatowski asked you about this Hemeon
15 report.

16 Was that published?

17 A No, that was an industrial hygiene report.

18 Q It was not published, so people wouldn't
19 know about it?

20 A I guess if they were members of the
21 Industrial Hygiene Foundation they would, but

1 otherwise they would not.

2 Q You also talked about some workers'
3 compensation cases against Owens-Corning?

4 A Yes.

5 Q How did you get that information?
6 Was it through the lawyers?

7 A Through the process of discovery. I assume
8 that is where it was found.

9 Q Can you tell the jury when the first
10 worker's compensation claim was filed by someone
11 working at the Kaylo plant?

12 A No.

13 Q Have you ever heard it was 1969?

14 A I don't know the exact date, no.

15 Q There is going to be some reference to some
16 workers' compensation claims filed against Owens-
17 Corning subcontractors in the 1950s.

18 Are you aware of those?

19 A Yes.

20 Q Are you aware that the people that filed
21 those claims had been working with asbestos since the

1 1920s?

2 A I don't know the exact dates. I know they
3 were long-term asbestos workers.

4 Q Are you aware that they worked with products
5 other than Kaylo for years?

6 A I would assume so.

7 Q You didn't mean to suggest that they got
8 workers' compensation claims from Kaylo in the '50s?

9 A I think the question had to do more with the
10 fact that they were secondary use insulators and had
11 the disease.

12 MR. MCGOWAN: Your Honor, I believe that is
13 it.

14 Thank you.

15 THE COURT: Thank you, Mr. McGowan.

16 Mr. Williams.

17 MR. WILLIAMS: Thank you, Your Honor.

18 CROSS-EXAMINATION

19 BY MR. WILLIAMS:

20 Q Good afternoon, Doctor.

21 During your direct examination you spent a

1 fair amount of time going through the Rohl study, and
2 I assume that is Rohl and some other co-authors,
3 correct?

4 A Yes, I think four co-authors.

5 Q Are all of those people from the Mount Sinai
6 complex or the environmental apparatus that is
7 attached to that?

8 A I think at the time the study was done I
9 think they were.

10 Q Okay. I think you indicated that Ford
11 sponsored or assisted in sponsoring that study,
12 correct?

13 A Well, I have no direct knowledge, except
14 there was acknowledgements of that in the front of the
15 paper and in the rear of the paper.

16 Q Okay. Would it be fair to say, though,
17 that, based upon your review of the literature, what
18 that really means is that Ford provided some money to
19 conduct the study?

20 A Well, there were two phases. It looked to
21 me, just based on what is written, they certainly

1 provided some money and they also reviewed the draft
2 of the report.

3 Q Okay. That study was carried out when,
4 Doctor?

5 A '76.

6 Q Okay. And I think you just indicated that
7 there were probably approximately four co-authors
8 along with Dr. Rohl on this study?

9 A That is correct.

10 Q Okay. And were all of those co-authors
11 associates of Dr. Selikoff?

12 A Well, certainly they were within the same
13 laboratory. I would call them associates, yes.

14 Q Now, we have been discussing Dr. Selikoff a
15 fair amount today and with other witnesses, but I am
16 not exactly sure that any of the witnesses had really
17 given a good historical picture of who Dr. Selikoff
18 was.

19 Could you go ahead and do so for the jury?

20 A Dr. Selikoff was a physician who had a lot
21 of interest in worker health, but actually began to be

1 interested in the asbestos issue in the late '50s and
2 early '60s, and he did a lot of studies, especially of
3 insulation trade.

4 He worked closely with that union and did
5 studies of their membership and published that, and he
6 was very instrumental in bringing together the 1964
7 conference.

8 Q Would it be fair to characterize him as a
9 world famous asbestos researcher?

10 A Clearly so.

11 Q Okay. One of the preeminent people in the
12 field?

13 A Yes.

14 Q Okay. Are you aware of exactly when Dr.
15 Selikoff and his associates first started looking at
16 the issue of asbestos exposure in auto mechanics?

17 A When the studies began?

18 Q Yes.

19 A Not entirely. I know that during the 1975
20 meeting he discussed some of their work and prior to
21 that time at least.

1 Q The paper started occurring when,
2 approximately?

3 A The papers on this issue?

4 Q Right. Authored by Dr. Selikoff and his
5 associates.

6 A In about '76.

7 Q So the mid '70s?

8 A Yes, there was an earlier article, actually
9 a shorter version of that paper that appeared in one
10 of the journals before that.

11 This was a detailed publication that we are
12 aware of today.

13 Q Presumably the work started sometime in the
14 early '70s then; would that be about the right ball
15 park?

16 A That is reasonable.

17 In 1969 the Public Health Service had done a
18 little bit of work in that area.

19 Q That was Jeremiah Lynch's work?

20 A Yes.

21 Q Are you aware, Doctor, from your review of

1 the literature for this work or for any other case,
2 that Dr. Selikoff and his associates didn't start
3 looking at the issue of asbestos exposure with
4 automobile mechanics until they were contacted by
5 Ford?

6 A I don't know the circumstances.

7 Q Okay. I think one of the points that Mr.
8 Ignatowski asked you about with regard to the Rohl
9 study was the estimate of the number of people in the
10 auto mechanic field, and I think that that study put
11 it at about 900,000; is that right?

12 A Yes. It was a rough estimate of people who
13 were at least in the industry who had a potential, I
14 guess, for exposure.

15 Q Am I correct that that was an estimate or a
16 best guesstimate as to the number of people currently
17 employed in the automobile mechanics industry?

18 A Yes, it is a number of people currently
19 employed.

20 Q You are aware, are you not, of Dr.
21 Nicholson's risk assessment work?

1 A Some of it, yes.

2 Q Okay. Are you aware that he actually
3 attempted in the course of that work to estimate the
4 approximate number of people who might have been
5 involved in auto mechanic work between 1940 and 1979?

6 A I am familiar with some of his publications,
7 yes.

8 Q Okay. I think he estimated it at about 6
9 and a half million people between those years.

10 Does that sound about right?

11 A I don't remember the exact numbers, but I
12 think it was about that.

13 Q Okay. Now, Mr. Ignatowski had you go
14 through the results of Dr. Rohl's study, but you have
15 also conducted this kind of air sampling or monitoring
16 yourself, haven't you?

17 A Yes, I did some of that work in Cincinnati
18 and began to do some studies in the early '70s, and
19 the work actually continued.

20 I transferred to a different group and that
21 work continued and actually resulted in some

1 publications.

2 Q Now, I think my notes reflect that you
3 joined NIOSH in about '71 or '72; is that right?

4 A '71.

5 Q '71. Is that when you started doing that
6 work?

7 A I don't know if we started exactly in '71.

8 We were mostly involved in that year in the
9 plants producing materials, but it wasn't too long
10 after that.

11 Q So it would have been '72, '73, something
12 like that?

13 A It may be a little later, in that ball
14 park.

15 Q Okay. And as I understand it, what you
16 would do is you would go around to various garages and
17 take air samples; is that right?

18 A We did some limited studies, yes.

19 Q Okay. About how many facilities did you
20 personally visit?

21 A You mean, personally take air samples?

1 Q Yes, garages now.

2 A We visited a lot of facilities, and we
3 sampled a lot less.

4 Q Why was that?

5 A Well, we had, first of all, to get a
6 cooperative management and workers to allow us to come
7 in and do a study.

8 NIOSH generally had to try to seek the
9 volunteer cooperation of the companies.

10 Q Presumably from your last comments, there
11 would be garages you would go to with the intent of
12 taking samples. A manager or whoever didn't want any
13 part of that?

14 A We went to a lot of facilities and talked to
15 them, and for one reason or another, it wasn't
16 appropriate for us to sample or management didn't like
17 us being there.

18 Q Okay. With respect to the garages that you
19 actually visited while you were at NIOSH, were those
20 all in the Cincinnati area, or were those in other
21 localities as well?

1 A At that time we were interested in the
2 friction products industry, so we did studies, for
3 example, of plants producing materials.

4 We did some studies in the garages that were
5 rebuilding brake assemblies.

6 We also did some studies in plants that took
7 the old assemblies and took the linings off and put
8 new linings on, so some of those were in Cincinnati.

9 The garages were mostly in Cincinnati at the
10 time.

11 Q Now, with respect to the plants that
12 actually manufactured the friction products, am I
13 correct that those would be the plants that actually
14 took raw asbestos fibers and then mixed them with
15 resins and produced the products that were sold?

16 A They produced the products that were sold,
17 yes.

18 Q Okay. I believe, in addition to you
19 participating in that, some of your colleagues at
20 NIOSH actually participated in those studies; is that
21 right?

1 A Yes, the studies were initiated when I was
2 there, and they continued for a fair number of years
3 and actually ended up in NIOSH during the engineering
4 control studies trying to determine control measures.

5 Q We will come to that in a minute.

6 Is one of your colleagues who participated
7 in the study during the time you were there and maybe
8 after you left, Dennis Roberts?

9 A Dennis at the time was an engineering
10 industrial hygiene technician.

11 Q What is that exactly?

12 A He was in the process of working on his
13 degree in industrial hygiene.

14 He was hired as a technician and did some of
15 the air monitoring.

16 Q So did he report to you then for a time?

17 A He did. I was assistant chief of an
18 industrial hygiene section, so Dennis reported to me
19 for a period of time.

20 Q Did he stay on after your initial work on
21 these studies?

1 A Yes. He continued to work on those
2 industries.

3 Q Okay. And you are familiar with the
4 technical reports that he has issued, aren't you?

5 A I don't know that -- he has a couple of
6 individual plant reports. Those are summarized in the
7 report I think by John Sheehey.

8 Q John Sheehey, who is he exactly?

9 A He was an engineer in the engineering
10 control section of NIOSH.

11 He was interested in evaluating methods for
12 controlling exposures to wear dust.

13 Q Okay. Now, I think you indicated that some
14 of Mr. Roberts' work is reflected in Mr. Sheehey's
15 work; is that right?

16 A It is referenced in it.

17 Q Okay. Did Mr. Sheehey attempt to kind of
18 round up all of the work that had been done by NIOSH
19 on this subject and summarize it in some fashion?

20 A To the extent that it applied to his
21 studies, I think.

1 Again, it was primarily an engineering
2 control study.

3 Q Okay. When did he approximately do that, do
4 you know?

5 A Well, the publications actually came about
6 in the late '80s, early '90s.

7 There was a publication, I think, in one of
8 the industrial hygiene journals and then there is a
9 much thicker technical report after that.

10 Q Okay. The article that was in the
11 industrial hygiene journal, was that an attempt to
12 summarize the actual information in the technical
13 journal?

14 A Well, to the extent that you can, yes.

15 Q All right. Are you aware if the results
16 that are reflected in the work done by Mr. Sheehey and
17 Mr. Roberts are similar to the results that you got
18 when you did your own personal work at NIOSH?

19 A They are comparable. I think we all found a
20 range of exposures as we talked about this morning.

21 Q All right.

1 A Some lower levels and some much higher.

2 Q Okay.

3 MR. WILLIAMS: May I approach, Your Honor?

4 THE COURT: You may.

5 BY MR. WILLIAMS:

6 Q I would like to show you, Doctor, what has
7 been marked Ford Exhibit Number 12. I think you have
8 seen this before.

9 (Whereupon, document tendered to witness.)

10 A Yes.

11 Q I think we talked about that at your
12 deposition, if I am not mistaken; is that right?

13 A Yes.

14 Q So you recognize this document?

15 A Yes.

16 Q What is it exactly?

17 A Well, this is a -- just a very brief
18 report.

19 We visited the Cincinnati municipal garage,
20 and we did some air sampling during a rebuild process
21 at that facility.

1 Q This is going to sound like a stupid
2 question, but the Cincinnati municipal garage, is that
3 a city-owned garage?

4 A Yes, it is.

5 Q Okay. When did you visit them?

6 A January 28th of 1972.

7 Q Okay.

8 You personally went?

9 A Yes.

10 Q Okay. What was your purpose of going to
11 this Cincinnati municipal garage?

12 A We were collecting samples to evaluate
13 exposures and use the phase contrast method.

14 Q Were you able to collect samples at this
15 garage?

16 A We were able to collect samples during the
17 blowing off process. They weren't doing any
18 grinding.

19 Q They were doing blowing off, so you were
20 able to measure that?

21 A We did.

1 Q This wasn't one of the garages where they
2 told you to go away then?

3 A No, the city was cooperative.

4 Q Okay. So you measured blowing off.

5 Exactly how many samples did you take,
6 Doctor?

7 A This is just a one-day study, and we
8 collected apparently a total of eight samples.

9 Q Okay. And did you collect those samples
10 personally yourself or can you tell?

11 A I am sure I did. I just don't recall
12 handling each one.

13 Q Sure. That is fair enough.

14 The blowing off, is that the process that we
15 saw on the videotape?

16 A Yes.

17 Q Okay. Now, I think you testified on direct
18 examination that in order to get a visible cloud of
19 dust, you would need somewhere in the range of 15 to
20 20 million particles per cubic foot; is that right --

21 A Of total --

1 Q -- approximately?

2 A Of total dust, yes.

3 Q Right, of total dust.

4 I think in another point in your direct
5 examination you explained at some point that -- hold
6 on, let me make sure I got this in my notes right.

7 About two million particles per cubic foot
8 equals approximately 12 fibers?

9 A That is the conversion that was used by the
10 ACGIH.

11 Q There are some problems with that, weren't
12 there?

13 A In 1968, and whether or not that applies to
14 these short fibers wear dust, we don't know.

15 Q Well, let's just assume for a minute then
16 that the conversion factor does apply.

17 Do you recall when you visited the
18 Cincinnati municipal garage if during the blowing out
19 process that you sampled whether there was visible
20 dust?

21 A Clearly the same process we saw in the film,

1 you can see the dust.

2 Q Okay. So we have got visible dust as you
3 testified earlier would be at least in the
4 neighborhood of 15 to 20 million total particles per
5 cubic foot?

6 A Yes, in that dust cloud itself, it would be
7 in that concentration of total particles.

8 Q Okay. And if we apply the conversion factor
9 then, how many fibers would that be?

10 A Well, conversion factors range from about 3
11 to 6 as an average, and that is purely a statistical
12 average because there is no exact conversion.

13 Q Assume 20 million particles?

14 A It is going to be 60 to 120.

15 Q Okay, 60 to 120 fibers?

16 A If you use the direct conversion, yes.

17 Q I understand that you think that that may
18 have problems?

19 A Yes, the problem with that in this
20 situation, that conversion was derived, for example,
21 from the asbestos textile mill where the proportion of

1 long fibers is much greater than in this wear dust, so
2 it may not apply at all to the circumstance.

3 Q Let me ask you, Doctor, it looks like from
4 the table that I have got attached to your trip report
5 that you took four samples that you have described
6 blowing off. One is blowing off front drums, blowing
7 off front drums, blowing off rear drums, blowing off
8 rear drums.

9 None of those samples approaches anywhere
10 near the 60 to 120 fibers, does it?

11 A No, again, for the reasons we talked about.
12 I don't know that that conversion is appropriate for
13 the wear dust.

14 Q What was your highest fiber count?

15 A Well, blowing the rear drum I found three
16 fibers per cc. Again, that is just one sample.

17 Q Sure. Again, Doctor, I know you have done
18 this personally, and I know you have reviewed the
19 literature, this is consistent within the spectrum of
20 what we are talking about, isn't it?

21 A These values are within the range of

1 concentrations that are reported in the literature,
2 yes.

3 Q Okay.

4 A That is not the highest, certainly not the
5 highest and certainly not the lowest.

6 Q Right. So it is within the range?

7 A By definition.

8 Q By definition.

9 A Right.

10 Q Let me ask you this:

11 When you went to this site to conduct this
12 sampling or to any other site, did you wear a
13 respirator?

14 A I certainly did.

15 Q Okay. Were the people conducting the
16 activity wearing a respirator?

17 A They were at the time we did the activity.

18 Now, whether they do it every day, I
19 couldn't tell you.

20 Q Okay. And then I think that, in addition to
21 writing the report, which I guess would be filed

1 through NIOSH channels, you sent a copy to the
2 manager, right?

3 A Yes, we always did.

4 Q Okay. I think, if you flip back somewhere
5 in this report, there is actually a copy of your cover
6 letter --

7 A Yes.

8 Q -- to the manager.

9 A Right.

10 Q Okay. Can you go to the second paragraph.
11 Is the manager Mr. Fry?

12 A Yes, Mr. Thomas Fry.

13 Q Okay.

14 The second paragraph of your report I
15 gather indicates what you were able to learn by
16 analyzing the wear debris; is that right?

17 A Well, at this point these samples, these
18 particular samples were analyzed by X-ray diffraction
19 and optical microscopy, at least at the time it was
20 written.

21 Q Sure. In fact, you make that clear, don't

1 you, I think?

2 A Yes. They weren't analyzed at this point by
3 electron microscopy yet.

4 Q Okay. Can you read to the jury what you
5 wrote to Mr. Fry starting with the second sentence in
6 the second paragraph?

7 A I will just read the whole paragraph?

8 Q Sure.

9 A The samples were analyzed for asbestos fiber
10 by means of X-ray diffraction and optical microscopy
11 although most brake linings contained 20 to 70
12 asbestos by weight, very little asbestos dust was
13 found in the samples.

14 The present theory used to explain these
15 findings is that most of the fiber is converted to an
16 amorphous mineral by intense heat and fine grinding
17 during braking. Just as we have talked about today.

18 Again, these weren't analyzed by electron
19 microscopy.

20 Q Again, I am just curious.

21 Anywhere in the report does it reflect

1 exactly how much of the wear debris consisted of
2 asbestos fiber?

3 A No, at this point X-ray diffraction
4 techniques were not capable of providing quantitative
5 data at that level.

6 Q So you left your characterization just by
7 saying very little asbestos dust was found?

8 A As best we could do with the techniques we
9 had available at the time.

10 Q Okay.

11 Can you tell me either from your own
12 knowledge or from your review of the report if any of
13' the samples that you took exceeded the standards that
14 were in place under the law today?

15 A No, not at that time. In fact, the letter
16 quotes the 1971 emergency temporary standard.

17 Q Which I understand was 10 fibers per
18 milliliter?

19 A No, 5 fibers per cc with a 10 fiber peak.

20 Q I am sorry, I misread that.

21 How long was that the standard?

1 exactly or approximately, if that makes sense. When
2 approximately was that?

3 A 1975.

4 Q So in the mid '70s then?

5 A Yes.

6 Q You don't think that it was a bad thing that
7 Ford representatives were there, do you?

8 A No, absolutely not.

9 MR. IGNATOWSKI: Objection.

10 THE COURT: Overruled.

11 A Sorry.

12 Q And I think you also indicated that it is
13 your recollection today that some of or one or more of
14 the Ford representatives who were there may have
15 actually talked about some of the control measures
16 that they put in place in their 1973 technical
17 bulletin; is that right?

18 A I believe that is correct.

19 After the meeting the director of the
20 institute charged me with writing this technical
21 guideline document, interim recommendations in short

1 order.

2 And so, as I recall, some of the methods
3 finally ended up in our report, with some of the
4 methods Ford talked about as well.

5 Q So you don't take issue with any of the
6 methods that were adopted in the '73 bulletin, do
7 you?

8 A Well, I can't say that I have gone back
9 through and reviewed it again. We certainly looked at
10 that Ford document.

11 We updated where we thought were appropriate
12 in our interim recommendations.

13 Q Without the benefit of hindsight, just
14 focusing on what happened actually in the mid '70s,
15 the control methods that were adopted in the Ford
16 bulletin, you were in favor of those, weren't you?

17 A Well, certainly those methods, any time you
18 can get away from using compressed air to blow out the
19 assembly, you are going to reduce dust exposures.

20 And by using the vacuum techniques and
21 respiratory protection in some areas, you can

1 certainly reduce exposures. Yes, they are reasonable
2 steps.

3 Q I think you just mentioned again that one
4 of those reasonable steps was to use the vacuum, and
5 that is the HEPA or HEPA vacuum we were talking about
6 earlier this morning?

7 A Yes.

8 Q Are you aware that it was actually research
9 conducted by Ford that led to the commercial
10 development of one of the first vacuums of that type
11 to be used during brake work?

12 A I am familiar with the fact that Ford
13 certainly sponsored some work on -- on the application
14 of the HEPA vacuum to brake cleaning.

15 Q Yes, I guess I didn't -- I really didn't
16 want to mislead you, the Court and the jury as to when
17 the HEPA vacuum was invented.

18 I mean, Ford's research really dealt with
19 applying that technology to brake work, right?

20 A I am familiar with that, yes.

21 Q And they were among the leaders in that?

1 A Certainly in terms of published literature.

2 Q Okay. I think you testified as well that
3 you put yourself through college doing brake work?

4 A Well, as --

5 Q Partly, I guess.

6 A Well, I was a general mechanic when I wasn't
7 doing construction work.

8 Q So it was part of the work that you did in
9 order to put yourself through school?

10 A Yes.

11 Q So you are familiar with doing brake work on
12 disc brakes?

13 A Yes.

14 Q You would agree, wouldn't you, that in order
15 to replace or install disc brake pads, there would be
16 no need for grinding, would there?

17 A Not necessarily grinding of the pad itself.

18 Sometimes these pads squeal and make noises
19 and they chatter and mechanics take these things off
20 and may bevel them or file grooves in them, and I have
21 done that.

1 Q Okay. Are you aware of any brake servicing
2 manuals that would have recommended that?

3 A I didn't work in a garage that was part of
4 a -- one of the major manufacturers of automobiles.

5 It was common practice in garages that I
6 worked.

7 Q Okay. You used the term beveling and
8 chamfering.

9 Can you explain to the jury what the
10 difference is?

11 A Well, they are fairly synonymous really.

12 Basically the idea is to make the lining fit
13 the curvature of the brake assembly.

14 Historically in the past they could have
15 been done on a car, applied the brake lining as you
16 grind it when it went on the car. And later on during
17 my time at the garage it was done by a stationary
18 grinder.

19 Q You were using the terms beveling and
20 chamfering?

21 A Beveling can sometimes mean just the edge,

1 the front edge or rear edge of a brake.

2 It is basically the same process, you are
3 basically lining.

4 Q When we are talking about chamfering, we
5 are talking about grinding?

6 A All of those processes involve some grinding
7 or sanding of the lining.

8 Q I think you said this morning or talked this
9 morning about something called refurbishing.

10 And as I understand it, and correct me if I
11 am wrong, what you are talking about is really you are
12 taking a brake shoe that doesn't really need to be
13 replaced and getting whatever needs to come off the
14 top; is that right?

15 A Yes. That largely was done on trucks and
16 buses, heavy equipment where there is really a thick
17 lining, and oils and greases will leak into the grille
18 assembly and cause the lining to become contaminated.

19 Q That takes what, a couple of seconds to do
20 that?

21 A Well, you are not grinding a lot of material

1 off, but you are basically taking off the surface.

2 Q Okay. You talked a little bit this morning
3 about some epidemiologic studies, and I just would
4 kind of like to run through them a little bit if we
5 could.

6 One of the kinds of studies that you talked
7 about is something called a case report.

8 A Yes.

9 Q Now, a case report, that is what it says,
10 right, it is a report of a case of some type,
11 correct?

12 A Or it can be a series of cases.

13 Q Right, that is really the next -- I have got
14 that in my notes as the next step, but a case series
15 would be a series of individual reports?

16 A That is correct.

17 Q I think you testified this morning about the
18 1975 "Dear Colleague" letter that was sent out to
19 various sources.

20 Do you recall that on the overhead?

21 A Yes.

1 Q I think you said before that was drafted
2 they tried -- they searched the literature to see what
3 kinds of diseases might be out there?

4 A Well, it is published information that
5 identified in this case mesothelioma among people who
6 were brake workers.

7 Q Right, and I think that 1975 letter
8 identified four cases; is that right?

9 A I believe so.

10 Q Those would be -- would those be in the
11 nature of case reports or case series, or can you tell
12 from the reference?

13 A Some of them came out of a case series.

14 Q Okay. You also talked about something
15 called a cohort study.

16 And I think you indicated that your study
17 down at the Charleston, South Carolina textile plant
18 was of a cohort type; is that right?

19 A Yes.

20 Q Okay. As I understand it, with a cohort
21 study, you take a healthy population and you either do

1 it prospectively or retrospectively to see what kinds
2 of diseases develop; is that right?

3 A That is correct.

4 Q Okay. How does that compare to what is
5 called a case control study?

6 A Well, in a case control study, what you do,
7 you take cases of disease, you match those or you
8 choose a set of controls that don't have disease, and
9 then you ask questions about what their exposures
10 might be.

11 You ask questions about cases and you ask
12 questions about controls.

13 Q And what are you trying to do by doing that,
14 by matching the cases with the controls?

15 A Well, you try to control for what we call
16 confounding variables, those things that could be
17 associated with exposure and disease, but might make
18 it difficult for you to observe a relationship.

19 Q For example, with lung cancer, would that be
20 smoking; would that be a confounding factor?

21 A That is a potential confounder for lung

1 cancer, yes.

2 Q Okay. So would a case control study -- by
3 matching the controls to the actual cases, are you
4 attempting to determine what causes the disease?

5 A Well, what you are looking at, you have
6 cases that have disease and controls that don't have
7 the disease and just ask questions about their
8 exposures, so you look at the percentage of cases
9 exposed versus the percentage of controls exposed.

10 Q Because you want to find out what type of
11 exposure causes the disease?

12 A You are trying to estimate the risk of
13 disease based on exposure, yes.

14 Q Would you agree that case control studies
15 are particularly useful in studying what kind of
16 exposures cause diseases when we are talking about a
17 disease as rare as mesothelioma?

18 A It can be if the cases are chosen properly
19 or controls are carefully chosen.

20 Q If the study is a good one --

21 A It is usual for rare diseases because you

1 start out with a larger number.

2 Q Other witnesses have told the jury because
3 you would expect to see really only one to two cases
4 of mesothelioma per million in the general population.

5 And if that is true, then you would need a
6 very large cohort, for example, in order to study what
7 exposures would lead to meso?

8 A That is true. If disease is rare, you need
9 more people.

10 Q That is one of the benefits of a case
11 control study?

12 A Potentially if the cases and controls are
13 collected properly. If you don't, you can bias the
14 study very easily.

15 Q Okay. I think you testified that asbestos
16 is toxic.

17 Can you tell me what you mean by toxic?

18 A Well, hygienists, and I think the public in
19 general refers to toxic as the ability to cause harm.

20 Frankly, if you look even in the toxicology
21 literature, you will find things like asbestos and

1 silica.

2 For example, in the textbook Kasserack and
3 Gruel, which is a standard textbook on toxicology,
4 asbestos is listed and still listed under toxic
5 dusts.

6 Q Okay. I think you told the jury that
7 earlier.

8 Is it fair to say that all chemicals have
9 the capacity or potential to be toxic?

10 A I guess if you push it to the extreme,
11 certainly.

12 Most materials exceed the body's capacity to
13 handle them --

14 Q For example, if I jumped off the QE II in
15 the middle of the Atlantic Ocean, the water would be
16 toxic to me, wouldn't it?

17 MR. IGNATOWSKI: Objection.

18 THE COURT: What, to him jumping off the
19 QE II?

20 MR. WILLIAMS: Yes. I don't know why he
21 would object to that.

1 THE COURT: Overruled.

2 MR. WILLIAMS: That is all I have. Thank
3 you.

4 THE COURT: Thank you Mr. Williams.

5 Ms. Tostanoski.

6 MS. TOSTANOSKI: Yes, Your Honor. Good
7 afternoon, ladies and gentlemen.

8 CROSS-EXAMINATION

9 BY MS. TOSTANOSKI:

10 Q My name is Gerry Tostanoski, and I represent
11 Owens-Illinois.

12 We are done with brakes, and I want to go
13 back to a few things Mr. McGowan was talking to you
14 about earlier.

15 The Dreessen study, that was prepared under
16 the direction of the Surgeon General?

17 A Dr. Dreessen was part of the Public Health
18 Service and their head of the Public Health Service is
19 the Surgeon General.

20 Q It says on the front cover it was prepared
21 under the direction of the Surgeon General?

1 A Yes, all reports have that on it. I don't
2 know that the Surgeon General actually read that
3 report.

4 The Surgeon General is the head of that
5 organization.

6 Q Now, the objective of that article as stated
7 in it was to find out what concentration of asbestos
8 dust could be tolerated by workers without any injury
9 to their health, correct?

10 A That was the objective, yes.

11 Q Okay. And you said it was long, and this is
12 it here, 100-some pages long?

13 A Yes.

14 Q We get all the way to the end of it on page
15 117 and they reach their conclusion.

16 Would you like a copy of it?

17 A Depends on what you are going to do with
18 it.

19 Q Just read the last sentence of it.

20 A Of a 100-page report, that is a fairly short
21 piece, but go ahead.

1 Q Do you want me to read the whole thing?

2 No, I am kidding.

3 A My point is that it is a 100-page report and
4 there is a lot said in there.

5 Q Let me see if you agree with me that this is
6 what it concludes.

7 It would seem if dust concentrations in
8 asbestos factories could be kept below 5 million
9 particles, (the engineering section of this report has
10 shown how this may be accomplished) new cases of
11 asbestosis probably would not appear.

12 A That is a fair statement of what they found,
13 and I think it also gives the appropriate degree of
14 confidence. They said probably.

15 The study is a study that has a lot of
16 strengths and, again, it has limitations which we have
17 gone over in the past.

18 Q This was published, so anybody could get a
19 copy of this and read it in 1938 and read the whole
20 report including the conclusion on the last page?

21 A Yes.

1 Q Now, if you were lazy like me and you didn't
2 want to read 117 pages, you could wait a year and read
3 the short version of it, right, Cliff Notes?

4 A They published a shorter version of it,
5 yes.

6 Q Okay. That was published in 1939 in the
7 literature?

8 A Yes.

9 Q And what they do, Dr. Dreessen and Dr.
10 Sayers, again, they take this long one and condense it
11 or make a synopsis of it?

12 A Yes. It is more like a book report than
13 anything else.

14 Q Like a Cliff Note, like I said?

15 A Almost like a Cliff Note.

16 Q At the end of the 1939 article that was
17 published, they, again, do a conclusion. And this
18 time they say it appears that if asbestos dust
19 concentrations in the air breathed are kept below five
20 million particles per cubic foot, new cases of
21 asbestosis will not appear.

1 Now, I guess, really, the only difference is
2 that they take out the word "probably?"

3 A Yes, based on no new data. The same
4 report.

5 Q Still in 1939 if I was going to get a copy
6 of this, this is what I would have read back then,
7 right?

8 A Yes, there is also a reference in the back
9 to the whole report.

10 If you really want to find out what is in
11 the whole report, you would read it.

12 Q Now, we have talked about TLVs today, and am
13 I correct that TLVs are geared toward the entire
14 working lifetime of a worker?

15 A They are, yes.

16 Q Okay. And we have mentioned a couple of
17 times TWA or time-weighted average, but I don't think
18 it has really been explained to the jury.

19 Could you tell the jury what a time-weighted
20 average is?

21 A Well, in essence it is this.

1 It is an average concentration over a
2 workday. There can be peaks and valleys in the
3 exposure, but the idea is to try to maintain that
4 average at some value.

5 The time weighted part comes in like this.

6 If you collect a number of samples over a
7 workday and some samples are longer in duration than
8 others, for example, if one sample is half hour and
9 another sample is an hour, you would give more weight
10 in the weighting process to the longer sample, so it
11 is a process of coming up with this average
12 concentration over a workday.

13 Q So from 1946 until -- I guess you said it
14 was 1968 that the notice of intent to change the TLV
15 was published, but it wasn't actually changed until
16 '70 or '71; is that right?

17 A The notice of intent stayed on the books, of
18 course, this one usually was two years, and I think it
19 was a little over two years for this one.

20 Q So in that time period if a worker had a
21 peak exposure that was in excess of the five million

1 particles per cubic foot, but then had longer periods
2 of exposure that were less, when all was said and done
3 at the end of the day, that worker's exposure would be
4 within the five million particles per cubic foot?

5 A Technically, yes, although the ACGIH also in
6 the '60s, I think early '70s, began to talk about
7 excursion values, that is, even though you maintained
8 this time-weighted average, they still had some
9 excursion values.

10 There were some general formulas that were
11 used.

12 Q When did those come into being?

13 A I believe first in the mid '60s they began
14 to talk about excursion values.

15 Q Is that similar to what you talked about
16 earlier when Mr. Ignatowski asked you what was the
17 current threshold limit value and you said there are
18 two?

19 A That is correct.

20 Q One would be the time weighted and the other
21 would be for the peak exposure that you talked about?

1 A That is correct.

2 Q I want to talk to you a little bit about the
3 Fleischer-Drinker report that you discussed with Mr.
4 McGowan.

5 Dr. Drinker, he was one of the early members
6 of the ACGIH?

7 A Yes, he was.

8 Q Doctor, I am going to ask you a number of
9 questions about this report, so I am not sure, but
10 would you like a copy of it?

11 A Depends on how detailed.

12 Q I am going to ask you about some of the
13 tables in a little while.

14 A I probably need a copy.

15 Q I know you have most of this memorized.

16 MS. TOSTANOSKI: Your Honor, may I give the
17 doctor a copy?

18 THE COURT: Please.

19 BY MS. TOSTANOSKI:

20 Q Doctor, the Fleischer-Drinker report
21 involved four different shipyards; is that correct?

1 A Yes.

2 Q Okay. What the investigators did was they
3 sort of did a systematic evaluation of the four
4 different shipyards to determine whether there was a
5 problem with respect to asbestos in those shipyards?

6 A It was certainly a systematic study with
7 some limitations we have talked about.

8 Q Okay. And the authors -- there was a lot of
9 detail in the report as to how asbestos was used in a
10 shipyard and what different products were used.

11 Would you agree with that?

12 A Yes.

13 Q And they also discuss some of the
14 precautions that were in effect back in 1946?

15 A Yes, they did.

16 Q Doctor, you are aware that in 1943 there
17 were some minimal requirements of safety that were
18 published for use in shipyards?

19 A Yes, I am.

20 Q And among the things that were discussed in
21 those minimum safety requirements for Navy shipyards

1 was asbestos, correct?

2 A Yes, they were sort of general industrial
3 hygiene requirements, but it did specifically deal
4 with asbestos.

5 Q A lot of the same things that were in the
6 1943 government minimum requirements are also
7 discussed in the Fleischer-Drinker report?

8 A I am not following. They both talk about
9 industrial hygiene controls.

10 Q Doctor, I am going to ask you questions
11 about page 11 of the report.

12 A Okay.

13 Q In the first column number 5, it talks about
14 the process of molding asbestos in the shipyard.

15 A Yes.

16 Q And they describe this process as a process
17 of building up the insulation to fit odd shapes of
18 boiler work and piping.

19 A Yes.

20 Q Is that correct?

21 A Yes, that is correct.

1 Q And when this work is done, they were able
2 to see some visible dust, correct?

3 A They talked about -- it says very little
4 visible dust is produced from this operation.

5 Q But they nevertheless saw some visible dust,
6 correct?

7 A I can't read any more than is in the
8 sentence.

9 It says very little visible dust. That is
10 all it says.

11 Q What Fleischer and Drinker concluded was
12 that no special ventilation or respiratory protection
13 would be required for that process of molding; is that
14 correct?

15 A That is what it said, yes.

16 Q Respirators were used on some other
17 processes like band sawing?

18 A They were.

19 Q Doctor, if you could turn to page 14 of the
20 report.

21 I think you told the jury earlier that one

1 of the things that Fleischer-Drinker did was they went
2 to the shipyards, four different shipyards where the
3 naval ships and other ships were being constructed and
4 they took dust measurements, correct?

5 A Yes.

6 Q And they report all of the dust measurements
7 in these tables?

8 A Yes, they do.

9 Q And the way the authors report the figures
10 is that they have got a column for total dust and a
11 column for asbestos dust, correct?

12 A Yes. They basically try to use a little bit
13 higher magnification to estimate the proportion of
14 asbestos in the sample, although that still has a lot
15 of limitations.

16 Q And they report ranges of counts and
17 averages, correct?

18 A For both total dust and asbestos dust, yes.

19 Q And by doing that, they are taking into
20 consideration the time-weighted average that you told
21 the jury about?

1 A Well, not really. This is just an average
2 of samples. This is not necessarily a time-weighted
3 average, but it is an average of dust concentrations.

4 Q They are not just looking at peak exposures,
5 they are looking at, moreover, all exposures,
6 correct?

7 A I think they are looking at both. They gave
8 a range and the average.

9 Q Right, so they are looking at both.

10 Now, if you look at the asbestos dust counts
11 that are reported, would you agree with me that there
12 is only one that exceeds the five million particle per
13 cubic foot and that would be the band saw cutting
14 in -- I think it is contract yard C?

15 A Are you talking about an average or a
16 range?

17 Q The range of asbestos dust.

18 A The contract yard C had an upper limit, and
19 this is just asbestos dust of 12.8 million particles
20 per cubic foot.

21 Q Right, that is the only one in this

1 particular column on range of counts that talks about
2 a count that is over 5 million, correct?

3 A Well, there is another one, aboard ship in
4 Navy yard B, that is five.

5 If you are looking at total dust counts,
6 they were similar orders of magnitude higher.

7 Q I am just talking about the one column, the
8 asbestos dust counts.

9 Most of them are within the five million
10 particles, correct?

11 A Well, there is a 5.1, and there is a 9.4.
12 Same table, Table 2, there is a 12.8, 9.4.

13 Q When you go and look at the averages, there
14 is just the one, the 6.19 for cutting with the band
15 saw in contract yard C?

16 A Yes, where the average is, yes.

17 Q The average, so there is the one that is
18 over it in that count, correct?

19 A Yes, we were looking at ranges, I thought.

20 Q When we switch over from ranges and look to
21 averages, we find the one that exceeds the five

1 million particles, correct?

2 A Correct. Again, the five million particles
3 is not the right measure against that particular
4 concentration.

5 Q But this is how it is being reported to the
6 community right there.

7 They have the total dust, the asbestos dust
8 and they have the counts for everything, correct?

9 A That is correct. The proper column is the
10 total dust column for the impinger counting method
11 that we have gone over.

12 Q Dr. Drinker, he was a member of the ACGIH
13 and he is the one who devised this chart, correct?

14 A Yes, he reported both sets of data.

15 MS. TOSTANOSKI: Your Honor, I would like to
16 use the screen for the next two articles.

17 THE COURT: Please.

18 (Whereupon, the documents were published to
19 the jury via the overhead projector.)

20 (Whereupon, the witness left the witness
21 stand.)

1 THE COURT: Let the record reflect that Mr.
2 McGowan is her assistant, and Mr. Ignatowski.

3 (Whereupon, discussion off the record.)

4 BY MS. TOSTANOSKI:

5 Q Dr. Dement, one of the gentleman whose name
6 keeps coming up is Dr. Selikoff, correct?

7 A Yes.

8 Q And you are familiar with the various
9 articles that he wrote and that were published in
10 1965?

11 A Yes.

12 Q The one that I am going to ask you about is
13 entitled, The Occurrence of Asbestosis Among
14 Insulation Workers in the United States.

15 You are familiar with that article?

16 A Yes, I am.

17 MR. IGNATOWSKI: What page?

18 MS. TOSTANOSKI: Pardon me?

19 MR. IGNATOWSKI: I was just asking about the
20 page.

21 MS. TOSTANOSKI: Oh, 141.

1 BY MS. TOSTANOSKI:

2 Q Now, on page 141 they talk about -- I knew I
3 wouldn't be able to do this.

4 They are talking about what they are doing
5 in this and this is their present investigation.

6 Do you see that down there in the middle,
7 Doctor?

8 We undertook to study the question whether
9 asbestos exposure during insulation work in the U.S.
10 was associated with the hazard of asbestosis and its
11 complications.

12 This is sort of where they are telling or
13 reading what it is that they are going to study,
14 correct?

15 A Yes.

16 Q Okay. I am going to flip back to the first
17 page of the study.

18 Doctor, I am going to look at the first
19 paragraph.

20 Mr. McGowan talked to you a little bit about
21 this in the Fleischer-Drinker study. And in the

1 beginning of the article Dr. Selikoff is pointing out
2 the differences in workers that had been studied in
3 the past and the workers that he is studying right
4 now.

5 He says the information currently available
6 concerning asbestosis has been derived largely from
7 studies of employees of asbestos textile factories and
8 should be properly referred to such individuals.

9 That would be the Dreessen and the
10 Merewether studies that we have talked about earlier?

11 A Yes, part of that.

12 Q Okay. It is inadequate to speak now of
13 asbestos workers.

14 With the growth of asbestos utilization,
15 including rapid multiplication of the number and
16 variety of its applications, it would perhaps be more
17 accurate to categorize workmen exposed to asbestos as
18 asbestos textile workers, asbestos insulation workers,
19 asbestos miners, et cetera, et cetera.

20 Now, the insulation workers, those would be
21 people like Fleischer and Drinker we are talking

1 about, the actual insulators on board ship; is that
2 correct?

3 A Part of them, yes.

4 Q The different occupations vary widely in
5 important respects, intimacy, intensity and duration
6 of exposure, variety and grade of asbestos used,
7 working conditions, in concomitant exposures to other
8 dusts or inhalants.

9 That is very similar to what you explained
10 to Mr. McGowan earlier. There is a big difference in
11 the constant exposure that a factory worker gets and
12 the intermittent exposure that an insulation worker
13 receives; is that correct?

14 A At least in terms of two things, one is
15 exposure, the peaks and valleys, and remains constant
16 with some variance.

17 Dr. Selikoff is talking about asbestos being
18 used in thousands of products. Some of the products
19 have other materials with hazards besides asbestos as
20 well.

21 That is one of the reasons he refers to

1 these different types of work populations as well.

2 Q Now, he talks a little bit about the work of
3 insulation workers on page 141, and -- right here,
4 Doctor.

5 A Yes.

6 Q He reports that the asbestos exposure to
7 which insulation workers are subject is limited and
8 intermittent.

9 That is because an insulation worker or
10 pipecoverer doesn't work with asbestos-containing
11 products all day long, correct?

12 A Many of them don't. They work with
13 nonasbestos materials.

14 Q And some of the things they do, like if they
15 have to cut it, that would be a higher exposure, but
16 if they are just actually putting pieces and wiring it
17 on, that would be a lesser exposure, so that is where
18 the intermittent part of it comes in?

19 A Yes, the characteristic we talked about,
20 peaks and valleys, of course.

21 Q Now, another thing that Dr. Selikoff did in

1 this is he tried to go back and record, the best he
2 could the different exposures that could be determined
3 from historical literature?

4 A He tried to review those, yes.

5 Q Okay. And he indicates up there, and he
6 talks about a gentleman by the name of Marr.

7 Do you see on the first paragraph, Marr,
8 there is a footnote?

9 A Yes.

10 Q Marr has recently brought shipyard
11 insulation experience up to date, comparing it with
12 the observations of Fleischer and colleagues and
13 concludes that, "Insulation materials and work methods
14 have remained essentially the same since 1945",
15 correct?

16 A Yes.

17 Q And measurements of dust exposures of
18 insulation workers have been but infrequently reported
19 and have been hampered by the varied nature of the
20 work.

21 As in other asbestos work, peak counts are

1 met which are excessively high, but generally counts
2 for asbestos fibers have been within the five million
3 particles per cubic foot of the ACGIH.

4 So what Dr. Selikoff is reporting here, and
5 you and I talked about it earlier, an insulation
6 worker is going to have time during the day that he is
7 exposed to more than five million particles per cubic
8 foot of air, but over an eight-hour working day his
9 exposure is going to be within that five million
10 particle per cubic foot TLV?

11 Is that what Dr. Selikoff is reporting in
12 1965?

13 A That is the essence, based on, again, what
14 he points out, that very few measurements were
15 actually made of those exposed.

16 Q Here we have somebody citing Fleischer-
17 Drinker, right?

18 A The first one. I can't think of anybody.

19 Q Nobody took the time to write a letter to
20 the editor or anything and publish it anywhere and
21 disagree with the findings of Fleischer and Drinker;

1 is that right?

2 A I haven't found one, no.

3 Q When Mr. McGowan was asking you about the
4 change in the TLV or notice of intent for change in
5 the TLV in 1968, he asked you if Dr. Selikoff was one
6 of the voices that was involved in that, and you
7 responded one of them, but really Dr. Cooper was the
8 man who was really active in that, right?

9 A Dr. Cooper had an ongoing set of studies
10 looking at the measurement exposure among insulation
11 workers and also looking at chest X-rays of insulation
12 workers.

13 Q Now, is this the study you are talking
14 about, The Work Environment of Insulating Workers, and
15 published by J. LeRoy Balzer and W. Clark Cooper in
16 1968?

17 A Yes, this is one of the articles. He
18 published in a few out of the study.

19 Q Who are Drs. Balzer and Cooper? I am not
20 sure Dr. Balzer was a doctor at that point.

21 A I don't know. I know Dr. Cooper better. He

1 was a physician, as it says in the School of Public
2 Health at the University of California at Berkeley.

3 Q While Dr. Selikoff was busy on the East
4 Coast studying insulation workers in New Jersey and
5 New York, Dr. Cooper was studying insulation workers
6 in California, correct?

7 A In different ways. This was a cross-
8 sectional study, and Dr. Selikoff was looking at
9 mortality.

10 Q They did that with the cooperation of the
11 union in California, correct?

12 A I believe so, yes.

13 Q Dr. Balzer and Cooper and some of their
14 colleagues would go on the jobsites with the
15 insulators in California and take measurements of the
16 work they were doing to determine what level of
17 exposure the insulators in California were being
18 exposed to, correct?

19 A Yes.

20 Q And they report about that in this
21 particular article, right?

1 A Yes. This is, by the way, after Dr.
2 Selikoff's work really in '64, '65.

3 Q Correct, but before anything was done to
4 lower the TLV, correct?

5 A That is correct.

6 Q Okay. Now, if you look at the first full
7 paragraph, the breathing zone dust levels found in the
8 dustiest operations observed were not as high as the
9 incidence of pneumoconiosis might have led us to
10 expect.

11 Some sample areas exceeded the present
12 threshold limit value TLV recommended by the ACGIH.

13 However, those samples were not for extended
14 periods of time.

15 Although we attempted to sample the dustiest
16 operations, the time-weighted averages for dust
17 samples containing asbestos would probably not exceed
18 the TLV in most situations even on ships.

19 This conforms to findings by Fleischer,
20 Marr, Leathart, Sanderson and to recently reported
21 findings by Ferris, who last year reported studies in

1 the same shipyards earlier appraised by Fleischer.

2 He is reporting in 1968 after doing studies,
3 the same thing Dr. Selikoff reported in '65, that
4 insulators' exposures to asbestos were within the five
5 million particle per cubic foot TLV?

6 A Generally, but the page before this he talks
7 about how impossible it is to actually calculate a
8 time-weighted average for an insulator given this
9 varied nature of work.

10 It points out the data in the literature,
11 but some were impossible to calculate the exposure
12 with these types of workers.

13 Q They wrote another paper that estimated the
14 average exposure with the limitations you have talked
15 about is really about five million particles.

16 Do you agree with that?

17 A I have seen various estimates. The EPA in
18 its risk assessment update in 1986 estimated that
19 historical exposure of insulation workers were likely
20 around 12 to 15 fibers per cc and tried to express it
21 in fibers per cc.

1 Q Which is a different standard than the
2 million particles per cubic foot?

3 A Yes, I am trying to relate it to past
4 exposures. This is on the average.

5 Doesn't mean there aren't periods where
6 there are higher exposures and lower exposures.

7 You have to realize, it is also an average
8 for not any one worker, but for the whole trade.

9 As we said, some of which worked with
10 nonasbestos materials for significant portion of their
11 work. And so it is not for a worker, not an average
12 for a worker who goes on a job today, works with
13 asbestos all day long. It is not his average.

14 It is over a whole working lifetime among
15 that population.

16 Q That is why Balzer and Cooper went out to
17 several jobsites and tried to get a real good feel for
18 what type of work was being done and what different
19 products were being used.

20 They didn't just go out and take a snapshot
21 here and there, they worked closely with the unions to

1 get these results, correct?

2 A Yes, but still theirs is just a snapshot and
3 they talk about the limitation of even their own
4 studies.

5 If you have it, the prior paragraphs talk
6 about how impossible it is to actually calculate their
7 average. This is out of their own paper.

8 Q This is nevertheless their conclusion, the
9 best information they had in 1968, correct?

10 A Yes, they were seeing disease at levels that
11 appeared to be based on available data.

12 Q Dr. Cooper being one of the voices to come
13 forward in 1968 said hey, we have looked at insulators
14 and their exposures are falling within the five
15 million particles per cubic foot and we are seeing
16 excess disease, so the TLV is probably too high?

17 A Yes. And either one of two ways. Either
18 these peak exposures, high intermittent exposures
19 produce more disease because of the nature of that
20 peak exposure, or the average exposure is -- the value
21 is too high, so one of two things were occurring.

1 Q So they report to the scientific and medical
2 community and it is picked up by the ACGIH and
3 eventually the Federal Government that the TLV is
4 wrong and let's do something about it here in the late
5 1960s and change it, correct?

6 A Yes.

7 Q That is all I have with this, Judge.

8 THE COURT: Okay.

9 How much longer do you anticipate, Ms.
10 Tostanoski?

11 MS. TOSTANOSKI: Just a few more minutes,
12 Judge.

13 Did you want to take a break?

14 THE COURT: No, we are going to conclude Dr.
15 Dement. Each side will have approximately five
16 minutes for any recross or redirect.

17 BY MS. TOSTANOSKI:

18 Q Doctor, the last area that I wanted to talk
19 to you about is the Hemeon report.

20 A Yes.

21 Q You told Mr. McGowan that that report was

1 not published, correct?

2 A I have never seen it in the published
3 literature, no. It is part of the Industrial Hygiene
4 Foundation's internal report.

5 Q Okay. Now, the Industrial Hygiene
6 Foundation -- I could be a member of the Industrial
7 Hygiene Foundation and receive their publication,
8 correct?

9 A Yes.

10 Q But I could go out and I could hire the
11 Industrial Hygiene Foundation to do some work for me
12 and I would be their client, right?

13 A I assume so, yes.

14 Q Okay. And that is exactly what happened
15 with the Hemeon report, correct?

16 The asbestos textile industry hired Dr.
17 Hemeon to do a study of textile factories for them,
18 correct?

19 A The textile institute hired the Industrial
20 Hygiene Foundation to do the work.

21 Dr. Hemeon was the person that did it for

1 the foundation.

2 Q And the place where you found a copy of the
3 Hemeon report, this unpublished report was not in the
4 files of the Industrial Hygiene Foundation, but you
5 came across it when you were doing work at the
6 Raybestos-Manhattan factory, correct?

7 A Actually technically correct. I found out
8 about the report through discussions with old-time
9 employees at this plant in Charleston which was one of
10 the plants that Dr. Hemeon visited in the '40s.

11 They did not have a copy of the report and I
12 tried to get my hands on a copy and actually wrote Dr.
13 Hemeon who was alive at that time, and I also wrote
14 the Industrial Hygiene Foundation.

15 And the response that I had was that they
16 didn't have a copy and it showed up later in court
17 testimony, in court proceedings.

18 Q All right.

19 A So I didn't get a copy in 1977.

20 Q Doctor, the reason that the employees of the
21 Raybestos-Manhattan factory, the old-time employees

1 that you talked about, knew about the Hemeon report,
2 Raybestos-Manhattan was one of the members of the
3 textile institute, correct?

4 A It was.

5 Q That was an industry group for manufacturers
6 who made cloth products, textiles?

7 A Textile products, yes.

8 Q Raybestos made cloth and yarns and felts and
9 things like that, correct?

10 A That is correct.

11 Q And Johns-Manville was another manufacturer
12 that was involved with asbestos textiles, among other
13 things, and they were also a member of the ATI,
14 right?

15 A Yes.

16 Q Owens-Illinois was not a member of the
17 Asbestos Textile Institute, was it?

18 A Not to my knowledge.

19 Q That is all I have. Thank you, Doctor.

20 MS. TOSTANOSKI: Thank you, Your Honor.

21 THE COURT: Thank you.

1 Mr. Doub.

2 MR. DOUB: No, Your Honor.

3 THE COURT: You have none?

4 MR. DOUB: No questions.

5 THE COURT: All right.

6 Mr. Ignatowski, do you have any questions?

7 MR. IGNATOWSKI: Yes, Your Honor, five
8 minutes.

9 THE COURT: You don't have to use all of it
10 if you don't want.

11 MR. IGNATOWSKI: This will be real quick,
12 Judge.

13 May I approach?

14 THE COURT: Of course.

15 REDIRECT EXAMINATION

16 BY MR. IGNATOWSKI:

17 Q Dr. Dement, Ms. Tostanoski asked you about
18 Dr. Selikoff's data and he mentioned about
19 intermittent exposures.

20 Can you read from that same article on page
21 153 about what diseases Dr. Selikoff was finding in

1 that cohort that was part of what -- the same study
2 that Ms. Tostanoski read to you from?

3 A Well, it says neoplastic complications.

4 Do you want me to read the whole paragraph?

5 Q Just the sections about neoplastic and the
6 findings of asbestosis.

7 A It says neoplastics complications of
8 asbestos exposure was studied among 307 consecutive
9 deaths in this group of men.

10 Lung cancer was found to be at least seven
11 times as common as expected and cancer of the
12 gastrointestinal tract three times as common as
13 expected.

14 There were 10 instances of mesothelioma of
15 the pleural peritoneum.

16 Q Is there a reference above that statement in
17 which Dr. Selikoff discusses findings of asbestosis?

18 A Yes.

19 Q How many cases of asbestosis did they find?

20 A Let me just find that piece.

21 It says among 392 individuals examined, more

1 than 20 years from the onset of exposure, radiological
2 evidence of asbestosis was found in 339, and half of
3 these asbestosis was moderate or extensive.

4 Q Now, I want to refer you to page 90 of the
5 Dreessen report that Ms. Tostanoski I believe asked
6 you about.

7 Did the Dreessen report in Table 43 also
8 talk about the findings of asbestos-related disease in
9 individuals who were exposed to millions of particles
10 per year over time periods?

11 And what did they find in the 5 to 9.9
12 period?

13 A In the group of individuals exposed just
14 from 0 to 4.9 million particles per cubic foot, and
15 they have different time periods in industry, but they
16 found individuals that had asbestos-related disease.

17 There were at least -- well, between --
18 about three cases among -- I can't total up the
19 numbers here.

20 Q How many did they find in the 5 to 9.9
21 million particles per cubic foot with 5 to 9.9 years

1 in the industry?

2 A They found 16 percent.

3 Q And over 10 years in the industry?

4 A 68 percent.

5 Q Over 10 million particles 5 to 9.9?

6 A 51 percent.

7 Q Over 10 years?

8 A Looks like --

9 Q Is that above 50 percent?

10 A 58 or 68. It is hard to read. I need
11 better glasses.

12 Q In the article, the Fleischer-Drinker study,
13 that is what controlled exhaust ventilation?

14 A At least partially. Some of the operations
15 had a local exhaust ventilation.

16 These were shipyards subject to the minimum
17 requirements of 1943.

18 Q There were cases of disease found in the
19 Fleischer-Drinker report in end users; is that
20 correct?

21 A That is correct.

1 Q Now, Mr. Williams asked you a couple of
2 questions. First of all, let me go back.

3 Mr. McGowan asked you about smoking.

4 Is there any relationship between cigarette
5 smoking and mesothelioma?

6 A No.

7 Q And you were asked some questions by Mr.
8 Williams about the development of the vacuum by Ford.

9 A Yes.

10 Q When Ford appeared at the meeting in 1975,
11 did they tell you that they were going to advise any
12 of their end users or people who were -- to whom they
13 were supplying friction products that such vacuums
14 should be used?

15 A I guess we were aware of this bulletin, but
16 other than that, that is all that was mentioned, as I
17 recall.

18 Q All of the items that were also listed in
19 the bulletin, did Ford tell you that they were going
20 to place those statements in any of their friction
21 products that they were supplying to end users down

1 the line?

2 A Well, it wasn't -- that wasn't addressed,
3 wasn't discussed. They didn't bring it up. We didn't
4 discuss that.

5 MR. IGNATOWSKI: I think that is all I have.
6 Thank you.

7 THE COURT: Thank you, Mr. Ignatowski.
8 Mr. McGowan, any recross?

9 MR. MCGOWAN: Briefly, Your Honor, two
10 minutes.

11 THE COURT: Okay.

12 RECROSS-EXAMINATION

13 BY MR. MCGOWAN:

14 Q Doctor, I didn't mean to suggest that
15 smoking causes mesothelioma.

16 When we are talking about diseases in
17 general, am I correct that Dr. Selikoff, when he
18 studied these insulators who had the increased risk of
19 lung cancer, also found that about 89 to 90 percent of
20 them were cigarette smokers?

21 MR. IGNATOWSKI: Objection.

1 THE COURT: Overruled.

2 A Not current smokers.

3 That percentage is what we would call ever
4 smoked regularly.

5 And if you looked at the time period, Dr.
6 Selikoff has studied it, if you looked in the general
7 population, you would find that 80 percent of people
8 were either current smokers at the time or past
9 smokers, so it is not an inappropriate number.

10 It is just the comparison population of the
11 U.S. is also smoking.

12 Q Not to belabor the point, he studied 17,800
13 people for close to 30 years.

14 Tell the jury the number of people who were
15 nonsmokers who developed lung cancer in that study?

16 A Well, probably in 1979, first of all, as you
17 said, had relatively few that were lifetime nonsmokers
18 because of the numbers.

19 I think he found either four or five lung
20 cancers in the nonsmoking group in 1979.

21 Q Doctor, didn't he find zero people with lung

1 cancers who were nonsmokers?

2 A I don't think that is true. The 1979
3 article?

4 THE COURT: Go ahead, last question on the
5 issue.

6 Q 1979, this is the article, these are people
7 who never smoked regularly, but they sometimes smoked.
8 He found five of the 17,800, didn't he?

9 A That is right. That is what I said.

10 Q They are not nonsmokers?

11 A Exactly. That wouldn't include current and
12 past smokers.

13 MR. MCGOWAN: That is all I have.

14 THE COURT: Mr. Williams, any recross?

15 MR. WILLIAMS: Your Honor, just since Dr.
16 Dement is the author of Ford Exhibit 12, I would like
17 to offer that at this time.

18 MR. IGNATOWSKI: No objection.

19 THE COURT: Defendant's Exhibit Ford 12 will
20 be admitted in evidence without objection.

21 (Whereupon, Defendant's Exhibit Number Ford

1 12 was received into evidence.)

2 MR. WILLIAMS: Thank you, Your Honor, no
3 recross.

4 THE COURT: You are welcome. Ms.
5 Ignatowski -- I am sorry, Ms. Tostanoski.

6 (Whereupon, laughter ensued.)

7 MS. TOSTANOSKI: Nothing further, Your
8 Honor. Thank you.

9 THE COURT: Dr. Dement, thank you very much.
10 You may be excused, sir.

11 THE WITNESS: Thank you, Your Honor.

12 (Whereupon, witness excused.)

13 THE COURT: What else do you have?

14 You had planned on using Dr. Dement all day,
15 didn't you, Mr. Ignatowski?

16 MR. IGNATOWSKI: That was pretty much our
17 plan.

18 We have a very, very short deposition that
19 goes along with the testimony yesterday that we can
20 read and won't take very long at all.

21 THE COURT: All right, let's do that, and

1 then we can perhaps let the jury go earlier today.

2 MR. IGNATOWSKI: Can we have a few moments
3 to get it together?

4 THE COURT: Sure.

5 If you would like to stand and stretch, feel
6 free to do so, ladies and gentlemen.

7 (Whereupon, pause.)

8 THE COURT: Ready to proceed, counsel?

9 MR. SHELLENBERGER: Yes, Your Honor.

10 THE COURT: Very well, all of the jurors are
11 back and ready to proceed.

12 MR. SHELLENBERGER: Thank you.

13 THE COURT: All right.

14 MR. SHELLENBERGER: Your Honor, I will be
15 asking the questions and Mr. Ignatowski will be doing
16 the answers, and there are some counter designations
17 from the defense.

18 This is the deposition of James Howard
19 Neary, August 18th, 1987. It is titled in the Circuit
20 Court for Baltimore County, In Re: Personal Injury
21 Asbestos Case.