

ORIGINAL

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1 CIRCUIT COURT OF MOBILE COUNTY, ALABAMA

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3 In Re: ALL ASBESTOS-RELATED :

4 PERSONAL INJURY OR DEATH CASES :

5 FILED OR TO BE FILED IN :

6 MOBILE COUNTY, ALABAMA :

7 - - - - - X

8 Washington, D.C.

9 Monday, May 4, 1992

10 Deposition of DAVID T. AUSTERN, a witness
11 herein, called for examination by counsel for Plaintiffs
12 in the above-entitled matter, pursuant to Notice, the
13 witness being duly sworn by JAN A. WILLIAMS, a Notary
14 Public in and for the District of Columbia, taken at the
15 offices of Manville Personal Injury Settlement Trust,
16 1825 Eye Street, N.W., Suite 300, Washington, D.C., at
17 10:45 a.m., Monday, May 4, 1992, and the proceedings
18 being taken down by Stenotype by JAN A. WILLIAMS and
19 transcribed under her direction.

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1 APPEARANCES:

2

3 On behalf of the Plaintiffs:

4 PETER A. KRAUS, ESQ.

5 Baron & Budd, P.C.

6 The Centrum

7 3102 Oak Lawn Avenue

8 Suite 1100

9 Dallas, Texas 75219

10 (214) 521-3605

11

12 On behalf of Defendant Owens-Corning Fiberglas:

13 RICHARD M. CRUMP, ESQ.

14 Crosby, Saad & Beebe, P.C.

15 Suite 600

16 3290 Dauphin Street

17 Mobile, Alabama 36606

18 (205) 476-3000

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1 APPEARANCES: (Continued)

2

3 On behalf of Defendant Flintkote, Inc.:

4 KELLY A. McCLOSKEY, ESQ.

5 Thompson, Hine and Flory

6 1920 N. Street, N.W.

7 Washington, D.C. 20036-1601

8 (202) 331-8800

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1 C O N T E N T S

2

3 THE WITNESS EXAMINATION BY COUNSEL FOR

4 DAVID T. AUSTERN THE PLAINTIFFS

5 By Mr. Kraus 7

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7 DEFENDANT OWENS-CORNING FIBERGLAS

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13 COUNSEL FOR DEFENDANT

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17 E X H I B I T S

18 EXHIBIT NO. PAGE NO.

19 Plaintiff's Exhibit Nos. 1 through 19 5

20

21 * Plaintiff's Exhibit Nos. 12 through 14 retained by

22 counsel.

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P R O C E E D I N G S

(The documents referred to
were marked Plaintiff's
Exhibit Nos. 1 through 19
for identification.)

MR. KRAUS: Let me state for the record that I
am counsel for Plaintiffs, my name is Peter Kraus.

I have had the court reporter mark as Exhibit 1
an Amended Notice of taking the oral deposition of David
Austern. And I had copies of this Notice served on
counsel for Owens-Illinois, Rock Wool, Garlock, A.W.
Chesterton, Owens-Illinois/Keene, Flintkote, John-Crane,
Pittsburgh Corning, Fiber Board, the Center for Claims
Resolution, Defendants Owens Corning Fiberglas, and
AC&S.

MR. CRUMP: Excuse me. Let me state something
for the record.

As a preliminary matter, it is my understanding
that there were motions to quash this deposition filed in
the Circuit Court of Mobile and that there was a phone
hearing held on those motions this morning. I was not
party to the phone hearing, but Mr. Kraus advises me that

1 the motions were denied.

2 MR. KRAUS: Let me just clarify that, Richard,
3 for the record. The hearing never took place, I never
4 spoke with the judge, I learned only from his secretary
5 that there would be no hearing and he would not rule on
6 any of the motions to quash these depositions.

7 MR. CRUMP: I understand. Thank you for
8 clarifying.

9 In any event the motions to quash then are
10 outstanding on this deposition and we do not by our
11 appearance here waive any grounds for quashing this
12 deposition which are asserted in those motions.

13 Additionally we would object in that we had not
14 had an opportunity prior to today to review the exhibits
15 tendered to Mr. Austern. Polly Kellar requested those
16 Friday and she was informed he wasn't sure which
17 documents he would tender to Mr. Austern and that maybe,
18 if we could check back later, we could be told that
19 information, although he was leaving shortly I believe
20 sometime Saturday to come to D.C.

21 So we don't waive any of those objections that
22 either were stated in the motions to quash which I have

1 stated or will state during the course of the deposition.
2 Whereupon,

3 DAVID T. AUSTERN

4 Was called as a witness by counsel for Plaintiff, and
5 having been duly sworn by the Notary Public, was examined
6 and testified as follows:

7 EXAMINATION BY COUNSEL

8 FOR THE PLAINTIFFS

9 BY MR. KRAUS:

10 Q. Would you state your full name for the record,
11 sir.

12 A. David Thomas Austern.

13 Q. And, Mr. Austern, what is your occupation?

14 A. I'm general counsel of the Manville Personal
15 Injury Settlement Trust.

16 Q. Would you describe briefly what your duties are
17 as general counsel for the Manville Personal Injury
18 Settlement Trust?

19 A. I direct the legal department in the trust and
20 supervise the lawyers and other staff in that
21 department. I also supervise the corporate legal affairs
22 of the trust both internally and with respect to the

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1 trust's relationship with the Manville Corporation and I
2 supervise the litigation that the trust is in.

3 Q. Would you describe briefly what the Manville
4 Trust is?

5 A. The Manville Trust was --

6 MR. CRUMP: I object. We didn't state any
7 stipulations on the record. I assume the usual
8 stipulations apply, although I don't know that, but I
9 would object on the record as to the relevance of that.

10 THE WITNESS: The trust was created by a plan
11 of reorganization under Chapter 11 of the bankruptcy code
12 pursuant to which the trust was given certain assets of
13 the Manville Corporation and assumed certain liabilities
14 of the Manville Corporation. It is a New York common law
15 trust.

16 BY MR. KRAUS:

17 Q. Would you describe please the connection
18 between the Manville Trust and the Manville Corporation.

19 A. We own on a fully diluted basis 80 percent of
20 the stock of the Manville Corporation, both preferred and
21 common. We are also the corporation's largest creditor
22 and are on a weekly and sometimes more frequently basis

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1 in contact with the Manville Corporation about its
2 affairs.

3 Q. Can you describe for me, sir, the relationship
4 between the Manville Corporation and a company that was
5 known as the Johns-Manville Corporation?

6 A. During the Chapter 11 bankruptcy, I mentioned
7 the Johns-Manville Corporation which consisted of -- the
8 Johns-Manville Sales Corporation and ten or possibly 11
9 subsidiaries were formed into the Manville Corporation.
10 So it is the successor corporation to Johns-Manville.

11 Q. Sir, was Johns-Manville a participant in the
12 asbestos industry?

13 MR. CRUMP: Object to the form of the question.

14 THE WITNESS: It was.

15 BY MR. KRAUS:

16 Q. What happened to the documents maintained by
17 Johns-Manville in the course of its business related to
18 its participation in manufacturing, mining, and milling
19 of asbestos products?

20 MR. CRUMP: I object to the form of the
21 question in that there was no proper predicate or
22 foundation laid that shows this gentleman has this

1 knowledge.

2 THE WITNESS: The corporation had what I'll
3 divide just for the sake of explanation into two types of
4 documents. They had asbestos-related documents which
5 Johns-Manville and its successor corporation, Manville,
6 had used in litigation either defending personal injury
7 lawsuits filed against the corporation prior to August of
8 1982 when the corporation declared bankruptcy and
9 additionally documents used by Manville as plaintiff in
10 litigation first against its insurance carriers in
11 California and later in a case filed in the Court of
12 Claims in the District of Columbia against the United
13 States Government. That was one set of documents.

14 And the other set of documents were all other
15 asbestos-related documents which Manville did not use in
16 its either defending itself in litigation or using as
17 plaintiff in litigation.

18 BY MR. KRAUS:

19 Q. Okay. What happened to those documents related
20 to Manville's participation in the asbestos-related
21 industry?

22 MR. CRUMP: Again I object to the form of the

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1 question in that there is no proper predicate or
2 foundation laid that shows that this gentleman has that
3 knowledge.

4 BY MR. KRAUS:

5 Q. Let me strike that then and rephrase.

6 Sir, do you have knowledge of what happened to
7 documents related to Johns-Manville Corporation's
8 participation in the asbestos industry?

9 A. Yes.

10 Q. And how do you have that knowledge, sir?

11 A. When I first became employed by the trust, I
12 went to Denver, Colorado, where Manville was
13 headquartered, to their headquarters building. And I was
14 actually shown the litigation part of the documents that
15 I referred to, consisting of virtually thousands of
16 documents involved in the 17,000 or so pending personal
17 injury cases which were stayed by the bankruptcy and in
18 addition an equally large and perhaps even slightly
19 larger group of documents which Manville had used in the
20 litigation in California against its insurance carriers
21 which was then over and was presently using in the Court
22 of Claims in its suit against the government.

1 MR. CRUMP: Move to strike those portions of
2 this gentleman's answer which are clearly hearsay in
3 which he was shown documents and was told or is purported
4 to know whose documents they appear to be.

5 BY MR. KRAUS:

6 Q. Sir, did those documents which you reviewed at
7 the Manville Corporation include the internal documents
8 of Johns-Manville Corporation in asbestos-related
9 businesses?

10 MR. CRUMP: Object to the form.

11 THE WITNESS: It included them. Obviously in
12 the personal injury side there were plaintiffs' documents
13 as well, but it included the asbestos work of
14 Johns-Manville.

15 BY MR. KRAUS:

16 Q. Sir, what happened to those asbestos-related
17 documents in 1988?

18 MR. CRUMP: Object to the form.

19 THE WITNESS: We, the trust, had transferred to
20 a warehouse which we leased in Denver all of the Manville
21 documents used in the insurance litigation in
22 California. We had transferred to us in the District of

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1 Columbia most, not all, but most of the personal injury
2 documents which Manville had had pending in 1982 in the
3 thousands of lawsuits that were stayed.

4 We had transferred to us to the Denver
5 warehouse all of the documents Manville was not currently
6 using in the lawsuit against the United States Government
7 in the Court of Claims and then copied the documents
8 which they were currently using during that litigation
9 and then had transferred to us in the same warehouse in
10 Denver all of the asbestos documents from wherever they
11 were located in the country. They were in three
12 principal places, in Manville facilities, some of which
13 were closed, some of which were opened, by truck and
14 brought to us in the Denver warehouse.

15 BY MR. KRAUS:

16 Q. Sir, are you now the custodian for those
17 documents related to Manville's asbestos activities?

18 MR. CRUMP: Excuse me. Are you referring to
19 Mr. Austern personally or the Manville Trust as an
20 entity?

21 MR. KRAUS: I am referring to Mr. Austern
22 personally.

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1 BY MR. KRAUS:

2 Q. Are you, Mr. Austern, now the custodian for
3 those documents related to Manville's asbestos-related
4 activities?

5 A. Yes, I am.

6 Q. Sir, let me show you what's been marked as
7 Plaintiff's Exhibit No. 2.

8 A. Okay.

9 Q. Would you identify what that is?

10 A. This is an affidavit which I prepared and
11 signed in March of last year.

12 Q. Is that affidavit true and correct to the best
13 of your knowledge, sir?

14 A. It is --

15 MR. CRUMP: Excuse me. I object to the form in
16 that the document speaks for itself.

17 THE WITNESS: It is accurate.

18 BY MR. KRAUS:

19 Q. I'm going to show you a series of exhibits
20 here, and let me identify them for the record.

21 First Plaintiff's Exhibit No. 3 which is also
22 labeled Plaintiff's Exhibit JM 3, a letter to

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1 Mr. Vandiver Brown, Attorney, dated October 1, 1935, with
2 an attached letter dated September 25, 1935, to
3 Mr. Sumner Simpson from Ms. Rossiter of Asbestos
4 Magazine.

5 Plaintiff's Exhibit No. 4 also marked JM 4, an
6 October 3, 1935, letter to Mr. Sumner Simpson from
7 Mr. Vandiver Brown.

8 Plaintiff's Exhibit No. 5, also marked
9 Plaintiff's Exhibit JM 6, a Memorandum of Agreement dated
10 November 20, 1936.

11 Plaintiff's Exhibit No. 6, a February 27, 1937,
12 letter to Mr. Sumner Simpson from Vandiver Brown.

13 Plaintiff's Exhibit No. 7, also marked JM 12,
14 that's Plaintiff's Exhibit JM 12, a May 11, 1937, letter
15 to Raybestos-Manhattan, Inc., from Vandiver Brown,
16 attaching a First Progress Report on Asbestos Experiments
17 dated May 5, 1937.

18 Plaintiff's Exhibit 8 also marked Plaintiff's
19 Exhibit JM 16, a May 3, 1939, letter to Sumner Simpson
20 from Vandiver Brown.

21 Plaintiff's Exhibit 9, also marked JM 29, a
22 February 24, 1943, letter to Vandiver Brown from Leroy U.

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1 Gardner, attaching an Outline of Proposed Monograph on
2 Asbestosis.

3 Plaintiff's Exhibit No. 10, also marked
4 Plaintiff's Exhibit JM 30, a June 18, 1943 letter to
5 Mr. Sumner Simpson from A. S. Rossiter, attaching a
6 June 14, 1943, letter to Mr. John E. Morgan.

7 Plaintiff's Exhibit No. 11, an April 30, 1948,
8 letter to Mr. Ernest Muehleck, I cannot read the name
9 exactly, but he's identified as the president of Keasbey
10 & Mattison Company, from Vandiver Brown.

11 Plaintiff's Exhibit 12, also marked Plaintiff's
12 Exhibit JM 283, a December 8, 1936, letter to Members of
13 the Asbestos Industry from Mr. C. J. Stouffer.

14 Plaintiff's Exhibit 13, also marked Plaintiff's
15 Exhibit JM 292, a picture with caption identified as the
16 May 1945, International Hygiene Trustees Meeting.

17 Plaintiff's Exhibit No. 14, also marked
18 Plaintiff's Exhibit JM 294, a Xerox of a publication
19 entitled Health and Industry dated on the facing page
20 November 7, 1946.

21 Plaintiff's Exhibit 15, also marked Plaintiff's
22 Exhibit JM 296, a Report of Preliminary Dust

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1 Investigation for the Asbestos Textile Institute dated
2 June 1947.

3 Plaintiff's Exhibit 16, also identified as
4 Plaintiff's Exhibit JM 306, a letter dated December 6,
5 1956, to Mr. Hugh M. Jackson from Daniel C. Braun.

6 Plaintiff's Exhibit No. 17, also marked
7 Plaintiff's Exhibit JM 310, an August 23, 1957, letter to
8 Mr. Hugh M. Jackson from Daniel C. Braun with attached
9 references.

10 Plaintiff's Exhibit 18 also marked Plaintiff's
11 Exhibit JM 416, a June 12, 1961, confidential memorandum
12 to Mr. A. W. Spedding, from Leon Morowitz or Horowitz,
13 it's not readable.

14 Plaintiff's Exhibit 19, also marked Plaintiff's
15 Exhibit JM 297, dated July 11, 1947, a Memorandum on
16 Plant of Johns-Manville Corporation.

17 MR. CRUMP: Just for the record, I don't want
18 my silence to be construed as an admission that those
19 documents are what Mr. Kraus says that they purport to
20 be.

21 MS. McCLOSKEY: Do you have any copies of the
22 exhibits?

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1 MR. KRAUS: Yes.

2 MS. McCLOSKEY: Thank you.

3 BY MR. KRAUS:

4 Q. Would you review these, sir. And by these I'm
5 referring to Exhibits 3 through 19 I just identified.

6 A. Okay.

7 Q. Mr. Austern, are Exhibits 3 through 19 genuine
8 and authentic copies of documents maintained in the files
9 of the Manville Trust?

10 MR. CRUMP: Excuse me. I want to object to the
11 form of the question inasmuch as I understand the Alabama
12 rules and the law of the state of Alabama, documents
13 cannot be authenticated en masse. As these are a number
14 of different documents from different authors, I object
15 to Mr. Austern identifying them en masse.

16 BY MR. KRAUS:

17 Q. Then let's go through them one by one. Is
18 Exhibit 3 a genuine and authentic copy of a document
19 maintained in the files of Manville Trust?

20 MR. CRUMP: I object to the form of that
21 question in that there is no foundation laid or proper
22 predicate for that and it does not comport with the

1 Alabama rules of law of authentication.

2 BY MR. KRAUS:

3 Q. Did you answer?

4 A. No, I didn't. The answer is yes.

5 Q. Is Exhibit 4 a genuine and authentic copy of a
6 document maintained in the files of Manville Trust?

7 MR. CRUMP: Same objection that I just stated.

8 THE WITNESS: Yes, it is.

9 BY MR. KRAUS:

10 Q. Is Exhibit 5 a genuine and authentic copy of a
11 document maintained in the files of Manville Trust?

12 MR. CRUMP: Same objection.

13 THE WITNESS: Yes, it is.

14 MR. CRUMP: Can I just have that same objection
15 as to all the documents which you are going to ask this
16 gentleman about?

17 MR. KRAUS: Yes.

18 MR. CRUMP: Yes?

19 MR. KRAUS: Yes.

20 BY MR. KRAUS:

21 Q. Is Exhibit 6 a genuine and authentic copy of a
22 document maintained in the files of Manville Trust?

1 A. Yes it is.

2 Q. The same about 7?

3 A. Yes.

4 Q. And is 8 also?

5 A. Yes.

6 Q. And is 9 also?

7 A. Yes.

8 Q. And is 10 also?

9 A. Yes.

10 Q. By also you understand I mean the same question

11 I just asked you, whether these are genuine and authentic

12 copies of documents maintained in the files of the

13 Manville Trust?

14 A. I understand.

15 Q. And is 11 also?

16 A. Yes.

17 Q. And 12?

18 A. Yes.

19 Q. And 13?

20 A. Yes.

21 Q. And 14?

22 A. Yes.

1 Q. Fifteen?
2 A. Yes.
3 Q. Sixteen?
4 A. Yes.
5 Q. Seventeen?
6 A. Yes.
7 Q. Eighteen?
8 A. Yes.
9 Q. Nineteen?
10 A. Yes.
11 Q. And, sir, are you the custodian for these
12 documents?
13 MR. CRUMP: Object to the form.
14 THE WITNESS: Yes.
15 BY MR. KRAUS:
16 Q. Sir, is there anyone else in either the
17 Manville Trust or the Manville Corporation who maintains
18 a collection or a repository of all these documents?
19 A. No.
20 Q. Sir, have you seen original copies of these
21 documents?
22 MR. CRUMP: Object to the form. Again it calls

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1 for him to verify seeing originals of a number of
2 different exhibits and I object to the form of that on
3 that basis.

4 BY MR. KRAUS:

5 Q. Answer it if you can, sir.

6 A. Can I refresh my recollection for a second?

7 Q. Yes.

8 A. I believe I'm going to say Exhibit 14, yes.

9 With respect to Exhibit 13, I have never seen the
10 original picture, but I have seen the original magazine
11 or a copy of the original magazine. With respect to all
12 the exhibits up to 13, I have seen either carbon copies
13 on tissue paper of Vandiver Brown's correspondence to
14 Sumner Simpson or his colleague of what are frequently
15 referred to as the Sumner Simpson papers. Obviously,
16 where Vandiver Brown is the sender, I have not seen the
17 original, I have seen the tissue copy or a tissue copy, I
18 can't say it's the only tissue copy.

19 With respect to correspondence to Vandiver
20 Brown from Sumner Simpson or others, in a few cases I
21 have seen the original letters and in some of those cases
22 the original letters were actually offered into evidence;

1 although I have seen them, I do not have them, I have
2 copies.

3 With respect to Exhibit 14, I have seen an
4 original publication; that is to say, this is a copy of
5 the original publication, there were obviously a number
6 of copies.

7 The same for Exhibit 15, I have seen -- this is
8 a copy, but I have seen what certainly appeared to be
9 original versions of Exhibit 15.

10 I cannot tell you that I have seen originals or
11 even tissues of 16 or Exhibit 17, but I certainly have
12 copies in my possession in the warehouse. And I have
13 seen what I believe are original typed versions of
14 Exhibits 18 and 19.

15 BY MR. KRAUS:

16 Q. Now, sir, for those documents which you just
17 identified as having seen either the original or a tissue
18 carbon copy, did those documents that you actually saw
19 appear to be aged?

20 MR. CRUMP: Object to the form of the question
21 because there's no specificity with respect to which
22 documents he saw. In particular I would cite to the fact

1 that he saw some but not all of the original of what he
2 referred to as the Sumner Simpson papers and I would
3 object to lack of foundation as to whether this witness
4 can testify to their age or not.

5 BY MR. KRAUS:

6 Q. Sir, in light of the objection, I think we had
7 better break this down again. With regard to Exhibit 3
8 and the attachment, have you seen either the original or
9 a tissue carbon copy original of that?

10 A. Yes.

11 Q. Did they appear to be aged?

12 MR. CRUMP: Object to the form.

13 THE WITNESS: They did.

14 BY MR. KRAUS:

15 Q. Did they appear to be in a condition so as to
16 create no suspicion as to their authenticity?

17 MR. CRUMP: I object to the form, it calls for
18 a conclusion that I think is best left to the Court.

19 THE WITNESS: I certainly believed they were
20 authentic.

21 BY MR. KRAUS:

22 Q. Do you have any reason to believe that the

1 dates reflected on the documents are incorrect?

2 A. No.

3 Q. Let me show you Exhibit 4. Have you seen
4 either an original or a tissue copy, original carbon copy
5 of that document?

6 A. Yes.

7 Q. Did it appear to be aged?

8 MR. CRUMP: Same objection as to the form, lack
9 of predicate or foundation.

10 THE WITNESS: It did.

11 BY MR. KRAUS:

12 Q. Is there any reason for you to believe that the
13 date is incorrect on that document?

14 A. No.

15 Q. Same question as to Exhibit 5 here. Have you
16 seen an original or a carbon copy of that document?

17 MR. CRUMP: Same objection.

18 THE WITNESS: I have seen a typed original of
19 that document which I believe has the original signatures
20 on it.

21 BY MR. KRAUS:

22 Q. Any reason to doubt that the date reflected on

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1 that document is in any way incorrect?

2 MR. CRUMP: Object to the form.

3 THE WITNESS: No.

4 BY MR. KRAUS:

5 Q. The original typed copy appeared to be aged?

6 A. Oh, yes.

7 Q. Let me show you Exhibit 6. Have you seen
8 either an original or an original carbon copy of Exhibit
9 6?

10 A. Carbon copy, yes.

11 Q. Did it appear to be aged?

12 MR. CRUMP: Same objection.

13 THE WITNESS: Yes.

14 BY MR. KRAUS:

15 Q. Do you have any reason to believe that the date
16 reflected on that exhibit was incorrect?

17 A. It appeared to be correct.

18 Q. Have you seen Exhibit 7, have you seen either a
19 copy or an original tissue carbon copy?

20 A. I've seen a tissue carbon copy of this.

21 Q. Did it appear to be aged?

22 MR. CRUMP: Same objection.

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1 THE WITNESS: Yes, it did appear to be aged.

2 BY MR. KRAUS:

3 Q. Any reason to believe the date reflected on
4 that exhibit is not correct?

5 MR. CRUMP: Same objection.

6 THE WITNESS: Same answer.

7 BY MR. KRAUS:

8 Q. I show you what's been marked as Exhibit 8.
9 Have you seen an original or an original carbon copy of
10 Exhibit 8?

11 A. A carbon copy again.

12 Q. Did it appear to be aged?

13 MR. CRUMP: Same objection.

14 THE WITNESS: Yes, it did.

15 BY MR. KRAUS:

16 Q. Any reason to believe the date is not correct
17 on that exhibit?

18 MR. CRUMP: Same objection.

19 THE WITNESS: I believe it's correct.

20 BY MR. KRAUS:

21 Q. I show you Plaintiff's Exhibit 9. Have you
22 seen an original or a carbon copy of Plaintiff's Exhibit

1 9?

2 A. I have seen a carbon copy.

3 Q. Did that tissue carbon copy appear to be aged?

4 A. It did.

5 Q. Any reason to believe that the date reflected
6 on that exhibit is incorrect?

7 MR. CRUMP: Object to the form, particularly in
8 light of the fact that there is an attachment; and,
9 whether or not the date on the cover letter is correct or
10 if it appears aged, object to the form with reference to
11 applying that to any attachments.

12 THE WITNESS: I believe it's correct.

13 BY MR. KRAUS:

14 Q. How about the attachment, sir?

15 A. I believe the age of this is correct as well.

16 MR. CRUMP: I object to the form. I don't see
17 a date on that document anywhere.

18 THE WITNESS: I'm relying on the date of the
19 letter.

20 BY MR. KRAUS:

21 Q. Fine. Have you seen a copy of the attachment?

22 A. Yes. And there appears to be an attachment to

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1 the attachment. In any event, I have seen the entire
2 document.

3 Q. And did the attachment and the attachment to
4 the attachment appear to be aged as well, sir?

5 A. Yes, they did.

6 Q. Let me show you Plaintiff's Exhibit 10.

7 A. Yes.

8 Q. Have you seen an original or an original carbon
9 copy of Plaintiff's Exhibit 10?

10 A. I have.

11 Q. Did it appear to be aged?

12 MR. CRUMP: Same objection.

13 THE WITNESS: Yes, it did. There's also an
14 attachment to Exhibit 10 which bears a date four days
15 earlier.

16 BY MR. KRAUS:

17 Q. Do you have any reason to believe that the date
18 of the letter or the attachment is not correct?

19 MR. CRUMP: Same objection.

20 THE WITNESS: I believe it's correct.

21 BY MR. KRAUS:

22 Q. Let me show you what's been marked as

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1 Plaintiff's Exhibit 11. Have you seen an original or an
2 original carbon copy of Plaintiff's Exhibit 11?

3 A. Yes, I have.

4 Q. Did it appear to be aged?

5 MR. CRUMP: Same objection.

6 THE WITNESS: It appeared to be aged.

7 BY MR. KRAUS:

8 Q. Do you have any reason to believe that the date
9 reflected on that document is not correct?

10 MR. CRUMP: Same objection.

11 THE WITNESS: I believe it's correct.

12 BY MR. KRAUS:

13 Q. Let me show you what's been marked as
14 Plaintiff's Exhibit 12. Have you seen an original or an
15 original carbon copy of Plaintiff's Exhibit 12?

16 A. Yes, I have.

17 Q. Did it appear to be aged?

18 A. It did.

19 MR. CRUMP: Excuse me. I'm going to have the
20 same objection to did it appear to be aged and did
21 the -- the same two questions that Mr. Kraus has been
22 asking, did the document appear to be aged and did it

1 appear to be the date that was reflected, I think the
2 basic thrust of those questions, that I have the same
3 objection to all of those. And if you will give me a
4 standing objection on that.

5 MR. KRAUS: That's fine.

6 MR. CRUMP: Thank you.

7 THE WITNESS: It appeared to be aged.

8 BY MR. KRAUS:

9 Q. Do you have any reason to believe that the date
10 reflected on that document is incorrect?

11 A. No, I believe it's correct.

12 Q. Let me show you what's been marked as
13 Plaintiff's Exhibit No. 13. I believe you testified
14 earlier that you have seen a copy, an original copy of
15 the magazine that that picture came from?

16 A. Yes. Let me tell you, I believe it's a
17 privately printed magazine, I don't suggest it's like
18 Time or Newsweek or anything like that, and I believe
19 it's also a program for a convention or some meeting.
20 But yes, I have seen the original.

21 Q. And do you have any reason to believe that the
22 May 1945 date of that picture is incorrect?

1 A. I have no reason to believe it's incorrect.

2 Q. Sir, did that original copy of that program
3 that you have seen appear to be aged?

4 A. Yes.

5 Q. And, sir, let me show you what's been marked as
6 Plaintiff's Exhibit 14 dated on the facing page November
7 7, 1946. Have you seen an original copy of that
8 document?

9 A. I have seen an original in the exact spiral
10 form that the first page appears to be copied from.

11 Q. And did it appear to be aged?

12 A. Yes, it did.

13 Q. Do you have any reason to believe that the date
14 reflected on that exhibit is incorrect?

15 A. I believe it's correct.

16 Q. With regard to Exhibit 15, sir, have you seen
17 an original or an original carbon copy of that report?

18 A. I have seen an original, what appeared to be an
19 original version of this report.

20 Q. Did it appear to be aged?

21 A. It did.

22 Q. Do you have any reason to believe that the date

1 reflected on that document is not correct?

2 A. I believe it's correct.

3 MR. CRUMP: Excuse me. Off the record just a
4 second.

5 (Discussion off the record.)

6 BY MR. KRAUS:

7 Q. Mr. Austern, I believe you testified earlier
8 that Exhibits 16 and 17 you have not seen originals or
9 original carbon copies of?

10 A. That's correct.

11 Q. You are, however, the document custodian for
12 these documents?

13 A. That's correct.

14 Q. And do you have any reason to believe the dates
15 reflected on Exhibits 16 and 17 are incorrect?

16 MR. CRUMP: Object to the form, no predicate or
17 foundation.

18 THE WITNESS: No, I do not, I believe they're
19 correct.

20 BY MR. KRAUS:

21 Q. Let me show you Exhibit 18, sir. Have you seen
22 an original or an original carbon copy of this document?

1 A. Yes, I have.

2 Q. Did it appear to be aged?

3 A. It did.

4 Q. Do you have any reason to believe the date
5 reflected on that exhibit is incorrect?

6 A. I believe it's correct.

7 Q. And the same question with 19, have you seen an
8 original or an original carbon copy of Plaintiff's 19?

9 A. Yes, I have.

10 Q. Did it appear to be aged?

11 A. It did.

12 Q. Do you have any reason to believe the date on
13 that document is incorrect?

14 A. I believe it's correct.

15 Q. And, sir, in summary are you the custodian for
16 Exhibits 3 through 19 for the Manville Trust?

17 A. Yes.

18 Q. And are Exhibits 3 through 19 genuine and
19 authentic copies of those documents that you are
20 custodian for?

21 MR. CRUMP: Same objection.

22 THE WITNESS: Yes, they are.

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1 BY MR. KRAUS:

2 Q. And do you have any reason to believe that any
3 of the dates reflected on Exhibits 3 through 19 are
4 incorrect?

5 MR. CRUMP: Same objection.

6 THE WITNESS: No, I do not.

7 MR. KRAUS: Pass the witness.

8 MR. CRUMP: May I have just a second, please.

9 EXAMINATION BY COUNSEL FOR
10 DEFENDANT OWENS-CORNING FIBERGLAS

11 BY MR. CRUMP:

12 Q. Let me ask you a few preliminary questions,
13 sir. When did you become affiliated with the Manville
14 Personal Injury Trust?

15 A. November 1 or 2, 1987.

16 Q. Prior to that date, had you had any connection
17 or affiliation with either the Manville Corporation or
18 Johns-Manville or any of its subsidiaries?

19 A. No.

20 Q. Would it be fair to say that prior to the
21 date of November 1, 1987, or November 2, whichever the
22 correct date is, you have no personal knowledge with

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1 respect to either the history of Johns-Manville
2 Corporation, the recordkeeping procedures of
3 Johns-Manville Corporation, or other aspects of its
4 corporate policies?

5 A. That's correct.

6 Q. How old a gentleman are you, sir?

7 A. I'm sorry?

8 Q. How old a gentleman are you?

9 A. Fifty-three, February 8, 1939.

10 Q. Do you recall most of the documents Mr. Kraus
11 asked you about were dated in the early to mid-thirties
12 and early forties, correct?

13 A. Correct.

14 Q. You would have been either not born or an
15 infant during the time that most of these documents were
16 purportedly authored?

17 A. Correct.

18 Q. And you clearly don't purport to have firsthand
19 knowledge with respect to the circumstances of offering
20 transmission or receipt of those documents?

21 A. I have no firsthand knowledge.

22 Q. As I understood your earlier testimony, sir,

1 the, quote, Manville documents are divided up into in
2 your opinion three categories, category one or maybe
3 category one and two are really one category but
4 documents used in litigation, either third-party
5 litigation, insurance litigation by Johns-Manville, or
6 John Manville's claim against the United States?

7 A. That's correct.

8 Q. Can we just combine those into, quote,
9 litigation documents?

10 A. Certainly.

11 Q. And the other category would be anything other
12 than litigation documents?

13 A. That was asbestos-related.

14 Q. And do you have an independent recollection as
15 we sit here today with respect to Exhibits 3 through 19
16 that Mr. Klaus asked you about whether any of those came
17 from the, quote, litigation documents or any other
18 documents?

19 A. Almost all of them were given to me separately
20 at one time so I can't tell you.

21 Q. I believe that I understood your testimony
22 earlier correctly in that the litigation documents

1 included documents that Johns-Manville used, either their
2 own documents or documents that they obtained through
3 discovery; is that correct?

4 A. That's correct.

5 Q. So, with respect to the aspect or the portion
6 of the documents that are considered to be litigation
7 documents, those all are not necessarily internal
8 Johns-Manville documents or documents that are kept at
9 Johns-Manville, they may have been received through the
10 discovery process?

11 A. That is correct.

12 Q. And, as you sit here today, do you have an
13 independent recollection with respect to each of these
14 documents whether any of those were received by
15 Johns-Manville through the litigation discovery process
16 as opposed to being kept by them originally, do you have
17 any firsthand knowledge with respect to that?

18 A. I have no firsthand knowledge, no.

19 Q. And I believe your characterization of the
20 documents that you reviewed when you went out to Denver
21 were thousands and thousands of documents; is that
22 correct?

- 1 A. You mean that were in Denver at the time.
- 2 Q. Yes.
- 3 A. Yes.
- 4 Q. And that was in approximately 1988?
- 5 A. Early '88.
- 6 Q. And approximately 1988 would have been the
7 first time that you would have personally seen any
8 documents that were the, quote, Manville documents; is
9 that correct?
- 10 A. No, that is not correct.
- 11 Q. Would it have been sometime after November 1 of
12 1987?
- 13 A. In December of '87 I was shown some documents.
- 14 Q. Do you have a recollection as you sit here
15 today whether any of the documents Mr. Kraus showed you
16 were included in the documents you saw in December of
17 1987?
- 18 A. Yes, they were.
- 19 Q. So would December of 1987 be a good starting
20 point with respect to your personally having seen any,
21 quote, Manville documents?
- 22 A. That's correct.

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1 Q. Would it be a fair statement, sir, that, from
2 the date that any of these documents may have been
3 authored to December 1987, you would have no personal
4 knowledge with respect to how they were kept, where they
5 were kept, or in what form they were kept?

6 A. I have no personal knowledge, that's correct.

7 Q. Now, you indicated that there were sources of
8 the documents other than the main Johns-Manville offices
9 in Denver?

10 A. That is correct.

11 Q. And I think you said there were three main
12 other sources. What were those three main other sources?

13 A. Manville, New Jersey, where Manville at one
14 time had a large plant and boxes were in storage there.
15 Lompoc, California, where similarly Manville had a large
16 plant, asbestos plant, and documents were sent to us from
17 Lompoc. And Bloomington, Illinois, on which I have no
18 firsthand knowledge, but huge numbers of documents came
19 from a Manville facility in Bloomington, I can only
20 assume a factory or a storage facility of some kind.

21 Q. As you sit here today, do you have personal
22 knowledge as to which of the documents, if any, that

1 Mr. Kraus has shown you today came from which of those
2 four facilities; in other words, Denver, Manville,
3 New Jersey, Lompoc, or Bloomington?

4 A. I don't believe any of the documents up to
5 exhibit -- can I refresh my recollection -- up to and
6 including Exhibit 12, I don't believe any of the
7 documents came from any of the three facilities you just
8 mentioned.

9 Q. Do you know at what point in time documents
10 from those facilities were sent to either Denver or
11 D.C.?

12 A. From those facilities?

13 Q. Yes.

14 A. They went to Denver and it was I would say from
15 April 1 to May 1, 1988, it was done by truck over a
16 period of time.

17 Q. Did you in any way oversee or supervise the
18 loading of the documents or the shipping of those
19 documents from the three facilities that we just
20 discussed to Denver?

21 MR. KRAUS: Object to the form of the
22 question. What do you mean about in any way oversee, you

1 mean actually there on the loading dock or involved in
2 the process?

3 BY MR. CRUMP:

4 Q. Do you understand my question, sir?

5 A. I think I do. I was not at the shipping end,
6 the loading end, of the documents. In a few cases I
7 believe I happened to be there when the documents arrived
8 in Denver.

9 Q. With respect to the documents in Denver, prior
10 to December or so of 1987, would you have had any direct
11 knowledge or input into the pulling together of all those
12 documents from the various sources within the Denver
13 facility?

14 A. Well, when I saw them in December of '87, they
15 were all pulled together. I can't tell you when that
16 happened.

17 Q. And you don't know, you have no personal
18 knowledge of who did that or under what circumstances
19 that was done or what protocol was followed to do that?

20 MR. KRAUS: Object on the grounds of
21 relevance.

22 THE WITNESS: Only through hearsay do I know

1 who did it.

2 BY MR. CRUMP:

3 Q. So the answer to my question would be that's
4 correct in terms of you have no personal knowledge?

5 A. I have no personal knowledge.

6 Q. Now, you mentioned the areas of litigation and
7 you mentioned insurance litigation that Johns-Manville
8 was involved in and a claim here in Washington against
9 the United States Government.

10 A. That's correct.

11 Q. And is it your understanding that that claim
12 was that Johns-Manville was pursuing either
13 indemnification by the government or compensation from
14 the government because of Johns-Manville having sold
15 asbestos products that were military spec'd products?

16 MR. KRAUS: Object to the question on a number
17 of grounds. First off it's completely irrelevant to the
18 purpose of this deposition; secondly, the witness has no
19 personal knowledge; thirdly, any government contract
20 defense-related questions are completely irrelevant to
21 this litigation.

22 THE WITNESS: To the extent I understand how

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1 the Court of Claims works, I believe it was an
2 indemnification case.

3 BY MR. CRUMP:

4 Q. Sir, let me ask you about the affidavit that
5 was marked as Exhibit 2 I believe. Have you got that in
6 front of you, sir?

7 A. Yes.

8 Q. All right. You indicated that you drafted
9 that?

10 A. Yes.

11 Q. At whose request?

12 A. Somebody in the firm of Baron & Budd.

13 Q. Did that person provide you with the documents
14 about which they requested an affidavit on the
15 authenticity?

16 MR. KRAUS: Object to the form of the
17 question.

18 THE WITNESS: I'm not sure. You mean documents
19 themselves?

20 BY MR. CRUMP:

21 Q. Well --

22 A. I believe I had a list -- to clarify my answer,

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1 I believe I had a list of documents, I'm not sure at the
2 time I had the documents.

3 Q. You were provided a list of documents by Baron
4 & Budd?

5 A. Yes.

6 Q. And the list would identify the date, author,
7 and recipient perhaps of the document or maybe the
8 subject matter of the document?

9 A. Essentially in the form of the affidavit, yes.

10 Q. And did you undertake to go to the document
11 repository and compare the documents that were identified
12 on the list with the originals in order to execute that
13 affidavit?

14 A. In some cases, yes; in some cases I had already
15 done that because of other affidavits in other
16 depositions.

17 Q. Do you have a recollection at this point in
18 time -- I understand it's four years later, do you have a
19 recollection of which of the documents you actually went
20 to the repository and verified as opposed to which you
21 did from memory from other affidavits?

22 A. Well, it's not four years later, it's one year

1 later. This is March of -- excuse me, you're right,
2 March of '91. Certainly the first 12 exhibits I had here
3 and had done that exercise before. I know the picture
4 and I recognize the picture and I've seen the original.

5 I believe 14 and 15, the two publications that
6 have been referred to, I have seen the originals a number
7 of times. I can't tell you with respect to 16 or 17
8 because I'm not sure I have ever seen originals and
9 frankly as I sit here I can't remember what I did with 18
10 and 19.

11 Q. Let me ask you a question, and I will need to
12 refer to the affidavit now. There are a couple of
13 documents that Mr. Kraus asked you about here today that
14 were not listed on this particular affidavit and I'm
15 going to go through them individually. But generally did
16 you review any documents in the repository in preparation
17 for the deposition here today?

18 A. No.

19 Q. Would it be fair to say that any testimony you
20 have given with respect to documents that were not
21 contained on this affidavit you're giving from memory in
22 terms of you haven't looked at that document recently in

1 the repository and compared it with any copy that
2 Mr. Kraus may have offered to you?

3 MR. KRAUS: Object to the form of the
4 question.

5 THE WITNESS: That's correct. But, to make it
6 clear, I had copies of these documents in advance of the
7 deposition.

8 BY MR. CRUMP:

9 Q. Yes, sir.

10 A. I have not compared them in preparation for
11 this deposition with copies in the warehouse, that's
12 correct.

13 Q. Let me see if I can find which ones I'm
14 particularly referring to. For example, Exhibit No. 15,
15 also identified as JM 296, I believe was identified by
16 Mr. Kraus as being a preliminary dust study sent to the
17 Asbestos Textile Institute; is that correct?

18 A. That's correct.

19 Q. If you'll look at your affidavit, I don't
20 believe that's one that you mentioned in your affidavit.
21 Certainly, if it is, it's not in chronology.

22 MR. KRAUS: Object on the grounds of relevance,

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1 it's immaterial whether or not that was a document that
2 we asked about in his affidavit.

3 THE WITNESS: I agree, it does not appear to be
4 in the affidavit.

5 BY MR. CRUMP:

6 Q. And, aside from relying on your memory,
7 you have not taken the copy of Exhibit 15 that
8 Mr. Kraus has provided you and compared that with any
9 original document or such that may be kept in the
10 Manville repository?

11 A. Not in preparation for this deposition.

12 Q. A number of the documents Mr. Kraus showed to
13 you were not authored by someone at Johns-Manville; is
14 that correct?

15 A. That's correct.

16 Q. As to any of the documents, you have no
17 firsthand knowledge with respect to the mode of its
18 preparation or whether or not it was, in fact, prepared
19 at or about the time that the date is reflected on the
20 document?

21 A. I have no personal knowledge.

22 Q. And you have no personal knowledge with respect

1 to whether or not it was prepared at or about the time
2 that the event that purports to be depicted in the
3 document took place?

4 A. I have no such personal knowledge.

5 Q. As to the documents that were not authored by
6 someone at Johns-Manville, you have no firsthand
7 knowledge as to whether or not that document was prepared
8 in the regular course of business of whatever entity
9 authored it?

10 A. That's correct.

11 Q. Do you have any reason to believe that any of
12 the documents that Mr. Kraus has asked you about were
13 distributed outside of the named recipients on the face
14 of the documents?

15 A. I'm sorry, were they what?

16 Q. Distributed beyond the named recipients
17 indicated on the face of the document.

18 A. I don't know if they were or weren't.

19 Q. You have no information about that?

20 A. That's correct.

21 Q. This may be a variation on a question
22 I asked you earlier and I'm trying to understand

1 it to remember if I did ask you. If I did, I
2 apologize for my repetitiveness, and I'm going to
3 ask you several questions that are going to start
4 with the premise that -- let me just ask the questions.

5 With respect to the documents, Exhibits 3
6 through 19, that Mr. Kraus has shown you, do you agree
7 with me that all the documents bear a date before any
8 involvement by you with either Johns-Manville or Manville
9 Trust?

10 A. That's correct.

11 Q. And, with respect to whether or not the
12 documents authored by or purportedly authored by either a
13 Manville individual or authored outside Manville, you
14 have no personal knowledge regarding the method or
15 standard operating procedure employed by either Manville
16 or the purported author of the document with respect to
17 the making of business records?

18 A. That's correct.

19 Q. And you have no personal knowledge with respect
20 to either Manville or the purported author of the
21 document as to what was the regular practice of business
22 regarding the making of records during that period of

1 time?

2 A. That's correct.

3 Q. And you have no personal knowledge whether or
4 not any of the documents were made at the time of the
5 event recorded or within some close period of time
6 following that?

7 A. That's correct.

8 Q. With respect to all the documents that were
9 gathered from Manville facilities, and I think your
10 testimony was that all the documents that Mr. Kraus has
11 shown you here today you believe were gathered from
12 Manville facilities?

13 A. Correct.

14 Q. You have no personal knowledge what may or may
15 not have happened with those documents, how they were
16 stored, or any changes that could have been made on those
17 documents from the date that they bear to the time that
18 you first became involved with them in December of 1987
19 or thereabouts?

20 A. That's correct.

21 Q. Some of the documents contain what I will refer
22 to as marginalia or handwriting on the face of a typed

1 document, correct?

2 A. Correct.

3 Q. And would it be correct to say that you have no
4 personal knowledge regarding who may have put the
5 marginalia on there or when it may have been placed on
6 there?

7 A. With the exception of the numbered stamps, not
8 date stamps but number stamps that appear on the lower
9 right-hand corner of some of the documents, that is
10 correct.

11 Q. What I will refer to as the Bates stamp, that's
12 the printed number on the lower right-hand corner of some
13 of the documents?

14 A. That's correct.

15 Q. When and by whom were those numbers placed on
16 any of the documents that they appear on?

17 A. I can't tell you the identity of the person who
18 placed the numbered stamps on them, but I will tell you
19 that the numbered stamps refer to documents used either
20 in the insurance litigation by Manville or in the Court
21 of Claims litigation by Manville.

22 Q. Did either Manville or the trust attempt to

1 Bates stamp all the documents contained within its
2 various repositories?

3 A. I will tell you, the trust certainly did not.
4 I don't know if Manville did.

5 Q. With respect to the documents that Mr. Kraus
6 has shown you, Exhibits 3 through 19, he went through
7 each one of them individually and asked you if you had
8 seen an original and did it look aged and did you have
9 any reason to believe that it was dated other than the
10 date on the face of the document.

11 Do you have any firsthand knowledge other
12 than the date on the face of the document that the
13 document was, in fact, prepared on the date that it
14 bears?

15 A. That's what I rely on, the date on the
16 document.

17 Q. You have no firsthand knowledge other than that
18 date?

19 A. That's correct.

20 MR. CRUMP: I believe those are all the
21 questions I have. Thank you, sir.

22 MR. KRAUS: Just a couple of follow-up.

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1 FURTHER EXAMINATION BY COUNSEL
2 FOR THE PLAINTIFFS

3 BY MR. KRAUS:

4 Q. Mr. Austern, were all of these exhibits
5 among exhibits received by the trust in either
6 facilities, agents, or employees of the Manville
7 Corporation?

8 MR. CRUMP: Object to the form.

9 THE WITNESS: That's correct.

10 BY MR. KRAUS:

11 Q. Let me ask you once more to examine Exhibit 15
12 carefully.

13 A. Okay.

14 Q. Does it appear to be a genuine and authentic
15 copy of the original of that document which you have
16 reviewed?

17 MR. CRUMP: Object to the form, lack of
18 predicate or foundation.

19 THE WITNESS: Yes.

20 BY MR. KRAUS:

21 Q. You have reviewed the original of this
22 document?

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1 A. Oh, I've seen an original of this, yes.

2 Q. Isn't it true, sir, that, when the
3 Manville Trust took custody of all these documents,
4 all the asbestos-related documents of the Manville
5 Corporation, that they were covered with asbestos
6 dust?

7 MR. CRUMP: Object to the form.

8 THE WITNESS: The boxes that came to us from
9 the three facilities that I mentioned had to be vacuumed
10 before we opened them because they had asbestos dust on
11 them.

12 MR. KRAUS: Nothing further.

13 Thank you.

14 MR. CRUMP: Off the record for a second.

15 (Discussion off the record.)

16 MR. CRUMP: Please read back the first question
17 by Mr. Kraus on redirect.

18 THE REPORTER: Question: Mr. Austern, were all
19 of these exhibits among exhibits received by the trust in
20 either facilities, agents, or employees of the Manville
21 Corporation?

22

1 FURTHER EXAMINATION BY COUNSEL FOR
2 DEFENDANT OWENS-CORNING FIBERGLAS
3 BY MR. CRUMP:

4 Q. Let me clarify one thing, sir. The litigation
5 in which Johns-Manville was involved, the third-party
6 litigation, the insurance litigation, and the Court of
7 Claims litigation was all ongoing. With respect to the
8 third-party litigation, it had stopped by the time you
9 became involved?

10 A. That's correct, it was subject to a bankruptcy
11 stay.

12 Q. And do you have information with respect to at
13 what point in time Johns-Manville first became involved
14 in third-party litigation?

15 A. Generally, yes.

16 Q. And approximately when was that?

17 A. I think the very first lawsuit was a Workers'
18 Compensation lawsuit in the '30s. But, as far as --

19 Q. I said third-party lawsuits. Do you understand
20 the distinction between third-party lawsuits and Workers'
21 Compensation?

22 A. Excuse me, you're absolutely right.

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1 With respect to the 17,000 or so personal
2 injury files we inherited, I believe the oldest pending
3 was over ten years old which would make it just prior to
4 1972.

5 Q. Okay. And the insurance litigation and the
6 Court of Claims litigation was litigation that was either
7 ongoing or had concluded prior to the time that you
8 became involved with either Manville or the trust?

9 A. The insurance litigation was definitely over
10 because we had the money, the insurance company money.
11 The Court of Claims litigation was ongoing. I don't mean
12 to say that trials were underway, but discovery was
13 ongoing.

14 Q. And, when Mr. Kraus asked you in 1988 when the
15 trust received the documents from JM, he asked you
16 whether or not they were received from the facilities,
17 agents, or employees of JM. Prior to JM turning them
18 over to the trust, you have no personal knowledge of
19 where JM may have gotten them including how much of them
20 may have come from the litigation through discovery from
21 plaintiffs or otherwise?

22 A. That's correct.

1 MR. CRUMP: Thank you, sir.

2 MR. KRAUS: That's it.

3 (Thereupon, at 12:00 p.m., the taking of the
4 instant deposition ceased.)

5

6

7

Signature of the Witness

8

9 SUBSCRIBED AND SWORN to before me this _____ day of

10 _____, 19__.

11

12

13

NOTARY PUBLIC

14 My Commission Expires

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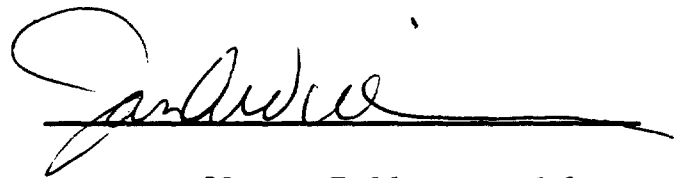
ALDERSON REPORTING COMPANY, INC.
1111 FOURTEENTH STREET, N.W.
SUITE 400
WASHINGTON, D.C. 20005
(202) 289-2260
(800) FOR DEPO

CERTIFICATE OF REPORTER

UNITED STATES OF AMERICA) ss.:

DISTRICT OF COLUMBIA)

I, JAN A. WILLIAMS, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me to the best of my ability and thereafter reduced to typewriting under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.



***Notary Public in and for
the District of Columbia***

My commission expires: 3-31-97

IN THE CIRCUIT COURT OF MOBILE COUNTY, ALABAMA

IN RE: ALL ASBESTOS-RELATED *
PERSONAL INJURY OR DEATH CASES *
FILED OR TO BE FILED IN *
MOBILE COUNTY, ALABAMA *

AMENDED NOTICE OF TAKING ORAL DEPOSITION

TO: ALL COUNSEL OF RECORD in the above-styled and numbered
cause of action.

PLEASE TAKE NOTICE that pursuant to the Alabama Rules of Civil Procedure, the deposition of David Austern, custodian of the records of the Manville Trust, will be taken stenographically on Monday, May 4, 1992, commencing at 10:30 A.M., and continuing until concluded, at the Manville Trust, 1825 Eye Street, N.W., Suite 300, Washington, D.C., before a certified court reporter from Alderson Reporting, 1111 14th Street, 4th Floor, Washington, D.C. 20005, telephone number 1-800-FOR-DEPO. All counsel of record are invited to attend and cross-examine.



Respectfully submitted,

BARON & BUDD
A PROFESSIONAL CORPORATION
The Centrum
3102 Oak Lawn Avenue
Suite 1100
Dallas, Texas 75219
(214) 521-3605
FAX: (214) 520-1181

By:

RW Budd/PAK

RUSSELL W. BUDD

State Bar No. 03312400

CERTIFICATE OF SERVICE

I hereby certify that an exact copy of the foregoing
Notice of Taking Oral Deposition has been delivered to all
counsel of record herein for the Defendants via telecopy and
U.S. Mail on this the 29th day of April, 1992.

RW Budd/PAK
RUSSELL W. BUDD

MEMORY TRANS REPORT

:BARON BUDD

(APR 29 '92 10:49AM)

* THIS FILE HAS BEEN CLEARED. *						
FILE NO.	FILE TYPE	DEPT. CODE	PAGES	RESULTS	GROUP	REMOTE TERMINAL IDENTIFICATION
70	SEND IMMEDIATE		6/6	OK	5	SPEED DIAL 61
			6/6	OK	5	SPEED DIAL 62
			6/6	OK	5	SPEED DIAL 63
			6/6	OK	5	SPEED DIAL 64
			6/6	OK	5	SPEED DIAL 65
			6/6	OK	5	SPEED DIAL 66
			6/6	OK	5	SPEED DIAL 67
			6/6	OK	5	SPEED DIAL 68
			6/6	OK	5	SPEED DIAL 70
			6/6	OK	5	SPEED DIAL 71
			6/6	OK	5	SPEED DIAL 72
			6/6	OK	5	SPEED DIAL 73

(APR 29 '92 10:00AM)

FILE NO.	FILE TYPE	DEPT. CODE	PAGES	GROUP	REMOTE TERMINAL IDENTIFICATION
70	SEND IMMEDIATE		6	5	SPEED DIAL 61
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				5	SPEED DIAL 68
				5	SPEED DIAL 70
				5	SPEED DIAL 71
				5	SPEED DIAL 72
				5	SPEED DIAL 73

REMAINING CALL CAPACITY 288

FREDERICK M. BARON
RUSSELL W. BUDD
BRENT M. ROSENTHAL
JANE N. SAGINAW
BRIAN D. WEINSTEIN
SARAH J. CLARK
LISA A. BLUE PH.D.
MARY E. SKELNIK
STEVEN D. WOLENS

BARON & BUDD
A PROFESSIONAL CORPORATION
ATTORNEYS AND COUNSELORS
THE CENTRUM
3102 OAK LAWN AVENUE
SUITE 1100
DALLAS, TEXAS 75219
(214) 521-3605
TELECOPIER (214) 520-1181

DIANE M. ANDREW
WENDY L. SMITH
JONATHAN DAVID
PETER A. KRAUS
JENNIFER B. CALHOUN
JANICE E. ROBINSON
SCOTT M. HENDLER
ERIC D. BEAL
C. ANDREW WATERS

* LICENSED ONLY IN IL AND MO
** LICENSED ONLY IN VA

GROUP #5

DATE: 4-29-92

<u>SP.#</u>	<u>TO</u>	<u>FAX NUMBER</u>	<u>PHONE NUMBER</u>
<u>61</u>	W. MICHAEL ATCHISON (OI)	(205) 868-6098	(205) 868-6000
<u>62</u>	R. STAN MORRIS (ROCK WOOL)	(205) 328-0013	(205) 328-2366
<u>63</u>	RICHARD VOLLMER (GARLOCK)	(205) 479-7700	(205) 476-5900
<u>64</u>	E.B. MCDONOUGH (A.W. CHESTERTON)	(205) 432-3300	(205) 432-3296
<u>65</u>	MICHAEL B. KINNARD (OI/KEENE)	(615) 525-8569	(615) 549-7000
<u>66</u>	JAMES W. TARLTON, III (FLINTKOTE)	(205) 432-4276	(205) 432-7517
<u>67</u>	JAMES A. PHILIPS (JOHN-CRANE)	(205) 344-7160	(205) 344-2814
<u>68</u>	MARK L. REDDITT (PC/FIB)	(205) 432-3736	(205) 432-3700
<u>69</u>	STEVEN M. HEATH (PC/FIB)	(404) 353-0673	(404) 354-4000
<u>70</u>	NORWOOD S. WILNER (CCR)	(904) 358-6889	(904) 354-8310
<u>71</u>	JON A. GREEN (OCF)	(205) 471-0810	(205) 476-3000
<u>72</u>	MARY BETH MANTIPLY (AC&S)	(205) 433-3559	(205) 433-3544
<u>73</u>	DAVID BARFIELD (AC&S)	(601) 353-6235	(601) 352-7500

NOTICE OF CONFIDENTIALITY

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FROM: John Kraus
URGENT! PLEASE DELIVER IMMEDIATELY
c:\fax\alastate

PAGES SENT 4

A F F I D A V I T

WASHINGTON, D.C.

SS:

David T. Austern, being duly sworn, deposes and says:

1. I am General Counsel of the Manville Personal Injury Settlement Trust (the "Trust"), with offices at 1825 Eye Street, N.W., Washington, D.C. 20006. I am admitted to practice before the courts in Washington, D.C., New York, Indiana, and before numerous federal courts, including the United States Supreme Court.

2. The documents attached to this affidavit and listed below were delivered to the Trust for custodial purposes by the Manville Corporation during May, 1988. To the best of my knowledge, the documents had been maintained until May, 1988 by the Manville Corporation in the ordinary course of its business. Based on the locations from which the documents were delivered to the Trust and the communications I received from officers of the Manville Corporation concerning the documents, I believe the documents are authentic.

3. Since May, 1988 the Trust has been the custodian of these documents and has maintained the documents in the ordinary course of its business as a settlement trust.



4. The dates of these documents reflect that they are more than twenty years old.

5. Many of the attached documents and similar documents maintained by the Trust as described above have been admitted into evidence in asbestos personal injury trials throughout the United States since at least 1984.

6. The attached documents referenced herein are:

JM1	Notice of Directors Meeting served April 15, 1933.
JM3	Letter dated October 1, 1935, to Vandiver Brown from Sumner Simpson with attachment: Letter to Sumner Simpson from A.S. Rossiter dated September 25, 1935.
JM4	Letter dated October 3, 1935, to S. Simpson from V. Brown.
JM6	Memorandum of Agreement dated November 20, 1936.
JM11	Letter dated February 27, 1937, to S. Simpson from V. Brown.
JM12	Letter dated May 11, 1937, to S. Simpson from V. Brown with attachment: First Progress Report on Asbestosis Experiments at the Saranac Laboratory dated May 5, 1937.
JM16	Letter dated May 3, 1939, to S. Simpson from V. Brown.
JM19	Letter dated May 4, 1939, to V. Brown from President (S. Simpson).
JM29	Letter dated February 24, 1943, to V. Brown from L.U. Gardner with attachment: "Outline of Proposed Monograph on Asbestosis."
JM30	Letter dated June 18, 1943, to S. Simpson from A.S. Rossiter with attachment: Letter dated June 14, 1943, to J. Morgan, Dept. of Labor & Industries, State of Washington, from E. DeForest, Northwest Magnesia Association.
JM31	Letter dated June 22, 1943, to V. Brown from S. Simpson.

JM32 Letter dated June 24, 1943, to S. Simpson from V. Brown.

JM86 April 8, 1946, letter from L. Gardner to J.P. Woodward.

JM89 April 18, 1946, letter from Gatke to V. Brown.

JM102 August 15, 1946, letter from L. Gardner to V. Brown.

JM118 December 2, 1946, letter from V. Brown to Bowditch.

JM121 Minutes of meeting held January 21, 1947.

JM132 July 29, 1947 letter from V. Brown to Woodward.

JM134 Summary of findings.

JM141 Letter dated December 29, 1947, to E. Day from R. Bertogliat.

JM146 February 25, 1948, letter from Woodard to Vorwald.

JM152 April 19, 1948, letter from V. Brown to Rohrbach.

JM159 April 30, 1948, letter from V. Brown to E. Muehleck.

JM178 September 14, 1948, letter from Thomas Gatke to V. Brown.

JM179 October 12, 1948, letter from Thomas M. Durkan to J.P. Woodard.

JM181 October 22, 1948, Asbestos Experiments report from V. Brown to E. Muehleck and J.F.D. Rohrbach.

JM182 October 27, 1948, Saranac Laboratory Asbestos Dust Experiments report from V. Brown to American BrakeBlok, Gatke Corporation, Keasbey & Mattison Co., Raybestos-Manhattan, Inc., The Russell Mfg. Co., Thermoid Co., Union Asbestos & Rubber Co., and United State Gypsum.

JM201 November 12, 1948 letter from Vandiver Brown to W.T. Kelly, Jr.

JM207 December 14, 1948, letter from Dr. A.J. Lanza to Arthur Vorwald.

JM210 March 3, 1948, letter from V. Brown to American BrakeBlok, Gatke Corporation, Keasby & Mattison Co., Raybestos-Manhattan, Inc., The Russell Mfg. Co., Thermoid Co., Union Asbestos & Rubber Co. and United States Gympsum Co.

JM226 June 14, 1949, letter from Thomas Gatke to V. Brown.

JM260 March 21, 1951, letter from V. Brown to American BrakeBlok, Gatke Corp., Keasbey & Mattison Co., Raybestos-Manhattan, Inc., The Russell Mfg. Co., Thermoid Co., Union Asbestos & Rubber Co., and U.S. Gypsum Co.

JM261 March 21, 1951, letter from V. Brown to Ivan Sabourin.

JM268 Confidential report to the Johns-Manville Corp. by the Saranac Laboratory entitled "Asbestosis". January 31, 1949.

JM270 Letter dated May 13, 1954, to H. Jackson from B.W. Luttenberger.

JM277 Johns-Manville Internal Correspondence dated May 7, 1976, to Labeling Review Committee from E.M. Fenner with Attachment: edited warning label.

JM280 Letter dated January 22, 1935, to M.F. Judd from V. Brown with attachment: Memorandum regarding Mellon Institute of Industrial Research Symposium on Dust Problems-Pittsburgh-January 15, 1935.

JM282 Letter dated December 4, 1936, to C.J. Stover from V. Brown.

JM283 Letter dated December 8, 1936, to Members of the Asbestos Industry from C.J. Stover with attachment: Application for Membership of the Air Hygiene Foundation of American, Inc.

JM292 Picture of the Industrial Hygiene Foundation Trustees' meeting held in the Board Room of the Johns-Manville Corp., in New York in May, 1945.

JM294 Health in Industry, Transactions Bulletin No. 8, 11th Annual Meeting of Industrial Hygiene Foundation of America, Inc., November 7, 1946.

JM297 Industrial Hygiene Foundation of America, Inc. Memorandum on Plant of Johns-Manville Corp. dated July 11, 1947, Supplementing the General Report, "Preliminary Dust Investigation for Asbestos Textile Institute" of June, 1947.

JM298 Letter dated February 25, 1948, to Arthur Vorwald from J.P. Woodard.

JM301 IHF Memorandum on Proposed Epidemiological Study of Lung Cancer in Asbestos Workers for the Quebec Asbestos Mining Association dated March 16, 1956.

JM306 Letter dated December 6, 1956, to Hugh Jackson from Daniel Braun.

JM310 Letter dated August 23, 1957, to Hugh Jackson from Daniel Braun with attachment: References of articles showing an association between lung cancer and asbestosis.

JM313 Letter dated December 30, 1957, to Ivan Sabourin from Dr. K. Smith.

JM319 Letter dated December 15, 1934, to V. Brown from G. Hobart.

JM320 Letter dated December 18, 1934, to M.F. Judd from V. Brown.

JM321 Report by the Industrial Health Service Policyholders Service Bureau of the Metropolitan Life Insurance Co., New York, entitled "Effects of the Inhalation of Asbestos Dust Upon the Lungs of Asbestos Workers."

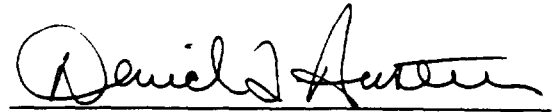
JM322 Letter dated December 21, 1934, to A.J. Lanza from V. Brown.

JM323 Letter dated December 24, 1934, to M.F. Judd from V. Brown.

JM381 Nima Committees, 1963-1964.

JM386 June 16, 1966 - Minutes of the Health and Safety Committee Meeting of the National Insulation Manufacturers Association.

JM416 Confidential Memo dated June 12, 1961 to A.W. Spedding
from Leon B. Horowitz.



David T. Austern

Subscribed and sworn to before me
this 1st day of ~~February~~, 1991.

MARCH



Notary Public

My commission expires: My Commission Expires May 14, 1994

J. M. 3



84

Bridgeport, Conn.
Oct. 1, 1935

Mr. Vandiver Brown, Attorney,
Johns-Manville Corp.,
22 East 40th St.,
New York City.

My dear Mr. Brown:

Enclosed is copy of a letter received from Miss Rossiter, of "Asbestos."

As I see it personally, we would be just as well off to say nothing about it until our survey is complete. I think the less said about asbestos, the better off we are, but at the same time, we cannot lose track of the fact that there have been a number of articles on asbestos dust control and asbestosis in the British trade magazines. The magazine "Asbestos" is in business to publish articles affecting the trade and they have been very decent about not re-printing the English articles.

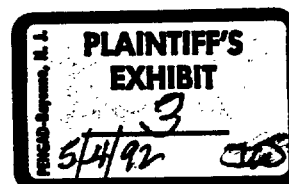
I shall be pleased to have your opinion in the matter.

Very truly yours,

SS-G.

Enc.

President



R 11 12 57 PM

"ASBESTOS"

Published by

SECRETARIAL SERVICE

16th Floor, Inquirer Bldg.
PHILADELPHIA, PA., U. S. A.

September 25, 1935.

Mr. Sumner Simpson, President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Dear Sir:

You may recall that we have written you on several occasions concerning the publishing of information, or discussion of, asbestosis and the work which has been, and is being done, to eliminate or at least reduce it.

Always you have requested that for certain obvious reasons we publish nothing, and, naturally your wishes have been respected.

Possibly by this time, however, the reasons for your objection to publicity on this subject have been eliminated, and if so, we would like very much to review the whole matter in "ASBESTOS".

Our thought is that we could either prepare from data which we have in our files, or obtain from Mr. W. A. Godfrey of the Cape Asbestos Company, London, who is much interested in the subject, an article on the work done in England and then follow it with an article written by someone in your organization, as to the work done here.

We understand from Mr. Stover that your North Charleston plant, contains very complete dust control equipment and a description of such equipment, if you approve, would make a very interesting part of the article. Possibly even you could supply a photograph or two showing some part of this dust control equipment.

We await with much interest your reply. If there is no serious objection it would seem to be a most interesting subject for the pages of "ASBESTOS", and possibly a discussion of it in "ASBESTOS" along the right lines, would serve to combat some of the rather undesirable publicity given to it in current newspapers.

Very truly yours,

"ASBESTOS" *D. P. R. R.*

Handwritten: 10-3-35

— Johns-Manville —

TWENTY-TWO EAST FORTIETH STREET
NEW YORK, N.Y.



Handwritten: 850

October 3, 1935

Mr. S. Simpson, President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

My dear Mr. Simpson:

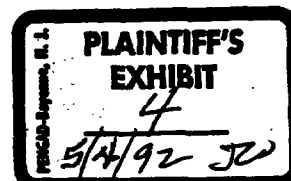
I wish to acknowledge receipt of yours of October 1st enclosing copy of the September 25th letter from the editor of the magazine "ASBESTOS". I quite agree with you that our interests are best served by having asbestosis receive the minimum of publicity. Even if we should eventually decide to raise no objection to the publication of an article on asbestosis in the magazine in question, I think we should warn the editors to use American data on the subject rather than English. Dr. Lanza has frequently remarked, to me personally and in some of his papers, that the clinical picture presented in North American localities where there is an asbestos dust hazard is considerably milder than that reported in England and South Africa.

I believe the question raised by Miss Rossiter might well be considered at the committee meeting scheduled for next Tuesday, at which I understand both you and Mr. Judd will be present.

Very truly yours,

Vandiver Brown
Vandiver Brown
Attorney

VB:T



Handwritten notes:
10-3-35
McClelland
see Stover & Bell
...
Stover & Bell

Handwritten: 80121

MEMORANDUM OF AGREEMENT

November 20, 1936

THE UNDERSIGNED hereby agree to underwrite certain experiments with asbestos dust to be conducted by Dr. LeRoy U. Gardner at the Saranac Laboratory, Saranac Lake, New York.

The general nature of these experiments and the cost thereof were explained at the meeting of certain brake lining manufacturers held in New York City on November 19, 1936.

The purpose of this memorandum is to confirm the agreement between the Undersigned to underwrite the cost of these experiments amounting to \$5,000 per year for a period of three (3) years, or a total of \$15,000.

The Undersigned agree to share equally the costs of said experiments. For example, if ten parties sign this Agreement, the annual contribution of each will be \$500. It may be more or less, depending on whether the number of those signing is more or less than ten.

It is understood that payments to Dr. Gardner will, for the sake of convenience, be made directly by Johns-Manville Corporation or by Raybestos-Manhattan, Incorporated, and that the others of the Undersigned will reimburse Johns-Manville

00013

... share of such payments as made.

AMERICAN BRAKE BLOCK CORPORATION
(Limited to \$250.00 per annum)

By W. C. [Signature]
vice President

ASBESTOS MANUFACTURING COMPANY

By L. [Signature]
Treas.

GATKE CORPORATION
(Limited to \$250.00 per annum)

By Charles L. [Signature] Pres.

JOHNS-MANVILLE CORPORATION

28 By E. M. [Signature]
Vice-President

KEASBEY & WATTISON

By [Signature]
Vice President

RAYBESTOS-MANHATTAN, INCORPORATED

By A. [Signature]
President

RUSSELL MANUFACTURING COMPANY

By [Signature] Pres.

THERMOID RUBBER COMPANY

By _____

UNION ASBESTOS & RUBBER COMPANY
(Limited to \$250.00 per annum.)

By [Signature]
Secretary-Treasurer

UNITED STATES GYPSUM COMPANY

(Limited to \$250.00 per annum)

By C. A. [Signature]
Secretary-Treasurer

By _____

By _____

By _____

By *J. J. [unclear]*

SOUTHERN ASBESTOS COMPANY

By *Geo. L. [unclear], Pres*

00018

JOHNS-MANVILLE CORPORATION

TWENTY-TWO EAST FORTIETH STREET

NEW YORK, N.Y.

EXECUTIVE OFFICES

February 27, 1937

Mr. Sumner Simpson,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Re: Asbestos Dust Experiments -
Dr. L. U. Gardner

Dear Mr. Simpson:

The United States Gypsum Company signed the Memorandum of Agreement relating to the underwriting of Dr. Gardner's experiments with asbestos dust, limiting its participation to the sum of \$250 per annum, or a total of \$750 for the three-year term of the experiments.

I believe that we have now fully canvassed the industry. The co-operation of the following companies has been obtained on a basis whereby their respective contributions are limited to \$250 per annum:

- (1) American Brake Block Corporation
- (2) Gatke Corporation
- (3) Union Asbestos & Rubber Company
- (4) United States Gypsum Company.

The participation of the above named companies will provide \$1,000 a year, leaving the sum of \$4,000 per year to be pro-rated between the following companies who have not limited their participation in the enterprise:

- (1) Asbestos Manufacturing Company -
- (2) Johns-Manville Corporation
- (3) Keasbey & Mattison
- (4) Raybestos-Manhattan, Incorporated
- (5) Russell Manufacturing Company
- (6) Thermoid Company and Southern Asbestos Company.

The six companies last above named will, therefore, be called upon to contribute the sum of \$666.67 per year for the three-year period.

I am enclosing herewith, for your records, a photostatic copy of the Memorandum of Agreement and photostatic copies of my letter to Dr. Gardner of November 20, 1936 and his reply of November 23, 1936, which set forth the substance of the arrangement between Dr. Gardner and the group.

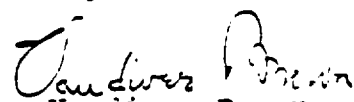
Copies of this letter, together with copies of the enclosed photostats, are being sent to each of the other participants.

Last December Johns-Manville Corporation sent Dr. Gardner its check for \$1250, constituting advance payment for the first quarter of 1937 on account of his annual retainer. Your Company and others of the group will be billed shortly for your share of this payment under the terms of the Memorandum. Johns-Manville Corporation is willing to continue making these advances to Dr. Gardner at the commencement of each succeeding calendar quarter during 1937, unless you or others prefer the matter be handled differently. I believe, however, that Dr. Gardner will prefer, in the matter of payment, to deal with one member of the group and it is my opinion, in which I believe you concur, that this represents the most satisfactory procedure.

Johns-Manville Corporation has likewise provided Dr. Gardner with 1200 pounds of asbestos fibre which he considers satisfactory for his purposes, although it has been found necessary for him to subject it to a "ball milling" process in order to reduce it to the desired degree of fineness. He estimates that this quantity will be sufficient for the first year's experiments and we will be very glad, at our expense, to provide him with similar quantities for the other two years.

I have also sent Dr. Gardner a photostatic copy of the Memorandum of Agreement so that he is fully advised as to the identity of those companies whose support he is receiving. At the same time I advised Dr. Gardner that those concerns which had limited their contributions were to participate just as fully in the benefits resulting from his experiments as were the others.

Very truly yours,


Vandiver Brown
General Attorney

VB:T
Enclosures

604736

PLAINTIFF'S
EXHIBIT

JM12

JOHNS-MANVILLE CORPORATION
TWENTY-TWO EAST FORTIETH STREET
NEW YORK N.Y.

EXECUTIVE OFFICES

May 11, 1937

Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Attention: Mr. S. Simpson, Pres.

Dear Mr. Simpson:

I am enclosing herewith copy of Dr.
Gardner's first progress report dated May 5, 1937
on the asbestosis experiments being conducted by
him at the Saranac Laboratory.

Very truly yours,

Vandiver Brown
Vandiver Brown
General Attorney

VB:T

Enclosure

PLAINTIFF'S
EXHIBIT

7
5/4/92 JCV

004751

225A

First Progress Report on Asbestosis Experiments
at the Saranac Laboratory. May 5, 1937.

To furnish a better understanding of the disease, asbestosis, and to provide standards as a basis for its diagnosis by x-ray films, a group of animal experiments has now been started.

It is expected that anatomical changes will be produced in the lungs of animals inhaling fibrous asbestos which will cast shadows on an x-ray film comparable to those seen in human beings. Since the animals can be killed as seems advisable it will be possible to compare the anatomical changes in their lungs with the shadows seen in the films.

To make certain whether the fibrosis in the lung is due to the chemical composition of asbestos or whether it is the result of a mild irritation in the walls of the air spaces resulting from the action of a fibrous foreign body (i.e. its physical structure) injection experiments are in progress. If no fibrosis results from accumulations of asbestos in other organs it may probably be assumed that chemical stimulation of the tissues is not responsible for the pulmonary fibrosis.

As a further check on the physical vs. the chemical hypothesis, the action of ground serpentine is being compared with that of chrysotile. Since they both have the same chemical composition the comparison should be instructive whatever the result.

To check the effect of mere fibrous structure, a search for other fibrous minerals was made. None other than those classified as asbestos could be discovered which had the same structural composition. However, because of our interest in the action of gypsum, a sample of satin spar (fibrous) and also one of soda tremolite were selected for comparative testing.

Finally, the action of various members of the asbestos group, amphibole, amesite, crocidolite and anthophyllite are all being compared with that of chrysotile.

It is too early to report more than the fact that the experiments have been started. For the inhalation of chrysotile, dust furnished by Mr. Fisher from a plant at Manville, W. J. is being employed. As it was received, the dust was not sufficiently fine for experiments of this type and we were forced to grind it

in a ball mill. Considerable time was spent in experimenting with a proper type of mill for the purpose. This difficulty was overcome and inhalation was begun on March 22.

In the dusting room we placed 30 guinea pigs, 20 rats, 8 rabbits and 3 cats. More of the latter will be procured as they become available. A dust concentration of approximately 175 million particles per cubic foot of air is now being maintained. This may later be changed. Over 90% of the particles are less than 5 microns in diameter. Since significant results cannot be expected to develop until exposures have been continued for from 1 to 2 years there can be little to report before the expiration of that time.

The various injection experiments are further advanced although it is too early to report any results. For this purpose all dusts have been analysed chemically and petrographically. They were then ground and fractionated by allutration. Only particles 1 to 3 microns in diameter were used. Their composition was again checked by the same methods of analysis. The various tests are tabulated for your information.

Chrysotile (Thetford)

a. Intravenous Injections.

Have proved difficult. 7 rabbits have died, apparently from mechanical effects, without receiving significant quantities of the dust. Further attempts are in progress.

b. Intraperitoneal Injections - 5 guinea pigs, March 31, 1937

One killed after one month. No gross fibrosis.

Amphibole

a. Intravenous Injection. 4 rabbits still in progress. Have each received 11 doses totalling 0.55 grams. No fatalities.

b. Intraperitoneal Injection. 5 guinea pigs. Feb. 5, 1937

2 killed after 12 and 30 days respectively. Dust plaques without gross fibrosis.

Amesite

a. Intravenous Injection. 4 rabbits still in progress. Have each received 11 doses totalling 0.55 grams. No fatalities.

b. Intraperitoneal Injection. 5 guinea pigs on Feb. 5, 1937

2 died of infection.
1 killed after 1 month. Most of the dust absorbed; no fibrosis.

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Crocidolite

- a. Intravenous Injection. 4 rabbits have each received full dose of one gram in 20 injections. None killed.
- b. Intraperitoneal Injection. 7 guinea pigs.
 - 2 died of infection.
 - 1 killed after 1 month. Pigmented dust plaques without fibrosis.

Anthophyllite

- a. Intravenous Injection. 4 rabbits have each received full dose of 1 gram in 20 injections.
 - 2 killed after 3 1/2 to 6 months respectively.
 - No evidence of fibrosis in the lungs, spleen, liver or bone marrow.
- b. Intraperitoneal Injection. 5 guinea pigs.
 - 3 killed after 1, 4 and 8 months respectively.
 - Disappearing reaction with gross evidence of fibrosis.

Serpentine

- a. Intravenous Injection. 4 rabbits have each received full dose of 1 gram in 20 injections. All alive and well.
- b. Intraperitoneal Injection. 5 guinea pigs.
 - 2 killed after 1 and 4 months respectively
 - Soft pigmented dust plaques without fibrosis.

Fibrous Gypsum - Satin Spar

- a. Intravenous Injection. 4 rabbits have each received 11 of 20 injections, or a total of 0.55 grams. No fatalities.
- b. Intraperitoneal Injections - not made.

Soda Tremolite

- a. Intravenous Injection. 4 rabbits have each received total dose of 1 gram in 20 injections. All alive and well.
- b. Intraperitoneal Injection. 5 guinea pigs.
 - 1 killed after 1 month. Small pigmented dust plaques without fibrosis.

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None of these early results is regarded as significant and no conclusions will be drawn until the observations have been continued for at least one year. It is not yet clear whether the difficulties with intravenous injection of chrysotile are merely a matter of technique or whether this substance is essentially toxic. We are attempting to discover the cause.

JOHNS-MANVILLE CORPORATION

TWENTY-TWO EAST FORTIETH STREET

NEW YORK, N. Y.

EXECUTIVE OFFICES

May 3, 1936.

Sumner Simpson, Esq.,
President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Dear Mr. Simpson:

I wonder if you have seen the 1936 report of The Saranac Laboratory. If not, I suggest you obtain a copy from Dr. Garner and note the references to Asbestosis on Page 9 of the "Report of the Director".

Included in the report are reprints of several articles or addresses delivered by various persons connected with the laboratory. One of these by Dr. Garner is a paper read before a meeting of the American Institute of Mining and Metallurgical Engineers in February, 1936. In this you will note also certain references to asbestosis on Page 5.

There is also a reprint of an article by Dr. Garner entitled "Etiology of Pneumoconiosis" reprinted from the November, 1935 issue of the Journal of the American Medical Association. In this article your attention is directed to a reference to Asbestosis on Pages 12, 13, and particularly at the top of Page 14.

The information covered by these references was presumably been derived from the experiments which Dr. Garner is conducting for, and with funds provided by, the group of members of the Asbestos Textile Industry. The Progress Reports which we have received to date would seem to indicate as much. This raises a question upon which I would like to have your thoughts, namely, whether Dr. Garner's use of this material is proper in view of the following paragraph from my letter of November 20, 1936, in which I outlined our proposal to Dr. Garner:

"It is our further understanding that the results obtained will be considered the property of those who are advancing the required funds,

who will determine whether, to what extent and in what manner they shall be made public. In the event it is deemed desirable that the results be made public, the manuscript of your study will be submitted to us for approval prior to publication."

The proposal contained in this letter was accepted by Dr. Gardner in a letter of November 23rd, from which I quote the following paragraph:

"The Saranac Laboratory agrees that the results of these studies shall become the property of the contributors and that the manuscripts of any reports shall be submitted for approval of the contributors before publication. "

Sincerely,

Vandiver G Brown
Vandiver Brown,
General Attorney.

VE:y

PLAINTIFF'S
EXHIBIT
JM 29

THE SARANAC LABORATORY
FOR THE STUDY OF TUBERCULOSIS
OF THE EDWARD L. TRUDEAU FOUNDATION
SARANAC LAKE, N.Y.

February 24, 1943

Res

Mr. Vandiver Brown
Johns-Manville Corporation
22 East 40th Street
New York, New York

Dear Mr. Brown:

I have at last succeeded in analyzing most of our voluminous experimental data and assessing the results. I realize that this should have been completed before this, but the emergency has left me short-handed in the Laboratory and also necessitated doing a good deal of extra traveling. I hope that the sponsors of our study of asbestosis will be charitable and realize that the work has far exceeded its original scope.

We have done over 40 different experiments, many of them divided into several parts, which involved exposure of animals for 1 to 3 years to various dusts. The business of preparing microscopic sections and chemically analyzing the tissues on more than 600 animals has been a job in itself. My time for studying sections and analyzing data has been so limited that we are behind our schedule. I have still not had time to write a full report of this work which will of necessity be monographic. However, for the benefit of the contributors, I am submitting a table of contents and an annotated outline to indicate conclusions and the line of argument that will be developed. The latter itself occupies 15 pages, but I hope they will find it sufficiently interesting to read. I shall work the final manuscript as I have opportunity.

There are a few experiments still in progress which should be completed by the time we are ready for them. The work on methods of dust determination, I consider important enough to include in the study. The question of cancer susceptibility now seems more significant than I had previously imagined. I believe I can obtain support for repeating it from the cancer research group. As it will take two or three years to complete such a study, I believe it would better be omitted from the present report. If it should become possible to make this study, I hope that I may count on some of your members to supply me with enough pure, long fibre asbestos for the purpose.

PLAINTIFF'S
EXHIBIT
9
5/4/92 JW

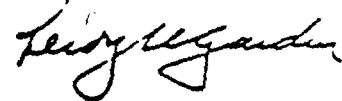
Mr. Vandiver Brown

-2-

February 24, 1941

Naturally, I shall welcome any criticism that you or any of the other contributors would care to offer. Should any of them want to discuss details, I would be pleased to meet with them. May I take this opportunity to thank all the sponsors through you for the support that we have had.

Sincerely yours,



Leroy U. Gardner, M. D.
Director

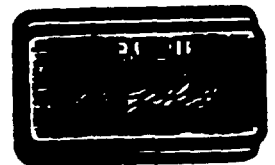
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Riss

OUTLINE OF PROPOSED MONOGRAPH ON ASBESTOSIS
Saranac Laboratory Study under Grant from Asbestos Association

PART I HUMAN ASBESTOSIS

- 1 Human Pathology - a study of 25 autopsy cases, Illustrated
- 2 X-ray Patterns in Asbestosis, Illustrated
- 3 Ash and Mineral Values in Human Asbestosis
- 4 Complications of Asbestosis
 - (a) Susceptibility to infection
 - i Tuberculous
 - ii Non-Tuberculous
 - iii Cancer of the lung
- 5 Disability, causes and comparison with silicosis
- 6 Diagnosis
 - (a) History of adequate exposure
 - (b) X-ray film pattern
 - (c) Physical examination
 - (d) Asbestosis bodies in sputum, their significance



PART II Experimental Asbestosis

I Methods

- (a) Inhalation exposure to plant dusts.
- (b) Injection into lungs through trachea of pure mineral
- (c) Injection of pure minerals into other organs.

2 Species Susceptibility

Man, guinea pigs, rabbits, cats, white mice and rats.
dogs.

3 Peculiar Characteristics of Asbestosis

- (a) Unusual localization of chrysotile fibre in lungs.
- (b) Rate of resultant tissue reaction more rapid than to quartz.
- (c) Reaction to chrysotile not progressive after exposure ceases: again the reverse of the situation in silicosis
- (d) Asbestos Bodies

- i Composition and methods of formation.
- ii Occurrence in different species.
- iii Formation does not parallel development of fibrosis
- iv Gradual disappearance after exposure ceases.

4 Comparative Effects of Different Asbestiform Minerals.

- (a) Canadian Chrysotile.
- (b) Arizona Chrysotile, low iron.
- (c) Crocidolite
 - i Bolivian specimen, stiff and elastic.
 - ii South African, soft and flexible.
- (d) Anthophyllite
- (e) Amosite.
- (f) Tremolite.

5 Effects of Control Minerals

- (a) Granular Serpentine, same chemical composition as chrysotile.
- (b) Glass Wool, a synthetic silicate fibre.
- (c) Brucite, a fibrous magnesium hydroxide almost free of silica

6 Chemical Composition of Asbestiform minerals in Relation to Irritation.

- (a) Nothing in composition correlated with relative irritant capacity.
- (b) Preliminary acid treatment
 - i Hydrochloric acid
 - ii Carbonic acid

(c) Effects of Aluminum

7 Physical Properties in Relation to Irritation

- (a) Length of fibre
- (b) Effect of Crushing
- (c) Heat treatment

8 Nature and Significance of Asbestosis Body

- (a) Formation
- (b) Protective effect preventing further irritation
- (c) Ultimate solubility in tissue

9 Theories of Action of Asbestiform Minerals

- (a) Chemical - reasons for considering invalid
- (b) Mechanical - experimental demonstration of.

10 Complications

- (a) Infection, tuberculosis and other varieties
- (b) Cancer of lung - experimental data suggestive but not proven

11 Disability

12 Essential Features of Hazardous Exposure

- (a) Nature of dust - fibrous component and size factors
- (b) Atmospheric Concentrations - probably lower than for quartz

- 1 Inadequacy of standard impinger sampling method which does not collect the dangerous fibres
- 11 Electrostatic precipitator sampling preferable but method must be modified

(c) Duration of Exposure

13 Recommendations for a New Standard of Safe Atmospheric concentrations of Asbestos Dust

- (a) The Quasi-official standard of 4 to 5 million particles per cu. ft.
- (b) Work upon better method of sampling
- (c) Necessity for comparison of results with X-ray film in employees

14 Prevention

- (a) Chemical means not practical

(4)

- I Acidosis necessary to dissolve fibre in lungs worse than Asbestosis
- II Aluminum Therapy inapplicable
- III Chief reliance still upon dust prevention with special emphasis upon the fibrous components

ASBESTOSIS - ANNOTED OUTLINE INDICATING RESULTS

PART I - HUMAN ASBESTOSIS

1 Human Pathology and X-ray Patterns - Description

Based upon 23 human autopsies

2 Ash and Mineral Values in Human Lungs.

3 Complication of Asbestosis

(a) Susceptibility to Infection

i Tuberculous- High incidence in English experience not duplicated in surveys of American Plants. Available autopsy statistics deceiving because of selection of material.

ii Non-Tuberculous- The same reason probably applies should be checked by analysis of absenteeism among asbestos workers.

iii Cancer of Lung Ditto, but there are now on record 10 cases of lung cancer in asbestos workers. Compared to the total number of autopsies on asbestosis, this incidence is excessive. No such frequency has been discovered in silicosis or other forms of pneumoconiosis except the Schneeberg mines of radioactive ores. The evidence is suggestive but not conclusive that asbestosis may precipitate the development of cancer in susceptible individuals.

4 Disability

Clinical experience suggests that truly disabling asbestosis is manifested by less striking X-ray changes than a corresponding degree of silicosis. Such disability in asbestosis is due to disease within the lungs and not to secondary heart disease. As in silicosis, associated pulmonary infection increases the amount of severity of the dust fibrosis with resultant accentuation of disability. There is urgent need for a careful physiological study of pulmonary function in asbestosis of varying severity. Undoubtedly, there are many diagnosable cases with no significant disability.

5 Diagnosis depends upon three factors.

(a) History of adequate exposure, usually 6 to 8 years, sometimes longer, at work where both the concentration and character of the "asbestos" dust are hazardous.

- (b) Evidence of disease in a characteristic X-ray pattern.
- (c) A physical examination which reveals certain characteristic signs and may reveal evidences of disability if present.
- (d) Asbestos bodies in the sputum are confirmatory when the previous factors are all positive. However, the bodies may be absent, particularly in the absence of bronchitis infection. Asbestos bodies unsupported by other evidence do not make a diagnosis. Occasional ones have been found in about 16 autopsy specimens of persons with no known exposure and no fibrosis, probably of non-occupational origin.

.....

PART II Experimental Asbestosis

I Methods

- (a) Inhalation Exposure to Plant Dust - Specific fibrosis in lungs, but no changes elsewhere.
- (b) Injections of Suspensions of Pure Minerals into Trachea - Similar results.
- (c) Injection of Suspensions of Pure Mineral⁸ into other organs - Fibres dissolved; no asbestos bodies; tissue reaction confined to phagocytosis and encapsulation. Compare the asbestos corpus of human subjects.

II Species Susceptibility

Unlike free silica, asbestos does not produce its specific effect in any organ of any species of animal. It caused fibrosis only in the lungs of man and those of a few of the species tested.

Species	Fibrosis	Asbestos Bodies	Species	Fibrosis	Asbestos Bodies
Man	4+	4+	Cat	+	+
Guinea Pig	2+	3+	White Mouse	0	±
Rabbit	+	±	White Rat	0	0
(* = very small cylindrical asbestos bodies)			Dog	0	0

III Peculiar Characteristics of Asbestosis

- (a) Localization of fibrous minerals in lungs differs from that of granular dust particles.

- 1 Fibres like chrysotile having a certain degree of flexibility and elasticity accumulate within the finest air tubes; granular dust is carried further on and is widely scattered through the terminal air spaces.
- (b) Rate of tissue reaction to asbestos is much more rapid than to an active dust like quartz. Evidences of formation appear as soon as sufficient concentration of fibres has localized in specific areas; with quartz, there is a latent period of months.
- (c) Reaction to asbestos does not progress on cessation of exposure. Young scar tissue that may have formed, contracts and becomes more dense but the area of involvement decreases in size. In silicosis, the young nodules become larger after exposure ceases.
- (d) Asbestosis Bodies are a specific concomitant of this form of pneumoconiosis. They are due to a deposit of protein and iron upon the surface of inhaled fibres. In guinea pigs they form after about 60 days of contact with the tissue. They are abundant in man and guinea pigs, (See paragraph 2 above) but much larger in the former probably because the larger sized air tubes admit larger fibres. In cats, rabbits and mice, there is an atypical coating of a few of the fibres after much longer residence in the lungs; in rats and dogs no bodies could be discovered. From paragraph 2 it is apparent that their occurrence does not parallel development of fibrosis. In lung injection experiments, the bodies have not developed until after fibrosis is well advanced. The number of bodies seems to decrease several years after exposure ceases.

V Comparative Effects of Different Asbestos Minerals

- (a) Canadian Chrysotile - highly irritating.
- (b) Arizona Chrysotile (low in iron) equally irritating and produces just as many asbestosis bodies as the Canadian product with over 11 times as much iron.
- (c) Crocidolite - The South African blue asbestos is known to cause asbestosis. Only a limited supply of this material in pure form was available, most of it was used earlier in the work in non-productive experiments. For the later critical injection tests into the lungs, a Bolivian variety was substituted because of its high purity. Its fibres were much straighter, stiffer and more elastic than the cottony South African variety. Perhaps because of these peculiarities, it has not given reactions comparable to chrysotile. It produced asbestosis bodies but did not localize in the terminal air tubes nor cause any fibrosis. Tests now being repeated with a typical South African crocidolite with physical characteristics simulating chrysotile.

- (d) Anthophyllite - stiff, straight fibres - atypical asbestosis bodies forms slowly but no localization or fibrosis in lungs.
- (e) Andesite - Ditto.
- (f) Annabergite - Ditto.
- (g) Tranoblite - Ditto but very few asbestosis bodies - Observation being continued.

V Control Mineral

- (a) Granular Sapphirine of same chemical composition as chrysotile is inert causing no fibrosis in lungs or other organs. It attracts iron from the lungs but of course, no "bodies" develop.
- (b) Glass Wool (a synthetic silicate) fibres are not inhalable from air-borne suspensions, apparently because of their stiffness (the diameter is not responsible as some used were less than 1 micron thick). On injection into the lungs, they do not localize in the air tubes but are widely scattered. They cause no fibrosis. After 3 or 4 months in contact with lung fluid, a few glass fibres take up iron but remain smooth. They never show the swollen ends and lateral projections of the true asbestosis bodies.
- (c) Brucite of interest because it is a fibrous mineral practically free of silica (0.9%). Crystallographically the arrangement of its Mg and OH groups in each unit cell is similar to that in chrysotile. The sample used also contained about 15% iron, probably from contaminating magnetite. The fibres are stiff and needle like. Observations not yet completed but after 2 months in the lungs, typical asbestosis bodies develop but there is as yet no fibrosis. The fibres are scattered through the lung instead of being localized inside the terminal air tubes and tissue reaction occurs around, instead of within the tubes.

VI Chemical Composition in Relation to Irritation

- (a) Nothing in the following chemical compositions can be correlated with variations in capacity to provoke tissue reaction.

(See Table Next Page)

	Chrysotile	Crystalline	Amphibole	Amorphous	Amphibole	Crystalline	Amorphous
SiO ₂	37.43%	34.99%	47.43%	46.27%	55.04%	35.22%	0.99%
Fe ₂ O ₃	3.35%	15.07%	0.51%	4.06%	3.05%	7.01%	3.38%
FeO	0	4.29%	0.7	33.65%	0	0.4	0.35%
Al ₂ O ₃	0.35%	1.02%	0.25%	1.09%	1.65%	0.55%	0.44%
CaO	0.05%	0.72%	0.44%	2.01%	12.22%	4.45%	0.40%
MgO	39.77%	12.25%	29.54%	3.22%	23.29%	20.52%	53.69%
Mn ₂ O	0.29	5.92	0.52	0.33	0.40	6.72	0.91
K ₂ O	0.08	0.57	0.15	0.10	0.12	0.09	0.15
Loss < 105°	4.30	0.02	0.02	0.66	0.32	0.34	0.53
> 105°	14.92	2.55	2.42	1.51	3.59	2.72	20.55

(b) Acid treatment of chrysotile fibres

1 One hour in dilute or concentrated HCl does not alter appearance of fibre but after such treatment it rapidly dissolves and disappears on injecting into living tissues.

11 Treatment with CO₂ bubbled through water or lung juice suspensions of chrysotile fibres causes partial solution with liberation of silica and magnesia.

(c) Colloidal alumina does not neutralize the effects of asbestos as it does quartz. On injecting chrysotile suspended in aluminum hydrate solution, fibrosis and asbestos bodies develop at the usual rate. It remains to demonstrate whether the fibres become coated with a layer of aluminum monohydrate as has been proved in the case of quartz. If they have, the coat does not affect their capacity to irritate tissue.

VII Physical Properties in Relation to Irritation of Lung Tissue

(a) Length of Fibre

Short chrysotile fibres under 3 microns are practically inert. 20 to 50 micron fibres cause typical fibrosis. The effects of longer ones could not be tested for technical reasons.

(b) Crushing completely destroys the fibrous structure of chrysotile. With loss of structure, all capacity to irritate disappears.

- (c) Heat At ignition temperatures, water is driven off but the fibre-structure is preserved. Fibres become extremely brittle. The physical change alters typical localization within the lungs, no fibrosis develops, reaction limited to phagocytosis. No asbestosis bodies formed.

VIII Nature and Significance of Asbestosis Bodies

- (a) Bodies probably result from deposition of iron and organic matter on a slowly dissolving fibre of asbestos. The source of the iron is more likely to be the lung tissue than the mineral itself as the coating is just as heavy on fibrous minerals of low iron content as upon those high in iron.
- (b) The effect of asbestosis body formation is assumed to be protective although it has not been possible to isolate a large enough quantity of these structures in unaltered form for purposes of test. The smooth rounded ends presented by the bodies would not be mechanically irritating.
- (c) If they were capable of causing irritation, the fibrosis in the lungs should progress after exposure ceases which it does not.
- (d) The gradual disappearance of bodies (and fibres) long after exposure points to ultimate solubility in tissue fluids.
- (e) The bodies are probably a fortuitous concomitant rather than a cause of fibrosis.

IX Theories of Irritant Action of Asbestiform Minerals

- (a) Chemical These experiments do not confirm the theory that asbestosis is merely a form of silicosis resulting from free silica liberated in the solution of a silicate molecule. If this were true asbestos, like quartz, should cause fibrosis in any organ of any species for the experiments have shown that injected asbestos dissolves in these locations. However, it does not cause such reaction in any location but the lungs of a few species.

(b) Mechanical Irritation

We are proposing the theory of mechanical irritation which is manifested only in the lungs because this organ is the only one whose normal physiological functions involve a high degree of mobility. Experiments designed to prove the necessity for motion in this tissue have failed for technical reasons. For this theory to be applicable, it is necessary that the fibres be concentrated in the five terminal air tubes. It has been shown that only chrysotile of the asbestiform minerals thus far has the proper physical characteristics to insure such localization. It is also essential that the fibre shall persist long enough before it dissolves in the lungs of species like mice, rats, dogs. It apparently dissolves so rapidly that it exerts no irritation. Similarly rapid solution may explain in part, the lack of fibrosis in organs other than the lungs.

The fibres must be long enough so that they cannot be completely surrounded by phagocytic cells which would prevent contact of these round, broken ends with the delicate cells supporting the air tubes. Observation has demonstrated that these conditions are realized in guinea pigs treated with long fibre chrysotile and fibrosis results. With the other asbestiform minerals that have been tested, some or all of the prerequisites were lacking and no fibrosis developed.

- (c) If the irritation were chemical, fine serpentine which has the same chemical composition as chrysotile should have also caused fibrosis. The crushed chrysotile should have been more active than intact fibres, because of the greater surface area exposed to body fluids. On the assumption that chrysotile, like quartz, becomes coated with a very thin layer of aluminum on treatment with colloidal aluminum hydroxide, capacity to cause fibrosis should be destroyed if the action were chemical but such is not the case.
- (d) The heavy coating resulting from asbestosis body formation apparently does stop tissue reaction but here the effects are probably mechanical for reasons cited.
- (e) Heat sufficient to alter chemical structure destroys power to irritate but it also alters essential physical characteristics that affect localization of the fibres in the lungs.

X Complications

(a) Susceptibility to Infection

- i Tuberculous - Asbestos behaves like most other minerals, in this respect and not like quartz which specifically increases native susceptibility to the tubercle bacillus. This infection may spread for a time but then heals. The resultant fibrosis accentuates that caused by the mineral fibre.
- ii Non-Tuberculous - of no greater frequency than in animals inhaling dusts of other kinds. Occasional epidemics of pneumonia occur in our dust rooms, but these are due to methods of housing rather than to dust; they can also occur in unexposed animals.

iii Cancer of Lungs

No experiments were ^{particularly} designed to elucidate this point but certain evidence suggests that asbestosis may actually favor development of tumors in susceptible species.

- 1 In guinea pigs, rabbits, rats, cats and dogs lung tumors are rare.
- 2 When these species were subjected to 2 to 3 years inhalation of asbestos dust, the incidence of lung tumor was not increased.

- 3 Some strains of white mice do develop tumors without apparent cause.
- 4 Such a strain of white mice was unintentionally used in three inhalation experiments with asbestos.
- 5 Of 11 mice inhaling long fibre asbestos for 15 to 24 months 8 developed malignant tumors in their lungs and 6 of them had tumors in other organs. The incidence rate 21.8% is excessive.
- 6 Of 22 mice inhaling short fibre asbestos for not longer than 12 months only 3 developed lung tumors. Rate 13.6%
- 7 As controls, we have only the experience with mice in other dust experiments.
For short periods, there were 51 mice exposed to 4 other kinds of dust for 10 to 12 months. Incidence of lung tumors 1.9%.
For long periods, there were 143 mice exposed to 4 different kinds of dust, including pure quartz, 23 to 31 months. In all this group of mice the average incidence of lung tumors was 13.8%; the highest rate (25%) was in a subgroup exposed to flint dust.

Thus the incidence of lung cancer in the long fibre asbestos mice was over 16 times the average for mice inhaling other dusts for comparable periods and over 3 times the maximum for any other group. Mice exposed to the practically inert short fibre asbestos showed fewer lung tumors although 7 times more than those in short exposure to other dusts.

These observations are suggestive but not conclusive evidence of cancer stimulating action by asbestos dust. They are open to several criticisms. The strain of mice was not the same in the asbestos experiment as in many of the others cited: apparently the former were unusually susceptible. Not enough animals survived the dust for longer than the 15 months apparently necessary to produce many tumors. There were no unexposed controls of the same strain and age and no similar controls exposed to other dusts. It is hoped that this experiment can be repeated under properly controlled conditions to determine whether asbestos actually favors cancer of the lung.

XI Disability

Cannot be determined in animals. The accidental deaths were from the same causes met with in all our dust inhalation experiments.

XII Essential Factors of Hazardous Exposure

(a) Nature of Dust

- i The hazard increases with the proportion of intact fibres in the dust. Granular material and crushed fibre are inert diluents.
- ii The long fibres must be thin enough (1-3 Microns) and short enough (under 30 Microns?) to be inhaled.
- iii Very short fibres (under 3 Microns) are practically inert.

(b) Atmospheric Concentration Still under study.

Apparently this factor is lower than in the case of dusts composed of granular minerals but methods of estimation are misleading.

- i The average standard Public Health Service impinger count in the long fibre asbestos dust room was 40 million particles per cu. ft. of air. This concentration caused fibrosis visible to the naked eye in 20 to 24 months. For comparison the average impinger counts in an experiment with pure quartz was 120 million particles per cu. ft. and fibrosis developed at about the same rate.
- ii However, impinger counts are deceptive because by this method of sampling very few fibres, which are the significant elements in the dust are collected.
- iii Sampling with an electrostatic precipitator is a much more efficient means of collecting fibres from air-borne suspensions. Samples from our long fibre asbestos room showed that the dust in the air contained 32.5% of fibres few of which had been collected or counted in the impinger sample. The latter sampled largely the inert granular particles.
- iv As ordinarily employed precipitator samples are weighed and the results expressed in mg. per cubic foot of air. There is no means of converting such values into numbers of particles particularly when these vary in size, shape and specific gravity.
- v Simultaneous sampling with precipitator and standard impinger yielded the respective values of 0.65 mg and 60 million particles per cubic foot of air.
- vi Theoretically the best index of hazard would be either the number or weight of fibrous elements in the dust.

(c) Duration of Exposure

- i Fibrosis visible to the naked eye after 12 months exposure, increases in extent in subsequent 12 months.
- ii The span of life of our most susceptible laboratory animal, the guinea pig has prevented continuing exposure longer than three years. In this period only the comparatively early stages of asbestosis have been produced. With the knowledge that we have gained, it is probable that more extensive disease could have been produced with a purer long fibre chrysotile. The long lived species, like cats, dogs are unfortunately not susceptible.
- iii For these reasons X-ray changes have been minimal and we were not able to fulfill one of the objectives of this program.

XIII Recommendation for a New Standard of Safe Atmospheric Concentration of Asbestos Dust.

- (a) While there is no official standard, the tentative one of 4 or 5 million particles per cubic foot of air is frequently quoted.
- (b) This is probably unreliable because it is based upon sampling with a standard impinger which we have shown does not collect most of the fibres that are the source of hazard.
- (c) We now think that a standard should be based upon samples collected with an electrostatic precipitator if it is feasible to determine readily the relative proportion of fibres in such material.
- (d) Work is still in progress upon the latter point.
- (e) To be of value the new standard would have to be correlated with the X-ray findings upon employees exposed to different concentrations of dust.

XIV Prevention of Asbestosis

The experiments have failed to develop any practical chemical means of neutralizing the action of fibrous asbestos.

- (a) To alter the human lung so that it would dissolve asbestos fibres rapidly like a rat would necessitate ~~creating~~ creating an acidosis which would be worse than the effects of the fibrosis.

- (b) Apparently aluminum, which is so effective against free silica, has little influence upon fibrous chrysotile.
- (c) However, it would be of great theoretical interest to treat a few cases with real dyspnea from asbestosis by aluminum inhalation. We are by no means certain whether the favorable results upon advanced silicosis are due to a chemical neutralization of quartz in the lungs. Aluminum might have some more general pharmacological effect which influences dyspnea.
- (d) Chief reliance must still be based upon control of dust in the air and, in view of these experiments, particularly upon the fibrous components of such dust.

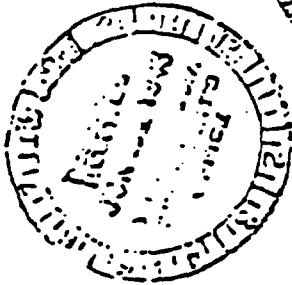
Henry G. Goshen

"ASBESTOS"

Published by

~~SECRETARIAL SERVICE~~

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PHILADELPHIA, PENNA. U. S. A.
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PLAINTIFF'S
EXHIBIT

Jm 30

June 18, 1943.

Mr. S. Simpson, President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Dear Mr. Simpson:

The attached copy of letter written by the Northwest Magnesia Association to the Department of Labor & Industries of the State of Washington, has been sent us apparently by the Secretary of the Association, Elliott DeForest, without any comment whatever, and in the envelope of the Asbestos Supply Company, First Ave. at Jackson, Seattle, Washington. Mr. DeForest is connected with the Asbestos Supply Company.

There does not seem to be anything we can do about it under the circumstances, and we are passing it along to you thinking it might interest you generally, and perhaps you might like to contact Mr. DeForest on the subject.

If you would prefer that the matter be handled thru us, we would be glad to write Mr. DeForest at your direction; otherwise you need not return the letter.

Very truly yours,

"ASBESTOS"

A. S. Rossiter,

Editor.

TJ

PLAINTIFF'S
EXHIBIT

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RM 76-B-22
4-29-77

U.S.

C O P Y

Seattle, Washington
June 14, 1943

Mr. John E. Morgan, Supervisor of Safety
Department of Labor & Industries
State of Washington
Olympia, Washington

RE: Proposed General Safety Standards -
Standard 49. Article A-5, ASBESTOSIS

Dear Mr. Morgan:

Our Association has given due consideration to the above mentioned subject and submit to you the following recommendations.

Inasmuch as any dust which might occur in any of our operations during the application of material in which asbestos might be used is not of any different character from the ordinary dust that is developed in thousands of occupations, we feel that it is adequately classified under Standard 45 in the general classification of "Hazards and Protective Devices." The relative quantity of asbestos in the materials that use the name "asbestos" is quite small. As a matter of fact, magnesia is 85% of most of the pipe covering which is generally referred to as asbestos amongst those uninformed.

In our entire practice of handling asbestos in the State of Washington, and our Association members have been in this business over 40 years, we have no knowledge of anyone who is even acquainted with the coined word "Asbestosis" much less ever having contracted the disease. We feel that if such a so-called disease were advertised to the general public, and our workmen in particular, that it would give them an excuse upon which to place claims for all sorts of allied ailments and our particular industry would be unduly burdened by such parasites.

Our Committee, consisting of Mr. V. S. Jenkins and Mr. T. F. Bellamy, who were interviewed by John E. Morgan and Herman Luft at the Smith Tower offices of the Department of Labor & Industries, report that the recorded singular case of Asbestosis as noted in the medical journals occurred in England some 40 or 50 years ago under most unsanitary and inhuman working conditions. Since this foreign disease has not come to our attention, we feel it should be left in Europe where it belongs and not brought to our local communities and create hysteria and fear amongst the families of our contented workmen who are now enjoying good health and living to a ripe old age, which is significant of the Pipe Coverers Union as compared with the other trades.

These statistics of your Department confirm the soundness of this argument by the low rate which we have, and we wish to continue enjoying this low rate by not allowing our standards to be adulterated. Therefore, we heartily recommend that this entire Paragraph A-5 be deleted from your code, and pledge our cooperation to your Safety Standards, which as we interpret them, is using good common sense on all occasions.

On all our operations where the slightest amount of dust might arise from any sawing, your representative will concur that we have proper ventilation and respiratory devices. However, when it comes to installing our material in cramped quarters of war vessels, we have proven that it is of more value to consider safety in regard to giving a man a proper vision and not allowing him to be encumbered with respirators, air hoses, hoods, etc.

Looking to you for favorable action in this matter, we remain

Very truly yours

NORTHWEST MAGNESIA ASSOCIATION

Elliott DeForest
Secretary

April 30, 1948

Mr. Ernest Buchlack,
President,
Kensley & Mattison Company,
Amaler, Penna.

Dear Mr. Buchlack:

You are correct in your understanding that there is not complete identity between those who sponsored Dr. Gardner's experiments and those who are presently members of the Asbestos Textile Institute. I believe it will be helpful for yours and Mr. Bohrback's consideration of this subject if I provide you with the following list of those who contributed:

Kensley & Mattison Company
Raybestos-Manhattan, Inc.
Johns-Manville Corporation
Southern Asbestos Company
Union Asbestos & Rubber Company
Gafco Corporation
Asbestos Manufacturing Co.
Russell Manufacturing Co.
United States Gypsum Company
American Brake Block Co.

The last four enumerated above are not members of the Institute. The first four enumerated above made the most substantial contributions, pledging and paying \$1,000 per year during each of the four or five years that support was extended to Dr. Gardner. The amount paid by the others was \$250 per year, and Russell Mfg. and Asbestos Mfg. Co. discontinued their contributions earlier than the others.

I am not sure just how the small committee should be created but, on the basis of contributions, it would appear that the four who contributed the most would be justified in setting up a committee composed of a representative of each. I would appreciate yours and Mr. Bohrback's views.

Sincerely,

Vandiver Brown,
Secretary.

Very
cc Mr. J. F. D. Bohrback
Raybestos-Manhattan, Inc.

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5/4/92 JW

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

4400 Fifth Avenue

Pittsburgh 13, Pa.

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JM296

REPORT OF
PRELIMINARY DUST INVESTIGATION
FOR

ASBESTOS TEXTILE INSTITUTE

JUNE, 1947

By

W.C.L. Eason
Head Engineer

Industrial Hygiene Foundation of America, Inc.

By John F. McMahon
Managing Director

June 18, 1947

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EXHIBIT

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of
PRELIMINARY DUST SURVEY
for
ASBESTOS TEXTILE INSTITUTE

June, 1947

OBJECT OF INVESTIGATION

This project was a preliminary investigation of the asbestos problem in textile plants of members of the Asbestos Textile Institute with the immediate object of defining the specific nature and the magnitude of the problem in all its phases. From such a definition, the character of a long-term project could be outlined. An original objective of most immediate importance was to facilitate the exchange of information between member companies on successful methods of dust control and otherwise to promote a general improvement in that field.

SUMMARY

The facts upon which this report is based were obtained on during the past three months, to all plants of Institute members (except one, who wished the visit postponed to a later date). Complete cooperation was extended at all plants. Dr. C. Richard Warner, Medical Director, Industrial Hygiene Foundation, participated in visits to three plants in development of the medical concepts of this report.

The problem is seen to be composed of three aspects which are discussed in three sections of the report and summarized herewith, :
ENGINEERING, MEDICAL, and PHYSICAL TESTING.

Engineering. -- Mechanical methods were seen in use in one or two plants which effected practical dust control in all operations, bringing concentrations down to five million or lower with one or two exceptions. It is proposed to prepare formal detailed descriptions of these methods for general distribution to members of Asbestos Textile Institute.

Medical Supervision of Workers. -- Only five plants have had a medical x-ray surveys of employees. In the others, therefore, there is a serious lack of information as to the incidence of asbestosis. The lack is more serious, in a sense, because in most of these plants no compensable cases of asbestosis have occurred to draw attention of top management to the problem. While the medical survey conducted by one plant recently shows only about 5 per cent of the employees with asbestosis, two other plants appear to have 20 per cent of their employees affected.

(Medical supervision of workers in this industry is of utmost importance for the protection of both employee and employer, not to mention other considerations. Therefore, it is strongly recommended that each plant institute a program of medical and x-ray examinations of all exposed workers as early as practical.

✓ Physical Testing (Dust Counts, etc.) -- The "maximum permissible dustiness" for asbestos is commonly taken to be five million particles per foot. This represents good attainment in the dust control program. It is emphasized, however, that dust elimination to this extent does not positively assure that no asbestosis will develop in some workers after a long working life (greater than 20-25 years). Scientific evidence is obscure on this point, and it is recommended, therefore, that studies be initiated aimed to develop another

variatick, because it is suggested that when control below five million is attained, present dust count methods may not properly measure the remaining hazard.

A detailed summary of recommendations for a long-term investigation is given at the end of this report.

I - ENGINEERING

PRESENT STATUS OF DUST CONTROL

Practically all plants visited have had one or more dust count surveys made of their operations and these data were available for the present study. In addition, a few samples were taken by the investigator in most

These records were studied and a range of concentrations judged most representative selected for the summary given in Table I. Where relatively extreme values appear it is an indication of too few data to permit a good estimate.

Figures in the last column are selected to indicate the magnitude of readily attainable dust concentrations with dust control measures now in use; or judged to be most typical of an operation where no special dust control measures are employed, e.g., ring spinning.

Discussion of Concentrations

The available dust count data for operations in the preparation of yarn are highly variable and reflect the poorer accuracy in sampling inherent in operations that are intermittent and miscellaneous in character. These figures are, therefore, considered much less reliable than those for other departments.

The figures for carding room dustiness indicate that with reasonable good enclosure and exhaust of the machines, concentrations well below ten million are obtainable. Four of the plants visited exceed the five million limit materially.

All the data for male spinners exposure indicates a wide variation in dustiness, ranging from two to eight million, but the volume of data are

TABLE 1

PRESENT STATUS OF DUST CONTROL IN DIFFERENT PLANTS:
DESCRIBED IN TERMS OF AVERAGE DUST COUNTS

	A	B	C	D	E	F	G	H	I	J	Most Typical with Control
Preparation	-	1-3	5-7	3-9	-	1-8	2-7	-	20	7-11	Below 7
Carding	2-3	1-2	10-25	4-12	1 1/2-3	2-4 1/2	2-3	2-3	30-50	4-17	2-3
Mule Spinning	-	1-3	6	-	3-7	2	-	-	-	8	-
Ring Spinning	2-4	1-5	-	1-4	3-5	1-2	2-8	8	13-18	5-6	3-5
Twisting	2-6	1-5	5-7	2	5-8	2-4	2-10	-	13-18	4-9	4-7
Weaving	1-2	1-5	11-15	2-5	-	1-5	2-10	4-7	-	2-4	1-3
Spooling, Winding	2-4	-	-	2	2-7	-	2	5-7	3	5	-

great enough to yield a good average. Concentrations for ring spinning are from one to five million although there is no strong indication in the data of marked differences between this operation and mule spinning.

There is a similar wide variation in data for twisting (two to million), but there is some justification in these data for the opinion held that this is one of the dustier operations in the finishing end of the mill. It is believed that occasional high values in both ring spinning and twisting reflect in some cases the sampling procedure. If the large impinger is maintained in one location and there is a strand breakage in that immediate area, the resulting whipping dust will be reflected in that single sample and will not, therefore, be representative of the worker's exposure.

Dustiness in weaving operations reflects the use of water for dust control in some plants and exhaust systems in others. The lowest concentrations of one to two million obtained in Plant A reflect highly efficient weaving methods there employed. Concentrations less than four to five million are readily attainable by local exhaust methods as indicated by the results in several plants.

The data for spooling and winding operations are included for completeness, but reflect miscellaneous operations and conditions. The dust reported is often due to the effect of other machinery in the same room. Considerations therefore affect the reliability of these data, as in the case of operations in the preparation room.

EXISTING DUST CONTROL PRACTICES

The following discussion of dust control practices in the industry is merely an outline. To be useful to those who are responsible for the engineering in each plant, they will need to be set forth in the form of detailed specifications describing details of construction, specifications for sheet metal contractors, for purchase of fans of proper capacity and design and operation of dust collectors.

Preparation

Highly variable practices prevail in different plants and the miscellaneous character of operations within a single plant makes it impracticable to formulate many general statements. However, it may be said that such control as is realized results from the use of modern equipment that is well closed and which usually incorporates pneumatic conveyors with ceiling condensers. The large movement of air involved in pneumatic transport serves a useful additional purpose of preventing the escape of dust from the primary equipment. Discharge of stock from ceiling condensers into bins, stock boxes or feed hoppers is a dust usually not under control. The blending operation is another source which is often not satisfactorily controlled. With the exception of these two common operations, most of the dust control procedures required will be more or less specific for each plant.

Carding

As has been noted, reduction of dustiness in carding to concentrations of three million or less is easily attained by good enclosure of machine and carefully designed exhaust. Moreover, experience of several

comparisons proves that it does not interfere seriously with manufacturing operations nor with quality of roving produced.

Our investigations indicate the superior advantages of having walls of the enclosure of wood to facilitate small clearance by rubbing tact at the edge of the main cylinder, thus avoiding excessive air infiltration at that point. Wood covers have the advantage of resistance to corrosion which was evident in installations with sheet metal covers.

Connection of the enclosure to the exhaust system by means of ducts of ample dimensions, i.e., large cross-sectional area is of major importance to avoid localized high air velocities close to the webbing in main cylinder. This detail was not always observed.

In view of similar degrees of success, judged by dust counts, between various installations, the best criterion of superior design as regards of exhaust from the machine was in the relative economy respecting volume of air exhausted per machine. Our observations indicated rather extreme variations as indicated in the following table of exhaust rates according set in five representative plants:

<u>Plant</u>	<u>Air Exhausted Per Set</u>
A	1500 cfm
B	2200 cfm
E	3800 cfm
G	5400 cfm
H	2000 cfm

It is apparent from this investigation that 2000-2500 cfm per set of breaker and finisher cards is ample exhaust capacity if the system properly designed.

All five of the systems described in the table serve their purpose satisfactorily from the viewpoint of operation, but it does not mean that they would be equally satisfactory to others. Thus the plant with high exhaust capacity (G) has a unique interplant tunnel connection, so that exhaust heat from another plant supplies replacement air without added cost, for or winter discomfort.

Plant E controls dust by completely housing each pair of cards in a spacious room, exhausted at a rate of 2000 cfm. Side walls are easily reached for repairs. Most plants would not prefer this arrangement.

As far as the dust count data can show, the card room of Plant E with 2200 cfm is equal if not superior to that of Plant I with 3800 cfm, recently installed system.

The fundamental features of best card dust control systems observed are as follows:

1. Wood enclosure with hinging arrangement.
2. Liberal clearance between worker rolls and curve of cover permitting air passage at low velocity.
3. Large chamber connection on cover, to duct.
4. Duct branch not over 5", preferably 4".
5. No blast gate dampers in branch line.
6. Exhaust influence over comb, either by extension of main cover or by separate hoods.
7. Exhaust space under machine, not over 4" duct.
8. Enclosure and exhaust of feed hopper, not over 4" duct.

Two installations include an exhaust branch to prevent the dust originating in the space between the ring doffers and the main cylinder.

Spinning

Machin

One plant has installed ventilation for their ring spinning for which management believes has reduced dust in this operation. It consists in a series of exhaust openings under the frame, near the floor, running the length of each frame. Time did not permit demonstrating to our own satisfaction whether a measurable improvement had been effected or not. This should be done by a series of dust measurements with exhaust on and off. The volume of air exhaust is insufficient to effect a true local exhaust action, and if it is effective it must, therefore, be an effect of simple dilution.

Twisting

Interest in control of dust from tristers is widespread in the industry and Plants A and B have installed an exhaust system like the one described for the spinning frames in Plant A. Here again the operators believe a marked improvement has resulted. Dust count data is needed that will measure the degree of improvement.

Winders

Machin *Construction*

Cop winders have been exhausted in Plants A and B with reported beneficial reduction in dustiness. We do not have quantitative data on point. The exhaust arrangement for Foster winders was developed many years ago and is well known. The tendency to elimination of this machine makes the problem one of little practical interest now.

In most plants, dust from other equipment, such as spinning twisting which are commonly in the same room, is of greater importance than from winding operations.

June, 1947

Weaving

One plant has a superior method of suppressing dust in weaving wet methods and dust count records indicate a complete suppression of dust. It involves a water spray head mounted above the warp at the rear of the harness with a mechanical screw arrangement for constant movement of the head transversely to the warp. They believe it to be more effective than system common in several plants wherein the warp is passed over wetted roll.

It is apparently not practical to recommend 100 per cent wet weaves throughout the industry. Moreover, we are satisfied that it is practical to control dust in this operation by local exhaust, where dry weaving is considered imperative for special properties of the cloth. One of the best exhaust arrangements includes an exhaust opening directly under the warp at the rear of the harness frame with a slot exhaust opening carried by the lay beam, latter connected to the stationary part of the exhaust system, either by flexible hose arrangement or by an all metal swivel joint.

Duct Work

The actual arrangement of duct work and exhaust fan present no unusual problems where good practice in sheet metal fabrication is followed. Points are of sufficient importance to require emphasis. Special care should be exercised in the fabrication to avoid sharp projections on the inside to create points of lodgment for fibers. Secondly, it must be designed to provide adequate transporting velocities. Velocities below 2000 fpm, in the experience of the industry, may permit settlement of material and gradual clogging. Therefore, allowing a margin of safety, the design should provide for velocities of 3000 fpm.

The problem of distribution of planned air flows to the different branches of the system is of importance in the design of all dust exhaust systems. The use of dampers in branches to adjust air flows is avoided in the best systems. Their function in effecting balance between branches best attained in the original design. Design procedures to effect this objective are available but will not be elaborated at this point.

Dust Collectors

Five plants in the survey employ the well-known burlap dust bag for filtering air from various exhaust systems. The favored filtering area is determined on the basis of one square foot for each air flow of 2 cfm. Most arrangements are such as to permit cleaning by whipping with a bamboo pole or a buggy whip by men who remain on the clean air side of the filter cloth. In one system, the men are required to enter the dust side for cleaning purposes, and final cleaning is carried out once weekly with the use of a central station vacuum cleaner. Practices in different plants are varied to frequency with which the burlap filter is freed of its dust load by whipping.

While these dust collectors work well, we are not prepared to recommend them to the exclusion of some commercial types of filters having automatic shakers. Several engineering elements enter into the design of a dust collector system, involving principally a proper estimate of pressure drop in the elements of the system and especially that through the filter proper (backwash). If the pressure drop estimate in the filter is incorrect, the system will not operate properly. If the basic resistance of the filter, i.e., that immediately after shaking the cloth, is subject to a constant increase over a pe-

of weeks, the system operation will suffer. Apparently, some of the older commercial flat bag type of collectors did exhibit that difficulty. Modifications in the design of such units have, however, been incorporated in recent models and those difficulties may have been eliminated.

Two plants employ commercial collectors of the flat bag or envelope type. Another plant uses a cloth tube commercial collector and also one filtering element is of paper, which is replaced at intervals of several days. A study of operating details of these commercial collectors is indicated in this study, including considerations of original cost and operating cost.

Recirculation

Several plants return air from the dust collectors to the work area to conserve heat in the cold weather. We are not prepared at this point either to condone or to condemn this practice except in cases where there is obviously leakage of dust through the filter and consequent recontamination of the air inside the plant. The practice is generally frowned upon where dusts that are hazardous to health are being handled. We believe there are certain circumstances where the practice might be permissible provided adequate safeguards are incorporated in operating procedures. The large volumes of air involved in dust control represent a tremendous problem as to heat loss and boiler capacity which cannot be passed over lightly.

II - MEDICALPRESENT MEDICAL FACILITIES AND PRACTICES

Every plant has connections with a local specialist in radiology who is employed for diagnostic work on an irregular basis. Three have their own x-ray machines used by the local specialist, but only one has a well-established schedule of periodic medical examinations.

Half of the plants have no positive information as to the incidence of asbestosis among their workers. The situation in these respects is indicated in Table II.

TABLE II.

PRESENT PRACTICES AND FACILITIES AS TO MEDICAL
X-RAY EXAMINATIONS IN VARIOUS PLANTS

Plant	Recent X-ray ¹ Survey Made	Periodic X-ray Examinations Made	Have Own X-ray Machine
A	Yes	No	Yes
B	No	No	No
C	Yes	No	No
D	Yes	No	No
E	No	No	No
F	No	No	No
G	No	No	No
H	Yes	Yes	Yes
I	No	No	No
J	Yes	No	Yes

¹Within last few years, and results available to plant or its physician

June, 1971

ESTIMATED INCIDENCE OF ASBESTOSIS

The incidence of asbestosis among employees of those plants where employees were examined in recent years, shows a marked variation as indicated by the following:

Plant A Plant A has recorded cases diagnosed as asbestosis to the extent about 20 per cent, and in the past nine years has compensated, on the average, two cases per annum. Total textile employment about 400.

Plant C on the basis of a recent systematic survey, estimates asbestosis incidence to be about three to four per cent.

Plant D has results from an incomplete survey in which four cases were found among those volunteering for examination with a total textile employment of around 150. They have compensated one case in about 10 years. Three more are pending.

J-M Plant H with a textile employment of 300 finds five or six cases annually that the physician believes show early changes due to asbestos.

Plant J has counted potential cases of asbestosis amounting in number to about 20 per cent, comparable with Plant A.

The other plants have conducted no systematic x-ray surveys of their own and have no information as to incidence among their employees. None of these has had cases requiring compensation.

While we have no complete data on history of employment and job turnover in the several plants, it is apparent that there is, at least superficially, a marked inconsistency in this picture. Also, it is clear that

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a serious lack of information prevails generally on this aspect of the problem.

The story in North Carolina is worth special mention. This state instituted 10 years ago, a system of periodic medical examinations for all workers in dusty industries and, hence, all asbestos textile workers have been x-rayed and clinically examined for a longer period, on a periodic basis than any other asbestos textile plant in this group. If the state examination finds that workers should discontinue their employment because of rapidly developing asbestosis they have the authority to effect this change. They see to it that workers who should receive workman's compensation due to disabling asbestosis are processed. So far as we have been able to ascertain neither event has occurred to any employee of the two North Carolina asbestos plants in this group.

These observations suggest that there may well be a marked divergence in medical procedures, interpretations, and attitudes respecting the diagnosis of asbestosis.

There is a very urgent need for a concerted cooperative medical effort to develop improved diagnostic procedures and uniformity of interpretation.

IMPORTANCE OF PERIODIC MEDICAL EXAMINATIONS

One of the most important elements of a program of protecting health of workers in dusty occupations is the periodic medical examination. The lack of scientific information regarding all aspects of asbestosis is serious. This cannot be over-emphasized. The obvious procedure to help overcome this deficiency is to employ every tool now available that will throw more light on the facts. The importance of the periodic medical x-ray examination can perhaps best be emphasized by stating that dust count investigations cannot, at the present state of knowledge, give us assurance as to the extent of our success in eliminating the hazard.

Regular examinations serve to protect the worker by giving early indication of health impairment due to dust, and permit intelligent action to be taken to avoid further serious health deterioration. This is particularly true if the detection is early enough and there is no progression to late stage asbestosis.

More important, for the long term, the accumulation of factual information regarding the health status of exposed workers, statistically interpreted in relation to dustiness studies and to mechanical developments in control equipment, will eventually indicate when the battle of asbestosis control is being won. This aspect of the problem is elaborated in the following section.

The inventory provided by such a medical program is just as important to intelligent action in this problem, as material inventories are to the proper conduct of business.

The question as to whether a plant should purchase its own x-ray equipment is an economic one involving consideration of cost of local cuts medical and x-ray facilities and of loss of employee time in travel, etc.

Diagnostic Panel

To further the objective of improvement and uniformity in diagnostic procedures, a medical section of the program is proposed in the form of a MEDICAL ASSESSMENT PANEL to be composed of outstanding medical men in this field, and of the physician designated by each company as the one responsible for its medical and diagnostic work. The composition, as to outside medical personnel, of this panel would be determined by its objectives: the assembling of the best possible medical brains and the mutual education in diagnostic procedures that comes from exchanges of scientific experiences and information.

The panel would meet, perhaps semi-annually, and consider the significance of x-ray films and other clinical data brought to the group by a participating physician. Dr. C. Richard Warner's services would be available for the organization and other details.

STATISTICAL STUDIES OF MEDICAL RECORDS

There are two very important questions concerning the physiological nature of asbestosis that have not yet been answered by any published investigation:

1. What is the expectation of asbestosis in workers exposed not more than 15-20 years to low concentrations of asbestos dust? Among the 500-odd workers who composed the subjects in the U.S. Public Health Service study, there were abnormally few who had been exposed for more than 15 years and practically none over 20 years. These facts seriously affected the conclusions that could be drawn.

2. Is there a progression to advanced asbestosis after exposure of an individual has been discontinued or has been reduced to very low levels due to action of dust deposits from earlier exposure? This question is of very great importance to intelligent medical supervision of workers in the plants.

It is virtually certain that statistical investigations of existing records would throw valuable light on these questions.

None of the plants visited during this inquiry have sufficiently extensive and systematic records to provide satisfactory answers to these questions, but the medical department of Metropolitan Life Insurance Company under Dr. A. J. Lanza, have x-rays of a number of men obtained in the early 1930's which could provide the nucleus of some useful information, depending on how many of the original group are available for re-x-ray.

The most outstanding store of information is in the records of the Division of Industrial Hygiene of the North Carolina Department of Health who, in accordance with state law have x-rayed workers in this, and other dusty industries, almost annually for the past 10 years. A study of these records would undoubtedly cast much light on the question of progression. Through officials of the company members in North Carolina, we already have assurances of their full cooperation in any investigations, and although we have not discussed the matter with them directly as to details, there is every reason to suppose that the desired information would be made available to us for the purposes described.

In addition, a general x-ray and medical survey of workers in one or two plants with a long history of high order of dust control would be of great value for this purpose.

III - PHYSICAL

SIGNIFICANCE OF DUST COUNTS

Correlation between development of asbestosis and some pertinent measure of dustiness, e.g., dust counts, can be developed by periodically serving and recording data on both aspects -- periodic medical examination of exposed workers together with the periodically measured dust exposure of each. However, to be useful for preventive purposes, these procedures have to be extended into the past wherever data is available. This was the procedure employed in the studies of the U.S. Public Health Service in North Carolina plants (Public Health Bulletin No. 241, 1938).

The main value of dust counts in asbestos plants is to obtain data on dust concentrations that can be compared with that study, and thus lead to conclusions as to probability of development of asbestosis in the particular plant being studied.

In that study, dustiness of different occupations was measured in the usual manner, and also the incidence of asbestosis by medical and X-ray examinations of the men employed. A statistical comparison of the two sets of data led the investigators to the conclusion that new cases of asbestosis would probably not occur if dust control measures were undertaken to ensure that no dust exposures exceeded five million particles per cubic foot (measured in the same manner).

APPRAISAL OF REDUCED DUST HAZARD

Having reached a degree of dust control represented by the dust count limit of five million, it is then proper to ask: "What degree of assurance is afforded by existing knowledge that asbestosis will not, in fact, develop in the future if dustiness is kept below that level?"

If there are factors, at present unknown, that will indicate a need for still better dust control, what will that limit be?

The information available does not permit complete assurance that five million is thoroughly safe nor has information been developed permitting a better estimate of safe dustiness.

It is nevertheless of the greatest importance either that such assurances be sought or a new yardstick of accomplishment be found for accurately measuring any remaining hazard in the dust zone below five million for the elimination of future asbestosis depends upon the degree of control effected now.

Measurement of Dustiness

One basis of uncertainty as to applying present conventional counting techniques to the measurement of asbestos dust hazards below the five million level is summarized in the question -- are the fibers of asbestos the causative agent or the non-fibrous "cubical" particles that look like those of other industrial dusts? The non-fibrous particles in most textile operations comprise 80-95 per cent of the total dust seen in dust counting.

While it is proven that asbestos dust is the cause of asbestosis there is no certain information as to what shape or size of dust is the causative factor. The correlation studies of the U.S. Public Health Service

employed conventional dust count techniques which, in effect, related incidence of asbestosis to the number of non-fibrous particles of a size ranging from one to five or 10 microns.

For illustration, suppose the causative dust element is something different, e.g., fibers that are less than 50-60 microns long, and less than 1-2 microns in diameter. The conventional dust count method would be satisfactory only if there were a fairly constant ratio between the two types of dust; it would, in that case, provide an adequate index.

Preliminary Studies on Qualities of Asbestos Dust

With a view to eventual development of supplementary methods for measuring asbestos dust concentrations on a weight basis, we have conducted some preliminary studies directed to the colorimetric determination of total silica in the minute quantities of asbestos dust obtained in a typical atmospheric sample. This requires development since it could provide a valuable tool for further investigation.

Sub-microscopic particles and fibers.

Another aspect of the dust examination problem on which preliminary work has been done involved studies with the electron microscope. We pose the two following questions:

1. Ordinary dust particles, one to three microns in diameter, comprise most of the particles in the dust count. They look like ordinary industrial dust and we refer to them as "cubical" as distinguished from "fibrous" particles. The question is: are these particles in fact non-fibrous or are they bundles of fibers?

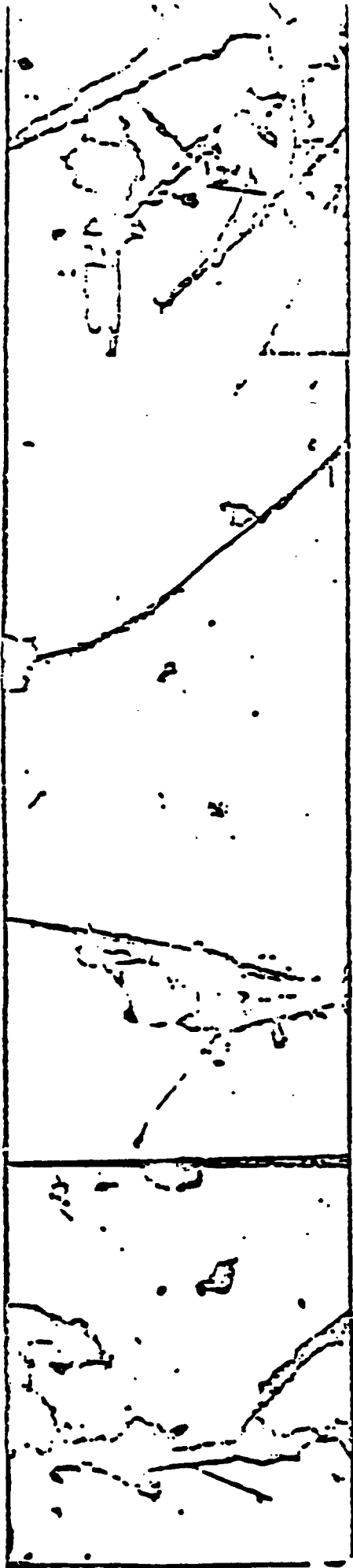
2. Secondly -- since the limit of resolution of the microscope lenses used in dust counting does not permit seeing particles very much smaller than one micron, one may ask if there are many fibers of great length, but such small width that they are invisible?

Samples of atmospheric dust were obtained for examination by the electron microscope, by mounting the small specimen slide used with this instrument, in the dust collecting zone of the electric precipitator. In order to eliminate very large fibers, the air being sampled was caused to pass first through a glass spiral coated with adhesive on its interior. This subjects the dust particles to centrifugal force and the largest ones would be precipitated out, much as they might be in the nasal passages of man.

Studies with other industrial dusts employing this spiral indicate that very rarely do cubical particles larger than three to five microns succeed in passing through the several turns of the spiral.

In samples obtained with this apparatus in a card room having a good dust control, we obtained pictures, some of which are reproduced in the attached Figure. They demonstrate first, that the cubical particles seen with a low power light-microscope are in fact bundles of fiber resembling a life size handful of partially opened fibers.

The picture further demonstrated that there are many fibers of considerable length, some fully 50 microns, whose other dimension is only a fraction of a micron; the fiber is therefore invisible in the dust counting microscope.



ELECTRON PHOTOMICROGRAPHS OF AIR-BORNE ASBESTOS DUST - MAGNIFICATION 5500 X

THIS CIRCLE 1 MICRON DIAMETER -



They also showed some fibers a few microns in length whose diameter is only 0.01-0.02 microns, although the commonest particles are bundles of fibers about 0.1 micron in width.

In addition to the light these observations throw on the sub-microscope character of asbestos dust, they are cited to indicate the other qualities that might be pertinent to evaluation of dust exposure, to supplement the dust count technique now in use.

DIFFERENT BUSINESSES OF STOCK

In investigations of the type being presently considered, a primary aim must be to develop improvements in dust control with the minimum of variation and expensive experimentation on a plant scale. At the stage of development of the industry, causes of dust are very often not obvious. Examination of dust count records made available to us, combined with the tests we performed ourselves, provide numerous instances of variation, the cause of which is not apparent.

We undertook recently to measure the amount of dust in the roving of different manufacturers by suspending a measured quantity of roving in alcohol then making a dust count in the same manner as with air samples. The result would be expressed in millions of particles per yard of roving or per gram, and would be of great advantage in relating differences in dustiness to the causative factor. Such a measurement technique would be essential in approximating the actual value of oil.

We do not have sufficient data on this effort on which to draw conclusions. There are difficulties to be overcome, and the solution depends more laboratory experimentation.

Another test method which would be of value is a standardized mechanical abuse of roving in a small vessel while sucking a stream of air with resulting dust as in the sampling for ordinary dust counts. A test of this kind, in conjunction with the dustiness index would be of value in evaluating the oiling practice, or it might take the place entirely of the procedure previously outlined.

OUTLINE OF RECOMMENDED PROCEDURES
FOR ASBESTOSIS INVESTIGATIONS

X. ENGINEERING

A. Dissemination of Existing Information

Provide factual information to Institute members with least possible delay; prepare bulletins with design sketches on some or all of several subjects listed below, to be distributed singly as ready. Additional field observations required in many cases.

1. Carding dust control: for various makes of machines
2. Dust in preparation, miscellaneous operations
3. Wet weaving equipment
4. Exhaust for Dry weaving
5. Exhaust for winders, etc.
6. Design of duct work
7. Design of dust house

B. Development of New Techniques for Dust Control

In this category, the problems for which there are no present answers: like twisting, spinning, appraisal of operation, efficiency and cost of commercial dust collectors, etc.

II. MEDICAL

A. Institution of Periodic Medical Examinations

This is urgently recommended to all companies. Medical advice as to organizations procedures will be given by the Foundation upon request.

B. Organization of a Diagnostic Panel for Asbestosis

Arranged by the Foundation's Medical Director and organized to meet in Pittsburgh at suitable intervals for scientific review of diagnostic problems, reading of x-ray films, etc. Panel to consist of individual company physician or medical consultants together with other medical authorities to be determined.

C. Statistical Study of Existing Medical Records

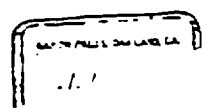
Designed to find answers to important questions concerning medical and physical nature of asbestosis; especially concerned with records of State of North Carolina, Metropolitan Life Insurance Company, etc.

III. PHYSICAL TESTING -- (Further Dust Studies)

Studies of physical and chemical characteristics of asbestos dust designed, in conjunction with medical studies, to provide more significant information concerning the nature of the dust exposure; to develop supplementary techniques for measuring remaining asbestosis hazard after reduction of dust to meet the present standard; to insure that effective control of dust has been attained.

This is a step by step program aimed at the elimination of asbestosis cases from the plants of Asbestos Textile Institute members.

11/23/79
12-23-79
1025



December 6, 1979

Mr. Hugh M. Jackson
Industrial Health Prog
Iduna-Manville Corporn
22 East 40th Street
New York 16, New York

PLAINTIFF'S
EXHIBIT
jm 306

Dear Hugh:

At the time of our meeting you and I discussed the status of the ATI study, and I promised to send you material which might be helpful. I realize that you will not be using it until January or February, but thought I would send you what we turned up immediately. We will continue to search and will send you anything more that we find before the time of your meeting.

In the American Journal of Medicine for November 1953, Inselbacher, Klaus, and Hardy have an article entitled, "Asbestosis and Bronchogenic Carcinoma". They report one case but review the literature and they state that "about 10,000 workers are probably engaged in potentially hazardous asbestos manufacturing operations in the United States. Most of the industry is engaged in asbestos textile manufacturing...." As early as 1936 Lanza estimated that about 12,000 individuals were employed in the chief asbestos plants in the United States, of whom 10,000 might be exposed. Minshaw and Garland in their book, "Diseases of the Chest", just off the press, state in part "exposure occurs in industrial plants where asbestos products are fabricated and among those who install insulating materials; the spinning and weaving of asbestos in combination with other textiles also results in exposure".

The Inselbacher article collects 20 cases including their own, of which 10 apparently occurred in this country. The occupations of these 10 cases were as follows: three weavers, two pipe insulators, one pipe coverer, one asbestos mill worker and porter, and three not known. The occupations of the other 10 (foreign) cases were as follows: spinner; mattress and opening departments; packer-stores department; carder, spinner, and weaver; pre-spinning-assembly room; machine adjuster; bagger; pipe coverer; "asbestos worker"; and one who spent 18 years in an asbestos plant although the occupation is not given.

PLAINTIFF'S
EXHIBIT
16
5/4/92 JW

Mr. Hugh M. Jackson

December 6, 1956

One conclusion of this article is that asbestos is associated with bronchogenic carcinoma in 13.9% of the cases cited in the literature.

Doll, "Mortality from Lung Cancer in Asbestos Workers", British Journ. Ind. Med., April 1955, presents data on 18 cases of lung cancer diagnosed at autopsy among 105 consecutive autopsies of workers in a large asbestos works. Fifteen of the 18 had asbestosis and three did not. These individuals were not minors, of course, and their occupations included: nine weavers, three filterizers, two disintegrators, one bag carrier, two spinners, and one maintenance man. In addition, we have found articles reporting at least seven other cases, mostly in the foreign literature and many of which do not specify the occupation.

L. W. Smith, "Pneumoconiosis and Lung Cancer", Compensation Medicine, November 1949, states that the American and English figures correspond so closely that it becomes more and more difficult to absolve asbestos as a potential factor in the development of pulmonary cancer. He quotes a recent editorial in the JAMA as follows: "As the available evidence shows that the occurrence of cancer of the lung is related to pulmonary asbestosis and is not merely a possible sequela of exposure to asbestos dust....", and states that claims for compensation will become of increasing frequency due to the general increase of carcinoma of the lung.

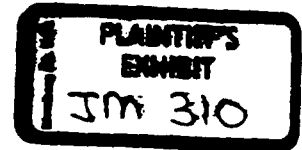
I hope that this material will be helpful to you in enlightening the representatives of the textile industry. We will continue to send "ammunition" as we uncover it.

With kindest personal regards.

Sincerely yours,

Daniel C. Braun, M.D.
Medical Director

DCB:H



August 23, 1957

Mr. Hugh M. Jackson, Manager
Industrial Health Program
Johns-Manville Corporation
22 East 40th Street
New York 16, New York

Dear Hugh:

Thank you for your letter of August 19 regarding the September meeting of the ATL.

As a matter of fact, having completed the literature search, it is apparent to us that the possibility of an association between lung cancer and asbestosis is much more likely to exist in asbestos factories than in mining operations. For example, of 99 cases which had been reported up to 1955, at least 80 appear to have occurred in asbestos workers other than miners. A number were women, and the occupations given were: weaver, carder, mattress maker, logger, begger, pipe coverer, spinner, etc.

Two specific articles which mention the type of exposure and the job is that by Doll (1) and that by Isselbacher, et. al. (2). Seventeen cases studied by Gloyne and 31 reported by Merewether, as well as three mentioned by Harrison and one each by Curston and Owen occurred in England. If my information is correct, there is no mining of asbestos in England, and these must all have been workers in textile or similar jobs. In this country, the ten cases reported were apparently all in textile workers. The first case, reported in 1935 by Lynch and Smith was a weaver in an asbestos factory for 21 years. Isselbacher's cases involved a contractor's helper engaged in cutting and sawing asbestos board and sorter in an asbestos mill.



Mr. Hugh M. Jackson

-2-

August 23, 1957

The QAMA study is in the final stages which are, of course, the slowest. All of the statistical analysis has been completed, and the report is 99% written. What remains is mainly minor revisions, typing the manuscript and proofing. It should go to the print shop by the end of this month.

I hope this supplies you with what you need for the meeting. If there is anything further, please let me know and I will try to get it to you in time.

Sincerely yours,

Daniel C. Braun, M.D.
Medical Director

DCE:la

Enclosure

References

1. Doll, R.: Mortality from Lung Cancer in Asbestos Workers.
Brit. J. Indust. Med. 12, 81-86, 1955.
2. Inselbacher, K. J.; Klaus, H.; and Hardy, H. L.: Asbestosis and
Bronchogenic Carcinoma. Am. J. Med. 15, 721-732, November
1953.
3. Doll, R.: Bronchial Carcinoma: Incidence and Aetiology (Milroy
Lectures, abridged) Brit. M. J., 2, 521-527, Sept. 5, 1953;
585-590, Sept. 12, 1953.

EXHIBIT NUMBER	DESCRIPTION	FOR IDENTIFICATION ONLY	ADMITTED IN EVIDENCE
JM-419	Deposition of David T. Austern, In re: <u>All Asbestos Related Personal Injury or Death Cases Filed or to be Filed in Mobile County, Alabama, Circuit Court of Mobile County, Alabama.</u> May 4, 1992, and all exhibits thereto.		

ORIGINAL

1

1 CIRCUIT COURT OF MOBILE COUNTY, ALABAMA

2 - - - - - X

3 In Re: ALL ASBESTOS-RELATED :

4 PERSONAL INJURY OR DEATH CASES :

5 FILED OR TO BE FILED IN :

6 MOBILE COUNTY, ALABAMA :

7 - - - - - X

8 Washington, D.C.

9 Monday, May 4, 1992

10 Deposition of DAVID T. AUSTERN, a witness
11 herein, called for examination by counsel for Plaintiffs
12 in the above-entitled matter, pursuant to Notice, the
13 witness being duly sworn by JAN A. WILLIAMS, a Notary
14 Public in and for the District of Columbia, taken at the
15 offices of Manville Personal Injury Settlement Trust,
16 1825 Eye Street, N.W., Suite 300, Washington, D.C., at
17 10:45 a.m., Monday, May 4, 1992, and the proceedings
18 being taken down by Stenotype by JAN A. WILLIAMS and
19 transcribed under her direction.

20

21

22

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1 APPEARANCES:

2

3 On behalf of the Plaintiffs:

4 PETER A. KRAUS, ESQ.

5 Baron & Budd, P.C.

6 The Centrum

7 3102 Oak Lawn Avenue

8 Suite 1100

9 Dallas, Texas 75219

10 (214) 521-3605

11

12 On behalf of Defendant Owens-Corning Fiberglas:

13 RICHARD M. CRUMP, ESQ.

14 Crosby, Saad & Beebe, P.C.

15 Suite 600

16 3290 Dauphin Street

17 Mobile, Alabama 36606

18 (205) 476-3000

19

20

21

22

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1 APPEARANCES: (Continued)

2

3 On behalf of Defendant Flintkote, Inc.:

4 KELLY A. McCLOSKEY, ESQ.

5 Thompson, Hine and Flory

6 1920 N. Street, N.W.

7 Washington, D.C. 20036-1601

8 (202) 331-8800

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1

C O N T E N T S

2

3

THE WITNESS

EXAMINATION BY COUNSEL FOR

4

DAVID T. AUSTERN

THE PLAINTIFFS

5

By Mr. Kraus

7

6

EXAMINATION BY COUNSEL FOR

7

DEFENDANT OWENS-CORNING FIBERGLAS

8

By Mr. Crump

35

9

FURTHER EXAMINATION BY

10

COUNSEL FOR THE PLAINTIFFS

11

By Mr. Kraus

54

12

FURTHER EXAMINATION BY

13

COUNSEL FOR DEFENDANT

14

OWENS-CORNING FIBERGLAS

15

By Mr. Crump

56

16

17

E X H I B I T S

18

EXHIBIT NO.

PAGE NO.

19

Plaintiff's Exhibit Nos. 1 through 19

5

20

21

* Plaintiff's Exhibit Nos. 12 through 14 retained by

22

counsel.

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1 P R O C E E D I N G S

2 (The documents referred to
3 were marked Plaintiff's
4 Exhibit Nos. 1 through 19
5 for identification.)

6 MR. KRAUS: Let me state for the record that I
7 am counsel for Plaintiffs, my name is Peter Kraus.

8 I have had the court reporter mark as Exhibit 1
9 an Amended Notice of taking the oral deposition of David
10 Austern. And I had copies of this Notice served on
11 counsel for Owens-Illinois, Rock Wool, Garlock, A.W.
12 Chesterton, Owens-Illinois/Keene, Flintkote, John-Crane,
13 Pittsburgh Corning, Fiber Board, the Center for Claims
14 Resolution, Defendants Owens Corning Fiberglas, and
15 AC&S.

16 MR. CRUMP: Excuse me. Let me state something
17 for the record.

18 As a preliminary matter, it is my understanding
19 that there were motions to quash this deposition filed in
20 the Circuit Court of Mobile and that there was a phone
21 hearing held on those motions this morning. I was not
22 party to the phone hearing, but Mr. Kraus advises me that

1 the motions were denied.

2 MR. KRAUS: Let me just clarify that, Richard,
3 for the record. The hearing never took place, I never
4 spoke with the judge, I learned only from his secretary
5 that there would be no hearing and he would not rule on
6 any of the motions to quash these depositions.

7 MR. CRUMP: I understand. Thank you for
8 clarifying.

9 In any event the motions to quash then are
10 outstanding on this deposition and we do not by our
11 appearance here waive any grounds for quashing this
12 deposition which are asserted in those motions.

13 Additionally we would object in that we had not
14 had an opportunity prior to today to review the exhibits
15 tendered to Mr. Austern. Polly Kellar requested those
16 Friday and she was informed he wasn't sure which
17 documents he would tender to Mr. Austern and that maybe,
18 if we could check back later, we could be told that
19 information, although he was leaving shortly I believe
20 sometime Saturday to come to D.C.

21 So we don't waive any of those objections that
22 either were stated in the motions to quash which I have

1 stated or will state during the course of the deposition.
2 Whereupon,

3 DAVID T. AUSTERN

4 Was called as a witness by counsel for Plaintiff, and
5 having been duly sworn by the Notary Public, was examined
6 and testified as follows:

7 EXAMINATION BY COUNSEL

8 FOR THE PLAINTIFFS

9 BY MR. KRAUS:

10 Q. Would you state your full name for the record,
11 sir.

12 A. David Thomas Austern.

13 Q. And, Mr. Austern, what is your occupation?

14 A. I'm general counsel of the Manville Personal
15 Injury Settlement Trust.

16 Q. Would you describe briefly what your duties are
17 as general counsel for the Manville Personal Injury
18 Settlement Trust?

19 A. I direct the legal department in the trust and
20 supervise the lawyers and other staff in that
21 department. I also supervise the corporate legal affairs
22 of the trust both internally and with respect to the

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1 trust's relationship with the Manville Corporation and I
2 supervise the litigation that the trust is in.

3 Q. Would you describe briefly what the Manville
4 Trust is?

5 A. The Manville Trust was --

6 MR. CRUMP: I object. We didn't state any
7 stipulations on the record. I assume the usual
8 stipulations apply, although I don't know that, but I
9 would object on the record as to the relevance of that.

10 THE WITNESS: The trust was created by a plan
11 of reorganization under Chapter 11 of the bankruptcy code
12 pursuant to which the trust was given certain assets of
13 the Manville Corporation and assumed certain liabilities
14 of the Manville Corporation. It is a New York common law
15 trust.

16 BY MR. KRAUS:

17 Q. Would you describe please the connection
18 between the Manville Trust and the Manville Corporation.

19 A. We own on a fully diluted basis 80 percent of
20 the stock of the Manville Corporation, both preferred and
21 common. We are also the corporation's largest creditor
22 and are on a weekly and sometimes more frequently basis

1 in contact with the Manville Corporation about its
2 affairs.

3 Q. Can you describe for me, sir, the relationship
4 between the Manville Corporation and a company that was
5 known as the Johns-Manville Corporation?

6 A. During the Chapter 11 bankruptcy, I mentioned
7 the Johns-Manville Corporation which consisted of -- the
8 Johns-Manville Sales Corporation and ten or possibly 11
9 subsidiaries were formed into the Manville Corporation.
10 So it is the successor corporation to Johns-Manville.

11 Q. Sir, was Johns-Manville a participant in the
12 asbestos industry?

13 MR. CRUMP: Object to the form of the question.

14 THE WITNESS: It was.

15 BY MR. KRAUS:

16 Q. What happened to the documents maintained by
17 Johns-Manville in the course of its business related to
18 its participation in manufacturing, mining, and milling
19 of asbestos products?

20 MR. CRUMP: I object to the form of the
21 question in that there was no proper predicate or
22 foundation laid that shows this gentleman has this

1 knowledge.

2 THE WITNESS: The corporation had what I'll
3 divide just for the sake of explanation into two types of
4 documents. They had asbestos-related documents which
5 Johns-Manville and its successor corporation, Manville,
6 had used in litigation either defending personal injury
7 lawsuits filed against the corporation prior to August of
8 1982 when the corporation declared bankruptcy and
9 additionally documents used by Manville as plaintiff in
10 litigation first against its insurance carriers in
11 California and later in a case filed in the Court of
12 Claims in the District of Columbia against the United
13 States Government. That was one set of documents.

14 And the other set of documents were all other
15 asbestos-related documents which Manville did not use in
16 its either defending itself in litigation or using as
17 plaintiff in litigation.

18 BY MR. KRAUS:

19 Q. Okay. What happened to those documents related
20 to Manville's participation in the asbestos-related
21 industry?

22 MR. CRUMP: Again I object to the form of the

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1 question in that there is no proper predicate or
2 foundation laid that shows that this gentleman has that
3 knowledge.

4 BY MR. KRAUS:

5 Q. Let me strike that then and rephrase.

6 Sir, do you have knowledge of what happened to
7 documents related to Johns-Manville Corporation's
8 participation in the asbestos industry?

9 A. Yes.

10 Q. And how do you have that knowledge, sir?

11 A. When I first became employed by the trust, I
12 went to Denver, Colorado, where Manville was
13 headquartered, to their headquarters building. And I was
14 actually shown the litigation part of the documents that
15 I referred to, consisting of virtually thousands of
16 documents involved in the 17,000 or so pending personal
17 injury cases which were stayed by the bankruptcy and in
18 addition an equally large and perhaps even slightly
19 larger group of documents which Manville had used in the
20 litigation in California against its insurance carriers
21 which was then over and was presently using in the Court
22 of Claims in its suit against the government.

1 MR. CRUMP: Move to strike those portions of
2 this gentleman's answer which are clearly hearsay in
3 which he was shown documents and was told or is purported
4 to know whose documents they appear to be.

5 BY MR. KRAUS:

6 Q. Sir, did those documents which you reviewed at
7 the Manville Corporation include the internal documents
8 of Johns-Manville Corporation in asbestos-related
9 businesses?

10 MR. CRUMP: Object to the form.

11 THE WITNESS: It included them. Obviously in
12 the personal injury side there were plaintiffs' documents
13 as well, but it included the asbestos work of
14 Johns-Manville.

15 BY MR. KRAUS:

16 Q. Sir, what happened to those asbestos-related
17 documents in 1988?

18 MR. CRUMP: Object to the form.

19 THE WITNESS: We, the trust, had transferred to
20 a warehouse which we leased in Denver all of the Manville
21 documents used in the insurance litigation in
22 California. We had transferred to us in the District of

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1 Columbia most, not all, but most of the personal injury
2 documents which Manville had had pending in 1982 in the
3 thousands of lawsuits that were stayed.

4 We had transferred to us to the Denver
5 warehouse all of the documents Manville was not currently
6 using in the lawsuit against the United States Government
7 in the Court of Claims and then copied the documents
8 which they were currently using during that litigation
9 and then had transferred to us in the same warehouse in
10 Denver all of the asbestos documents from wherever they
11 were located in the country. They were in three
12 principal places, in Manville facilities, some of which
13 were closed, some of which were opened, by truck and
14 brought to us in the Denver warehouse.

15 BY MR. KRAUS:

16 Q. Sir, are you now the custodian for those
17 documents related to Manville's asbestos activities?

18 MR. CRUMP: Excuse me. Are you referring to
19 Mr. Austern personally or the Manville Trust as an
20 entity?

21 MR. KRAUS: I am referring to Mr. Austern
22 personally.

1 BY MR. KRAUS:

2 Q. Are you, Mr. Austern, now the custodian for
3 those documents related to Manville's asbestos-related
4 activities?

5 A. Yes, I am.

6 Q. Sir, let me show you what's been marked as
7 Plaintiff's Exhibit No. 2.

8 A. Okay.

9 Q. Would you identify what that is?

10 A. This is an affidavit which I prepared and
11 signed in March of last year.

12 Q. Is that affidavit true and correct to the best
13 of your knowledge, sir?

14 A. It is --

15 MR. CRUMP: Excuse me. I object to the form in
16 that the document speaks for itself.

17 THE WITNESS: It is accurate.

18 BY MR. KRAUS:

19 Q. I'm going to show you a series of exhibits
20 here, and let me identify them for the record.

21 First Plaintiff's Exhibit No. 3 which is also
22 labeled Plaintiff's Exhibit JM 3, a letter to

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1 Mr. Vandiver Brown, Attorney, dated October 1, 1935, with
2 an attached letter dated September 25, 1935, to
3 Mr. Sumner Simpson from Ms. Rossiter of Asbestos
4 Magazine.

5 Plaintiff's Exhibit No. 4 also marked JM 4, an
6 October 3, 1935, letter to Mr. Sumner Simpson from
7 Mr. Vandiver Brown.

8 Plaintiff's Exhibit No. 5, also marked
9 Plaintiff's Exhibit JM 6, a Memorandum of Agreement dated
10 November 20, 1936.

11 Plaintiff's Exhibit No. 6, a February 27, 1937,
12 letter to Mr. Sumner Simpson from Vandiver Brown.

13 Plaintiff's Exhibit No. 7, also marked JM 12,
14 that's Plaintiff's Exhibit JM 12, a May 11, 1937, letter
15 to Raybestos-Manhattan, Inc., from Vandiver Brown,
16 attaching a First Progress Report on Asbestos Experiments
17 dated May 5, 1937.

18 Plaintiff's Exhibit 8 also marked Plaintiff's
19 Exhibit JM 16, a May 3, 1939, letter to Sumner Simpson
20 from Vandiver Brown.

21 Plaintiff's Exhibit 9, also marked JM 29, a
22 February 24, 1943, letter to Vandiver Brown from Leroy U.

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1 Gardner, attaching an Outline of Proposed Monograph on
2 Asbestosis.

3 Plaintiff's Exhibit No. 10, also marked
4 Plaintiff's Exhibit JM 30, a June 18, 1943 letter to
5 Mr. Sumner Simpson from A. S. Rossiter, attaching a
6 June 14, 1943, letter to Mr. John E. Morgan.

7 Plaintiff's Exhibit No. 11, an April 30, 1948,
8 letter to Mr. Ernest Muehleck, I cannot read the name
9 exactly, but he's identified as the president of Keasbey
10 & Mattison Company, from Vandiver Brown.

11 Plaintiff's Exhibit 12, also marked Plaintiff's
12 Exhibit JM 283, a December 8, 1936, letter to Members of
13 the Asbestos Industry from Mr. C. J. Stouffer.

14 Plaintiff's Exhibit 13, also marked Plaintiff's
15 Exhibit JM 292, a picture with caption identified as the
16 May 1945, International Hygiene Trustees Meeting.

17 Plaintiff's Exhibit No. 14, also marked
18 Plaintiff's Exhibit JM 294, a Xerox of a publication
19 entitled Health and Industry dated on the facing page
20 November 7, 1946.

21 Plaintiff's Exhibit 15, also marked Plaintiff's
22 Exhibit JM 296, a Report of Preliminary Dust

1 Investigation for the Asbestos Textile Institute dated
2 June 1947.

3 Plaintiff's Exhibit 16, also identified as
4 Plaintiff's Exhibit JM 306, a letter dated December 6,
5 1956, to Mr. Hugh M. Jackson from Daniel C. Braun.

6 Plaintiff's Exhibit No. 17, also marked
7 Plaintiff's Exhibit JM 310, an August 23, 1957, letter to
8 Mr. Hugh M. Jackson from Daniel C. Braun with attached
9 references.

10 Plaintiff's Exhibit 18 also marked Plaintiff's
11 Exhibit JM 416, a June 12, 1961, confidential memorandum
12 to Mr. A. W. Spedding, from Leon Morowitz or Horowitz,
13 it's not readable.

14 Plaintiff's Exhibit 19, also marked Plaintiff's
15 Exhibit JM 297, dated July 11, 1947, a Memorandum on
16 Plant of Johns-Manville Corporation.

17 MR. CRUMP: Just for the record, I don't want
18 my silence to be construed as an admission that those
19 documents are what Mr. Kraus says that they purport to
20 be.

21 MS. McCLOSKEY: Do you have any copies of the
22 exhibits?

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1 MR. KRAUS: Yes.

2 MS. McCLOSKEY: Thank you.

3 BY MR. KRAUS:

4 Q. Would you review these, sir. And by these I'm
5 referring to Exhibits 3 through 19 I just identified.

6 A. Okay.

7 Q. Mr. Austern, are Exhibits 3 through 19 genuine
8 and authentic copies of documents maintained in the files
9 of the Manville Trust?

10 MR. CRUMP: Excuse me. I want to object to the
11 form of the question inasmuch as I understand the Alabama
12 rules and the law of the state of Alabama, documents
13 cannot be authenticated en masse. As these are a number
14 of different documents from different authors, I object
15 to Mr. Austern identifying them en masse.

16 BY MR. KRAUS:

17 Q. Then let's go through them one by one. Is
18 Exhibit 3 a genuine and authentic copy of a document
19 maintained in the files of Manville Trust?

20 MR. CRUMP: I object to the form of that
21 question in that there is no foundation laid or proper
22 predicate for that and it does not comport with the

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1 Alabama rules of law of authentication.

2 BY MR. KRAUS:

3 Q. Did you answer?

4 A. No, I didn't. The answer is yes.

5 Q. Is Exhibit 4 a genuine and authentic copy of a
6 document maintained in the files of Manville Trust?

7 MR. CRUMP: Same objection that I just stated.

8 THE WITNESS: Yes, it is.

9 BY MR. KRAUS:

10 Q. Is Exhibit 5 a genuine and authentic copy of a
11 document maintained in the files of Manville Trust?

12 MR. CRUMP: Same objection.

13 THE WITNESS: Yes, it is.

14 MR. CRUMP: Can I just have that same objection
15 as to all the documents which you are going to ask this
16 gentleman about?

17 MR. KRAUS: Yes.

18 MR. CRUMP: Yes?

19 MR. KRAUS: Yes.

20 BY MR. KRAUS:

21 Q. Is Exhibit 6 a genuine and authentic copy of a
22 document maintained in the files of Manville Trust?

- 1 A. Yes it is.
- 2 Q. The same about 7?
- 3 A. Yes.
- 4 Q. And is 8 also?
- 5 A. Yes.
- 6 Q. And is 9 also?
- 7 A. Yes.
- 8 Q. And is 10 also?
- 9 A. Yes.
- 10 Q. By also you understand I mean the same question
- 11 I just asked you, whether these are genuine and authentic
- 12 copies of documents maintained in the files of the
- 13 Manville Trust?
- 14 A. I understand.
- 15 Q. And is 11 also?
- 16 A. Yes.
- 17 Q. And 12?
- 18 A. Yes.
- 19 Q. And 13?
- 20 A. Yes.
- 21 Q. And 14?
- 22 A. Yes.

1 Q. Fifteen?
2 A. Yes.
3 Q. Sixteen?
4 A. Yes.
5 Q. Seventeen?
6 A. Yes.
7 Q. Eighteen?
8 A. Yes.
9 Q. Nineteen?
10 A. Yes.
11 Q. And, sir, are you the custodian for these
12 documents?
13 MR. CRUMP: Object to the form.
14 THE WITNESS: Yes.
15 BY MR. KRAUS:
16 Q. Sir, is there anyone else in either the
17 Manville Trust or the Manville Corporation who maintains
18 a collection or a repository of all these documents?
19 A. No.
20 Q. Sir, have you seen original copies of these
21 documents?
22 MR. CRUMP: Object to the form. Again it calls

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1 for him to verify seeing originals of a number of
2 different exhibits and I object to the form of that on
3 that basis.

4 BY MR. KRAUS:

5 Q. Answer it if you can, sir.

6 A. Can I refresh my recollection for a second?

7 Q. Yes.

8 A. I believe I'm going to say Exhibit 14, yes.

9 With respect to Exhibit 13, I have never seen the
10 original picture, but I have seen the original magazine
11 or a copy of the original magazine. With respect to all
12 the exhibits up to 13, I have seen either carbon copies
13 on tissue paper of Vandiver Brown's correspondence to
14 Sumner Simpson or his colleague of what are frequently
15 referred to as the Sumner Simpson papers. Obviously,
16 where Vandiver Brown is the sender, I have not seen the
17 original, I have seen the tissue copy or a tissue copy, I
18 can't say it's the only tissue copy.

19 With respect to correspondence to Vandiver
20 Brown from Sumner Simpson or others, in a few cases I
21 have seen the original letters and in some of those cases
22 the original letters were actually offered into evidence;

1 although I have seen them, I do not have them, I have
2 copies.

3 With respect to Exhibit 14, I have seen an
4 original publication; that is to say, this is a copy of
5 the original publication, there were obviously a number
6 of copies.

7 The same for Exhibit 15, I have seen -- this is
8 a copy, but I have seen what certainly appeared to be
9 original versions of Exhibit 15.

10 I cannot tell you that I have seen originals or
11 even tissues of 16 or Exhibit 17, but I certainly have
12 copies in my possession in the warehouse. And I have
13 seen what I believe are original typed versions of
14 Exhibits 18 and 19.

15 BY MR. KRAUS:

16 Q. Now, sir, for those documents which you just
17 identified as having seen either the original or a tissue
18 carbon copy, did those documents that you actually saw
19 appear to be aged?

20 MR. CRUMP: Object to the form of the question
21 because there's no specificity with respect to which
22 documents he saw. In particular I would cite to the fact

1 that he saw some but not all of the original of what he
2 referred to as the Sumner Simpson papers and I would
3 object to lack of foundation as to whether this witness
4 can testify to their age or not.

5 BY MR. KRAUS:

6 Q. Sir, in light of the objection, I think we had
7 better break this down again. With regard to Exhibit 3
8 and the attachment, have you seen either the original or
9 a tissue carbon copy original of that?

10 A. Yes.

11 Q. Did they appear to be aged?

12 MR. CRUMP: Object to the form.

13 THE WITNESS: They did.

14 BY MR. KRAUS:

15 Q. Did they appear to be in a condition so as to
16 create no suspicion as to their authenticity?

17 MR. CRUMP: I object to the form, it calls for
18 a conclusion that I think is best left to the Court.

19 THE WITNESS: I certainly believed they were
20 authentic.

21 BY MR. KRAUS:

22 Q. Do you have any reason to believe that the

1 dates reflected on the documents are incorrect?

2 A. No.

3 Q. Let me show you Exhibit 4. Have you seen
4 either an original or a tissue copy, original carbon copy
5 of that document?

6 A. Yes.

7 Q. Did it appear to be aged?

8 MR. CRUMP: Same objection as to the form, lack
9 of predicate or foundation.

10 THE WITNESS: It did.

11 BY MR. KRAUS:

12 Q. Is there any reason for you to believe that the
13 date is incorrect on that document?

14 A. No.

15 Q. Same question as to Exhibit 5 here. Have you
16 seen an original or a carbon copy of that document?

17 MR. CRUMP: Same objection.

18 THE WITNESS: I have seen a typed original of
19 that document which I believe has the original signatures
20 on it.

21 BY MR. KRAUS:

22 Q. Any reason to doubt that the date reflected on

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1 that document is in any way incorrect?

2 MR. CRUMP: Object to the form.

3 THE WITNESS: No.

4 BY MR. KRAUS:

5 Q. The original typed copy appeared to be aged?

6 A. Oh, yes.

7 Q. Let me show you Exhibit 6. Have you seen
8 either an original or an original carbon copy of Exhibit
9 6?

10 A. Carbon copy, yes.

11 Q. Did it appear to be aged?

12 MR. CRUMP: Same objection.

13 THE WITNESS: Yes.

14 BY MR. KRAUS:

15 Q. Do you have any reason to believe that the date
16 reflected on that exhibit was incorrect?

17 A. It appeared to be correct.

18 Q. Have you seen Exhibit 7, have you seen either a
19 copy or an original tissue carbon copy?

20 A. I've seen a tissue carbon copy of this.

21 Q. Did it appear to be aged?

22 MR. CRUMP: Same objection.

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1 THE WITNESS: Yes, it did appear to be aged.

2 BY MR. KRAUS:

3 Q. Any reason to believe the date reflected on
4 that exhibit is not correct?

5 MR. CRUMP: Same objection.

6 THE WITNESS: Same answer.

7 BY MR. KRAUS:

8 Q. I show you what's been marked as Exhibit 8.
9 Have you seen an original or an original carbon copy of
10 Exhibit 8?

11 A. A carbon copy again.

12 Q. Did it appear to be aged?

13 MR. CRUMP: Same objection.

14 THE WITNESS: Yes, it did.

15 BY MR. KRAUS:

16 Q. Any reason to believe the date is not correct
17 on that exhibit?

18 MR. CRUMP: Same objection.

19 THE WITNESS: I believe it's correct.

20 BY MR. KRAUS:

21 Q. I show you Plaintiff's Exhibit 9. Have you
22 seen an original or a carbon copy of Plaintiff's Exhibit

1 9?

2 A. I have seen a carbon copy.

3 Q. Did that tissue carbon copy appear to be aged?

4 A. It did.

5 Q. Any reason to believe that the date reflected
6 on that exhibit is incorrect?

7 MR. CRUMP: Object to the form, particularly in
8 light of the fact that there is an attachment; and,
9 whether or not the date on the cover letter is correct or
10 if it appears aged, object to the form with reference to
11 applying that to any attachments.

12 THE WITNESS: I believe it's correct.

13 BY MR. KRAUS:

14 Q. How about the attachment, sir?

15 A. I believe the age of this is correct as well.

16 MR. CRUMP: I object to the form. I don't see
17 a date on that document anywhere.

18 THE WITNESS: I'm relying on the date of the
19 letter.

20 BY MR. KRAUS:

21 Q. Fine. Have you seen a copy of the attachment?

22 A. Yes. And there appears to be an attachment to

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1 the attachment. In any event, I have seen the entire
2 document.

3 Q. And did the attachment and the attachment to
4 the attachment appear to be aged as well, sir?

5 A. Yes, they did.

6 Q. Let me show you Plaintiff's Exhibit 10.

7 A. Yes.

8 Q. Have you seen an original or an original carbon
9 copy of Plaintiff's Exhibit 10?

10 A. I have.

11 Q. Did it appear to be aged?

12 MR. CRUMP: Same objection.

13 THE WITNESS: Yes, it did. There's also an
14 attachment to Exhibit 10 which bears a date four days
15 earlier.

16 BY MR. KRAUS:

17 Q. Do you have any reason to believe that the date
18 of the letter or the attachment is not correct?

19 MR. CRUMP: Same objection.

20 THE WITNESS: I believe it's correct.

21 BY MR. KRAUS:

22 Q. Let me show you what's been marked as

1 Plaintiff's Exhibit 11. Have you seen an original or an
2 original carbon copy of Plaintiff's Exhibit 11?

3 A. Yes, I have.

4 Q. Did it appear to be aged?

5 MR. CRUMP: Same objection.

6 THE WITNESS: It appeared to be aged.

7 BY MR. KRAUS:

8 Q. Do you have any reason to believe that the date
9 reflected on that document is not correct?

10 MR. CRUMP: Same objection.

11 THE WITNESS: I believe it's correct.

12 BY MR. KRAUS:

13 Q. Let me show you what's been marked as
14 Plaintiff's Exhibit 12. Have you seen an original or an
15 original carbon copy of Plaintiff's Exhibit 12?

16 A. Yes, I have.

17 Q. Did it appear to be aged?

18 A. It did.

19 MR. CRUMP: Excuse me. I'm going to have the
20 same objection to did it appear to be aged and did
21 the -- the same two questions that Mr. Kraus has been
22 asking, did the document appear to be aged and did it

1 appear to be the date that was reflected, I think the
2 basic thrust of those questions, that I have the same
3 objection to all of those. And if you will give me a
4 standing objection on that.

5 MR. KRAUS: That's fine.

6 MR. CRUMP: Thank you.

7 THE WITNESS: It appeared to be aged.

8 BY MR. KRAUS:

9 Q. Do you have any reason to believe that the date
10 reflected on that document is incorrect?

11 A. No, I believe it's correct.

12 Q. Let me show you what's been marked as
13 Plaintiff's Exhibit No. 13. I believe you testified
14 earlier that you have seen a copy, an original copy of
15 the magazine that that picture came from?

16 A. Yes. Let me tell you, I believe it's a
17 privately printed magazine, I don't suggest it's like
18 Time or Newsweek or anything like that, and I believe
19 it's also a program for a convention or some meeting.
20 But yes, I have seen the original.

21 Q. And do you have any reason to believe that the
22 May 1945 date of that picture is incorrect?

1 A. I have no reason to believe it's incorrect.

2 Q. Sir, did that original copy of that program
3 that you have seen appear to be aged?

4 A. Yes.

5 Q. And, sir, let me show you what's been marked as
6 Plaintiff's Exhibit 14 dated on the facing page November
7 7, 1946. Have you seen an original copy of that
8 document?

9 A. I have seen an original in the exact spiral
10 form that the first page appears to be copied from.

11 Q. And did it appear to be aged?

12 A. Yes, it did.

13 Q. Do you have any reason to believe that the date
14 reflected on that exhibit is incorrect?

15 A. I believe it's correct.

16 Q. With regard to Exhibit 15, sir, have you seen
17 an original or an original carbon copy of that report?

18 A. I have seen an original, what appeared to be an
19 original version of this report.

20 Q. Did it appear to be aged?

21 A. It did.

22 Q. Do you have any reason to believe that the date

1 reflected on that document is not correct?

2 A. I believe it's correct.

3 MR. CRUMP: Excuse me. Off the record just a
4 second.

5 (Discussion off the record.)

6 BY MR. KRAUS:

7 Q. Mr. Austern, I believe you testified earlier
8 that Exhibits 16 and 17 you have not seen originals or
9 original carbon copies of?

10 A. That's correct.

11 Q. You are, however, the document custodian for
12 these documents?

13 A. That's correct.

14 Q. And do you have any reason to believe the dates
15 reflected on Exhibits 16 and 17 are incorrect?

16 MR. CRUMP: Object to the form, no predicate or
17 foundation.

18 THE WITNESS: No, I do not, I believe they're
19 correct.

20 BY MR. KRAUS:

21 Q. Let me show you Exhibit 18, sir. Have you seen
22 an original or an original carbon copy of this document?

1 A. Yes, I have.

2 Q. Did it appear to be aged?

3 A. It did.

4 Q. Do you have any reason to believe the date
5 reflected on that exhibit is incorrect?

6 A. I believe it's correct.

7 Q. And the same question with 19, have you seen an
8 original or an original carbon copy of Plaintiff's 19?

9 A. Yes, I have.

10 Q. Did it appear to be aged?

11 A. It did.

12 Q. Do you have any reason to believe the date on
13 that document is incorrect?

14 A. I believe it's correct.

15 Q. And, sir, in summary are you the custodian for
16 Exhibits 3 through 19 for the Manville Trust?

17 A. Yes.

18 Q. And are Exhibits 3 through 19 genuine and
19 authentic copies of those documents that you are
20 custodian for?

21 MR. CRUMP: Same objection.

22 THE WITNESS: Yes, they are.

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1 BY MR. KRAUS:

2 Q. And do you have any reason to believe that any
3 of the dates reflected on Exhibits 3 through 19 are
4 incorrect?

5 MR. CRUMP: Same objection.

6 THE WITNESS: No, I do not.

7 MR. KRAUS: Pass the witness.

8 MR. CRUMP: May I have just a second, please.

9 EXAMINATION BY COUNSEL FOR
10 DEFENDANT OWENS-CORNING FIBERGLAS

11 BY MR. CRUMP:

12 Q. Let me ask you a few preliminary questions,
13 sir. When did you become affiliated with the Manville
14 Personal Injury Trust?

15 A. November 1 or 2, 1987.

16 Q. Prior to that date, had you had any connection
17 or affiliation with either the Manville Corporation or
18 Johns-Manville or any of its subsidiaries?

19 A. No.

20 Q. Would it be fair to say that prior to the
21 date of November 1, 1987, or November 2, whichever the
22 correct date is, you have no personal knowledge with

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1 respect to either the history of Johns-Manville
2 Corporation, the recordkeeping procedures of
3 Johns-Manville Corporation, or other aspects of its
4 corporate policies?

5 A. That's correct.

6 Q. How old a gentleman are you, sir?

7 A. I'm sorry?

8 Q. How old a gentleman are you?

9 A. Fifty-three, February 8, 1939.

10 Q. Do you recall most of the documents Mr. Kraus
11 asked you about were dated in the early to mid-thirties
12 and early forties, correct?

13 A. Correct.

14 Q. You would have been either not born or an
15 infant during the time that most of these documents were
16 purportedly authored?

17 A. Correct.

18 Q. And you clearly don't purport to have firsthand
19 knowledge with respect to the circumstances of offering
20 transmission or receipt of those documents?

21 A. I have no firsthand knowledge.

22 Q. As I understood your earlier testimony, sir,

1 the, quote, Manville documents are divided up into in
2 your opinion three categories, category one or maybe
3 category one and two are really one category but
4 documents used in litigation, either third-party
5 litigation, insurance litigation by Johns-Manville, or
6 John Manville's claim against the United States?

7 A. That's correct.

8 Q. Can we just combine those into, quote,
9 litigation documents?

10 A. Certainly.

11 Q. And the other category would be anything other
12 than litigation documents?

13 A. That was asbestos-related.

14 Q. And do you have an independent recollection as
15 we sit here today with respect to Exhibits 3 through 19
16 that Mr. Klaus asked you about whether any of those came
17 from the, quote, litigation documents or any other
18 documents?

19 A. Almost all of them were given to me separately
20 at one time so I can't tell you.

21 Q. I believe that I understood your testimony
22 earlier correctly in that the litigation documents

1 included documents that Johns-Manville used, either their
2 own documents or documents that they obtained through
3 discovery; is that correct?

4 A. That's correct.

5 Q. So, with respect to the aspect or the portion
6 of the documents that are considered to be litigation
7 documents, those all are not necessarily internal
8 Johns-Manville documents or documents that are kept at
9 Johns-Manville, they may have been received through the
10 discovery process?

11 A. That is correct.

12 Q. And, as you sit here today, do you have an
13 independent recollection with respect to each of these
14 documents whether any of those were received by
15 Johns-Manville through the litigation discovery process
16 as opposed to being kept by them originally, do you have
17 any firsthand knowledge with respect to that?

18 A. I have no firsthand knowledge, no.

19 Q. And I believe your characterization of the
20 documents that you reviewed when you went out to Denver
21 were thousands and thousands of documents; is that
22 correct?

- 1 A. You mean that were in Denver at the time.
- 2 Q. Yes.
- 3 A. Yes.
- 4 Q. And that was in approximately 1988?
- 5 A. Early '88.
- 6 Q. And approximately 1988 would have been the
- 7 first time that you would have personally seen any
- 8 documents that were the, quote, Manville documents; is
- 9 that correct?
- 10 A. No, that is not correct.
- 11 Q. Would it have been sometime after November 1 of
- 12 1987?
- 13 A. In December of '87 I was shown some documents.
- 14 Q. Do you have a recollection as you sit here
- 15 today whether any of the documents Mr. Kraus showed you
- 16 were included in the documents you saw in December of
- 17 1987?
- 18 A. Yes, they were.
- 19 Q. So would December of 1987 be a good starting
- 20 point with respect to your personally having seen any,
- 21 quote, Manville documents?
- 22 A. That's correct.

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1 Q. Would it be a fair statement, sir, that, from
2 the date that any of these documents may have been
3 authored to December 1987, you would have no personal
4 knowledge with respect to how they were kept, where they
5 were kept, or in what form they were kept?

6 A. I have no personal knowledge, that's correct.

7 Q. Now, you indicated that there were sources of
8 the documents other than the main Johns-Manville offices
9 in Denver?

10 A. That is correct.

11 Q. And I think you said there were three main
12 other sources. What were those three main other sources?

13 A. Manville, New Jersey, where Manville at one
14 time had a large plant and boxes were in storage there.
15 Lompoc, California, where similarly Manville had a large
16 plant, asbestos plant, and documents were sent to us from
17 Lompoc. And Bloomington, Illinois, on which I have no
18 firsthand knowledge, but huge numbers of documents came
19 from a Manville facility in Bloomington, I can only
20 assume a factory or a storage facility of some kind.

21 Q. As you sit here today, do you have personal
22 knowledge as to which of the documents, if any, that

1 Mr. Kraus has shown you today came from which of those
2 four facilities; in other words, Denver, Manville,
3 New Jersey, Lompoc, or Bloomington?

4 A. I don't believe any of the documents up to
5 exhibit -- can I refresh my recollection -- up to and
6 including Exhibit 12, I don't believe any of the
7 documents came from any of the three facilities you just
8 mentioned.

9 Q. Do you know at what point in time documents
10 from those facilities were sent to either Denver or
11 D.C.?

12 A. From those facilities?

13 Q. Yes.

14 A. They went to Denver and it was I would say from
15 April 1 to May 1, 1988, it was done by truck over a
16 period of time.

17 Q. Did you in any way oversee or supervise the
18 loading of the documents or the shipping of those
19 documents from the three facilities that we just
20 discussed to Denver?

21 MR. KRAUS: Object to the form of the
22 question. What do you mean about in any way oversee, you

1 mean actually there on the loading dock or involved in
2 the process?

3 BY MR. CRUMP:

4 Q. Do you understand my question, sir?

5 A. I think I do. I was not at the shipping end,
6 the loading end, of the documents. In a few cases I
7 believe I happened to be there when the documents arrived
8 in Denver.

9 Q. With respect to the documents in Denver, prior
10 to December or so of 1987, would you have had any direct
11 knowledge or input into the pulling together of all those
12 documents from the various sources within the Denver
13 facility?

14 A. Well, when I saw them in December of '87, they
15 were all pulled together. I can't tell you when that
16 happened.

17 Q. And you don't know, you have no personal
18 knowledge of who did that or under what circumstances
19 that was done or what protocol was followed to do that?

20 MR. KRAUS: Object on the grounds of
21 relevance.

22 THE WITNESS: Only through hearsay do I know

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1 who did it.

2 BY MR. CRUMP:

3 Q. So the answer to my question would be that's
4 correct in terms of you have no personal knowledge?

5 A. I have no personal knowledge.

6 Q. Now, you mentioned the areas of litigation and
7 you mentioned insurance litigation that Johns-Manville
8 was involved in and a claim here in Washington against
9 the United States Government.

10 A. That's correct.

11 Q. And is it your understanding that that claim
12 was that Johns-Manville was pursuing either
13 indemnification by the government or compensation from
14 the government because of Johns-Manville having sold
15 asbestos products that were military spec'd products?

16 MR. KRAUS: Object to the question on a number
17 of grounds. First off it's completely irrelevant to the
18 purpose of this deposition; secondly, the witness has no
19 personal knowledge; thirdly, any government contract
20 defense-related questions are completely irrelevant to
21 this litigation.

22 THE WITNESS: To the extent I understand how

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1 the Court of Claims works, I believe it was an
2 indemnification case.

3 BY MR. CRUMP:

4 Q. Sir, let me ask you about the affidavit that
5 was marked as Exhibit 2 I believe. Have you got that in
6 front of you, sir?

7 A. Yes.

8 Q. All right. You indicated that you drafted
9 that?

10 A. Yes.

11 Q. At whose request?

12 A. Somebody in the firm of Baron & Budd.

13 Q. Did that person provide you with the documents
14 about which they requested an affidavit on the
15 authenticity?

16 MR. KRAUS: Object to the form of the
17 question.

18 THE WITNESS: I'm not sure. You mean documents
19 themselves?

20 BY MR. CRUMP:

21 Q. Well --

22 A. I believe I had a list -- to clarify my answer,

1 I believe I had a list of documents, I'm not sure at the
2 time I had the documents.

3 Q. You were provided a list of documents by Baron
4 & Budd?

5 A. Yes.

6 Q. And the list would identify the date, author,
7 and recipient perhaps of the document or maybe the
8 subject matter of the document?

9 A. Essentially in the form of the affidavit, yes.

10 Q. And did you undertake to go to the document
11 repository and compare the documents that were identified
12 on the list with the originals in order to execute that
13 affidavit?

14 A. In some cases, yes; in some cases I had already
15 done that because of other affidavits in other
16 depositions.

17 Q. Do you have a recollection at this point in
18 time -- I understand it's four years later, do you have a
19 recollection of which of the documents you actually went
20 to the repository and verified as opposed to which you
21 did from memory from other affidavits?

22 A. Well, it's not four years later, it's one year

1 later. This is March of -- excuse me, you're right,
2 March of '91. Certainly the first 12 exhibits I had here
3 and had done that exercise before. I know the picture
4 and I recognize the picture and I've seen the original.

5 I believe 14 and 15, the two publications that
6 have been referred to, I have seen the originals a number
7 of times. I can't tell you with respect to 16 or 17
8 because I'm not sure I have ever seen originals and
9 frankly as I sit here I can't remember what I did with 18
10 and 19.

11 Q. Let me ask you a question, and I will need to
12 refer to the affidavit now. There are a couple of
13 documents that Mr. Kraus asked you about here today that
14 were not listed on this particular affidavit and I'm
15 going to go through them individually. But generally did
16 you review any documents in the repository in preparation
17 for the deposition here today?

18 A. No.

19 Q. Would it be fair to say that any testimony you
20 have given with respect to documents that were not
21 contained on this affidavit you're giving from memory in
22 terms of you haven't looked at that document recently in

1 the repository and compared it with any copy that
2 Mr. Kraus may have offered to you?

3 MR. KRAUS: Object to the form of the
4 question.

5 THE WITNESS: That's correct. But, to make it
6 clear, I had copies of these documents in advance of the
7 deposition.

8 BY MR. CRUMP:

9 Q. Yes, sir.

10 A. I have not compared them in preparation for
11 this deposition with copies in the warehouse, that's
12 correct.

13 Q. Let me see if I can find which ones I'm
14 particularly referring to. For example, Exhibit No. 15,
15 also identified as JM 296, I believe was identified by
16 Mr. Kraus as being a preliminary dust study sent to the
17 Asbestos Textile Institute; is that correct?

18 A. That's correct.

19 Q. If you'll look at your affidavit, I don't
20 believe that's one that you mentioned in your affidavit.
21 Certainly, if it is, it's not in chronology.

22 MR. KRAUS: Object on the grounds of relevance,

1 it's immaterial whether or not that was a document that
2 we asked about in his affidavit.

3 THE WITNESS: I agree, it does not appear to be
4 in the affidavit.

5 BY MR. CRUMP:

6 Q. And, aside from relying on your memory,
7 you have not taken the copy of Exhibit 15 that
8 Mr. Kraus has provided you and compared that with any
9 original document or such that may be kept in the
10 Manville repository?

11 A. Not in preparation for this deposition.

12 Q. A number of the documents Mr. Kraus showed to
13 you were not authored by someone at Johns-Manville; is
14 that correct?

15 A. That's correct.

16 Q. As to any of the documents, you have no
17 firsthand knowledge with respect to the mode of its
18 preparation or whether or not it was, in fact, prepared
19 at or about the time that the date is reflected on the
20 document?

21 A. I have no personal knowledge.

22 Q. And you have no personal knowledge with respect

1 to whether or not it was prepared at or about the time
2 that the event that purports to be depicted in the
3 document took place?

4 A. I have no such personal knowledge.

5 Q. As to the documents that were not authored by
6 someone at Johns-Manville, you have no firsthand
7 knowledge as to whether or not that document was prepared
8 in the regular course of business of whatever entity
9 authored it?

10 A. That's correct.

11 Q. Do you have any reason to believe that any of
12 the documents that Mr. Kraus has asked you about were
13 distributed outside of the named recipients on the face
14 of the documents?

15 A. I'm sorry, were they what?

16 Q. Distributed beyond the named recipients
17 indicated on the face of the document.

18 A. I don't know if they were or weren't.

19 Q. You have no information about that?

20 A. That's correct.

21 Q. This may be a variation on a question
22 I asked you earlier and I'm trying to understand

1 it to remember if I did ask you. If I did, I
2 apologize for my repetitiveness, and I'm going to
3 ask you several questions that are going to start
4 with the premise that -- let me just ask the questions.

5 With respect to the documents, Exhibits 3
6 through 19, that Mr. Kraus has shown you, do you agree
7 with me that all the documents bear a date before any
8 involvement by you with either Johns-Manville or Manville
9 Trust?

10 A. That's correct.

11 Q. And, with respect to whether or not the
12 documents authored by or purportedly authored by either a
13 Manville individual or authored outside Manville, you
14 have no personal knowledge regarding the method or
15 standard operating procedure employed by either Manville
16 or the purported author of the document with respect to
17 the making of business records?

18 A. That's correct.

19 Q. And you have no personal knowledge with respect
20 to either Manville or the purported author of the
21 document as to what was the regular practice of business
22 regarding the making of records during that period of

1 time?

2 A. That's correct.

3 Q. And you have no personal knowledge whether or
4 not any of the documents were made at the time of the
5 event recorded or within some close period of time
6 following that?

7 A. That's correct.

8 Q. With respect to all the documents that were
9 gathered from Manville facilities, and I think your
10 testimony was that all the documents that Mr. Kraus has
11 shown you here today you believe were gathered from
12 Manville facilities?

13 A. Correct.

14 Q. You have no personal knowledge what may or may
15 not have happened with those documents, how they were
16 stored, or any changes that could have been made on those
17 documents from the date that they bear to the time that
18 you first became involved with them in December of 1987
19 or thereabouts?

20 A. That's correct.

21 Q. Some of the documents contain what I will refer
22 to as marginalia or handwriting on the face of a typed

1 document, correct?

2 A. Correct.

3 Q. And would it be correct to say that you have no
4 personal knowledge regarding who may have put the
5 marginalia on there or when it may have been placed on
6 there?

7 A. With the exception of the numbered stamps, not
8 date stamps but number stamps that appear on the lower
9 right-hand corner of some of the documents, that is
10 correct.

11 Q. What I will refer to as the Bates stamp, that's
12 the printed number on the lower right-hand corner of some
13 of the documents?

14 A. That's correct.

15 Q. When and by whom were those numbers placed on
16 any of the documents that they appear on?

17 A. I can't tell you the identity of the person who
18 placed the numbered stamps on them, but I will tell you
19 that the numbered stamps refer to documents used either
20 in the insurance litigation by Manville or in the Court
21 of Claims litigation by Manville.

22 Q. Did either Manville or the trust attempt to

1 Bates stamp all the documents contained within its
2 various repositories?

3 A. I will tell you, the trust certainly did not.
4 I don't know if Manville did.

5 Q. With respect to the documents that Mr. Kraus
6 has shown you, Exhibits 3 through 19, he went through
7 each one of them individually and asked you if you had
8 seen an original and did it look aged and did you have
9 any reason to believe that it was dated other than the
10 date on the face of the document.

11 Do you have any firsthand knowledge other
12 than the date on the face of the document that the
13 document was, in fact, prepared on the date that it
14 bears?

15 A. That's what I rely on, the date on the
16 document.

17 Q. You have no firsthand knowledge other than that
18 date?

19 A. That's correct.

20 MR. CRUMP: I believe those are all the
21 questions I have. Thank you, sir.

22 MR. KRAUS: Just a couple of follow-up.

1 FURTHER EXAMINATION BY COUNSEL
2 FOR THE PLAINTIFFS

3 BY MR. KRAUS:

4 Q. Mr. Austern, were all of these exhibits
5 among exhibits received by the trust in either
6 facilities, agents, or employees of the Manville
7 Corporation?

8 MR. CRUMP: Object to the form.

9 THE WITNESS: That's correct.

10 BY MR. KRAUS:

11 Q. Let me ask you once more to examine Exhibit 15
12 carefully.

13 A. Okay.

14 Q. Does it appear to be a genuine and authentic
15 copy of the original of that document which you have
16 reviewed?

17 MR. CRUMP: Object to the form, lack of
18 predicate or foundation.

19 THE WITNESS: Yes.

20 BY MR. KRAUS:

21 Q. You have reviewed the original of this
22 document?

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1 A. Oh, I've seen an original of this, yes.

2 Q. Isn't it true, sir, that, when the
3 Manville Trust took custody of all these documents,
4 all the asbestos-related documents of the Manville
5 Corporation, that they were covered with asbestos
6 dust?

7 MR. CRUMP: Object to the form.

8 THE WITNESS: The boxes that came to us from
9 the three facilities that I mentioned had to be vacuumed
10 before we opened them because they had asbestos dust on
11 them.

12 MR. KRAUS: Nothing further.

13 Thank you.

14 MR. CRUMP: Off the record for a second.

15 (Discussion off the record.)

16 MR. CRUMP: Please read back the first question
17 by Mr. Kraus on redirect.

18 THE REPORTER: Question: Mr. Austern, were all
19 of these exhibits among exhibits received by the trust in
20 either facilities, agents, or employees of the Manville
21 Corporation?

22

1 FURTHER EXAMINATION BY COUNSEL FOR
2 DEFENDANT OWENS-CORNING FIBERGLAS
3 BY MR. CRUMP:

4 Q. Let me clarify one thing, sir. The litigation
5 in which Johns-Manville was involved, the third-party
6 litigation, the insurance litigation, and the Court of
7 Claims litigation was all ongoing. With respect to the
8 third-party litigation, it had stopped by the time you
9 became involved?

10 A. That's correct, it was subject to a bankruptcy
11 stay.

12 Q. And do you have information with respect to at
13 what point in time Johns-Manville first became involved
14 in third-party litigation?

15 A. Generally, yes.

16 Q. And approximately when was that?

17 A. I think the very first lawsuit was a Workers'
18 Compensation lawsuit in the '30s. But, as far as --

19 Q. I said third-party lawsuits. Do you understand
20 the distinction between third-party lawsuits and Workers'
21 Compensation?

22 A. Excuse me, you're absolutely right.

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1 With respect to the 17,000 or so personal
2 injury files we inherited, I believe the oldest pending
3 was over ten years old which would make it just prior to
4 1972.

5 Q. Okay. And the insurance litigation and the
6 Court of Claims litigation was litigation that was either
7 ongoing or had concluded prior to the time that you
8 became involved with either Manville or the trust?

9 A. The insurance litigation was definitely over
10 because we had the money, the insurance company money.
11 The Court of Claims litigation was ongoing. I don't mean
12 to say that trials were underway, but discovery was
13 ongoing.

14 Q. And, when Mr. Kraus asked you in 1988 when the
15 trust received the documents from JM, he asked you
16 whether or not they were received from the facilities,
17 agents, or employees of JM. Prior to JM turning them
18 over to the trust, you have no personal knowledge of
19 where JM may have gotten them including how much of them
20 may have come from the litigation through discovery from
21 plaintiffs or otherwise?

22 A. That's correct.

1 MR. CRUMP: Thank you, sir.

2 MR. KRAUS: That's it.

3 (Thereupon, at 12:00 p.m., the taking of the
4 instant deposition ceased.)

5

6

7

Signature of the Witness

8

9 SUBSCRIBED AND SWORN to before me this _____ day of
10 _____, 19__.

11

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13

NOTARY PUBLIC

14 My Commission Expires

15

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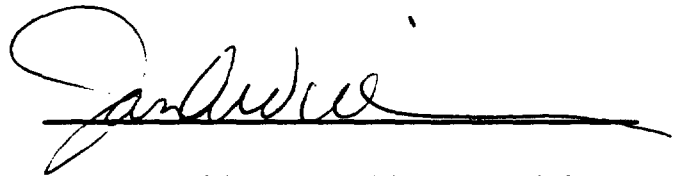
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CERTIFICATE OF REPORTER

UNITED STATES OF AMERICA) ss.:

DISTRICT OF COLUMBIA)

I, JAN A. WILLIAMS, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me to the best of my ability and thereafter reduced to typewriting under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.



**Notary Public in and for
the District of Columbia**

My commission expires: 3-31-97

IN THE CIRCUIT COURT OF MOBILE COUNTY, ALABAMA

IN RE: ALL ASBESTOS-RELATED *
PERSONAL INJURY OR DEATH CASES *
FILED OR TO BE FILED IN *
MOBILE COUNTY, ALABAMA *

AMENDED NOTICE OF TAKING ORAL DEPOSITION

TO: ALL COUNSEL OF RECORD in the above-styled and numbered
cause of action.

PLEASE TAKE NOTICE that pursuant to the Alabama Rules of
Civil Procedure, the deposition of David Austern, custodian of
the records of the Manville Trust, will be taken stenographically
on Monday, May 4, 1992, commencing at 10:30 A.M., and continuing
until concluded, at the Manville Trust, 1825 Eye Street, N.W.,
Suite 300, Washington, D.C., before a certified court reporter
from Alderson Reporting, 1111 14th Street, 4th Floor, Washington,
D.C. 20005, telephone number 1-800-FOR-DEPO. All counsel of
record are invited to attend and cross-examine.



Respectfully submitted,

BARON & BUDD
A PROFESSIONAL CORPORATION
The Centrum
3102 Oak Lawn Avenue
Suite 1100
Dallas, Texas 75219
(214) 521-3605
FAX: (214) 520-1181

By: RW Budd/PAK
RUSSELL W. BUDD
State Bar No. 03312400

CERTIFICATE OF SERVICE

I hereby certify that an exact copy of the foregoing
Notice of Taking Oral Deposition has been delivered to all
counsel of record herein for the Defendants via telecopy and
U.S. Mail on this the 29th day of April, 1992.

RW Budd/PAK
RUSSELL W. BUDD

(APR 29 '92 10:49AM)

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(APR 29 '92 10:00AM)

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SARAH J. CLARK
LISA A. BLUE PH.D.
MARY E. SKELNIK
STEVEN D. WOLENS

BARON & BUDD
A PROFESSIONAL CORPORATION
ATTORNEYS AND COUNSELORS
THE CENTRUM
3102 OAK LAWN AVENUE
SUITE 1100
DALLAS, TEXAS 75219
(214) 521-3605
TELECOPIER (214) 520-1181

*DIANE M. ANDREW
WENDY L. SMITH
JONATHAN DAVID
**PETER A. KRAUS
JENNIFER B. CALHOUN
JANICE E. ROBINSON
SCOTT M. HENDLER
ERIC D. BEAL
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GROUP #5

DATE: 4-29-92

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<u>62</u>	R. STAN MORRIS (ROCK WOOL)	(205) 328-0013	(205) 328-2366
<u>63</u>	RICHARD VOLLMER (GARLOCK)	(205) 479-7700	(205) 476-5900
<u>64</u>	E.B. MCDONOUGH (A.W. CHESTERTON)	(205) 432-3300	(205) 432-3296
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FROM: John Kraus
URGENT! PLEASE DELIVER IMMEDIATELY
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PAGES SENT 4

A F F I D A V I T

WASHINGTON, D.C.

SS:

David T. Austern, being duly sworn, deposes and says:

1. I am General Counsel of the Manville Personal Injury Settlement Trust (the "Trust"), with offices at 1825 Eye Street, N.W., Washington, D.C. 20006. I am admitted to practice before the courts in Washington, D.C., New York, Indiana, and before numerous federal courts, including the United States Supreme Court.

2. The documents attached to this affidavit and listed below were delivered to the Trust for custodial purposes by the Manville Corporation during May, 1988. To the best of my knowledge, the documents had been maintained until May, 1988 by the Manville Corporation in the ordinary course of its business. Based on the locations from which the documents were delivered to the Trust and the communications I received from officers of the Manville Corporation concerning the documents, I believe the documents are authentic.

3. Since May, 1988 the Trust has been the custodian of these documents and has maintained the documents in the ordinary course of its business as a settlement trust.



4. The dates of these documents reflect that they are more than twenty years old.

5. Many of the attached documents and similar documents maintained by the Trust as described above have been admitted into evidence in asbestos personal injury trials throughout the United States since at least 1984.

6. The attached documents referenced herein are:

JM1	Notice of Directors Meeting served April 15, 1933.
JM3	Letter dated October 1, 1935, to Vandiver Brown from Sumner Simpson with attachment: Letter to Sumner Simpson from A.S. Rossiter dated September 25, 1935.
JM4	Letter dated October 3, 1935, to S. Simpson from V. Brown.
JM6	Memorandum of Agreement dated November 20, 1936.
JM11	Letter dated February 27, 1937, to S. Simpson from V. Brown.
JM12	Letter dated May 11, 1937, to S. Simpson from V. Brown with attachment: First Progress Report on Asbestosis Experiments at the Saranac Laboratory dated May 5, 1937.
JM16	Letter dated May 3, 1939, to S. Simpson from V. Brown.
JM19	Letter dated May 4, 1939, to V. Brown from President (S. Simpson).
JM29	Letter dated February 24, 1943, to V. Brown from L.U. Gardner with attachment: "Outline of Proposed Monograph on Asbestosis."
JM30	Letter dated June 18, 1943, to S. Simpson from A.S. Rossiter with attachment: Letter dated June 14, 1943, to J. Morgan, Dept. of Labor & Industries, State of Washington, from E. DeForest, Northwest Magnesia Association.
JM31	Letter dated June 22, 1943, to V. Brown from S. Simpson.

JM32 Letter dated June 24, 1943, to S. Simpson from V. Brown.

JM86 April 8, 1946, letter from L. Gardner to J.P. Woodward.

JM89 April 18, 1946, letter from Gatke to V. Brown.

JM102 August 15, 1946, letter from L. Gardner to V. Brown.

JM118 December 2, 1946, letter from V. Brown to Bowditch.

JM121 Minutes of meeting held January 21, 1947.

JM132 July 29, 1947 letter from V. Brown to Woodward.

JM134 Summary of findings.

JM141 Letter dated December 29, 1947, to E. Day from R. Bertogliat.

JM146 February 25, 1948, letter from Woodard to Vorwald.

JM152 April 19, 1948, letter from V. Brown to Rohrbach.

JM159 April 30, 1948, letter from V. Brown to E. Muehleck.

JM178 September 14, 1948, letter from Thomas Gatke to V. Brown.

JM179 October 12, 1948, letter from Thomas M. Durkan to J.P. Woodard.

JM181 October 22, 1948, Asbestos Experiments report from V. Brown to E. Muehleck and J.F.D. Rohrbach.

JM182 October 27, 1948, Saranac Laboratory Asbestos Dust Experiments report from V. Brown to American BrakeBlok, Gatke Corporation, Keasbey & Mattison Co., Raybestos-Manhattan, Inc., The Russell Mfg. Co., Thermoid Co., Union Asbestos & Rubber Co., and United State Gypsum.

JM201 November 12, 1948 letter from Vandiver Brown to W.T. Kelly, Jr.

JM207 December 14, 1948, letter from Dr. A.J. Lanza to Arthur Vorwald.

JM210 March 3, 1948, letter from V. Brown to American BrakeBlok, Gatke Corporation, Keasby & Mattison Co., Raybestos-Manhattan, Inc., The Russell Mfg. Co., Thermoid Co., Union Asbestos & Rubber Co. and United States Gypsum Co.

JM226 June 14, 1949, letter from Thomas Gatke to V. Brown.

JM260 March 21, 1951, letter from V. Brown to American BrakeBlok, Gatke Corp., Keasbey & Mattison Co., Raybestos-Manhattan, Inc., The Russell Mfg. Co., Thermoid Co., Union Asbestos & Rubber Co., and U.S. Gypsum Co.

JM261 March 21, 1951, letter from V. Brown to Ivan Sabourin.

JM268 Confidential report to the Johns-Manville Corp. by the Saranac Laboratory entitled "Asbestosis". January 31, 1949.

JM270 Letter dated May 13, 1954, to H. Jackson from B.W. Luttenberger.

JM277 Johns-Manville Internal Correspondence dated May 7, 1976, to Labeling Review Committee from E.M. Fenner with Attachment: edited warning label.

JM280 Letter dated January 22, 1935, to M.F. Judd from V. Brown with attachment: Memorandum regarding Mellon Institute of Industrial Research Symposium on Dust Problems-Pittsburgh-January 15, 1935.

JM282 Letter dated December 4, 1936, to C.J. Stover from V. Brown.

JM283 Letter dated December 8, 1936, to Members of the Asbestos Industry from C.J. Stover with attachment: Application for Membership of the Air Hygiene Foundation of American, Inc.

JM292 Picture of the Industrial Hygiene Foundation Trustees' meeting held in the Board Room of the Johns-Manville Corp., in New York in May, 1945.

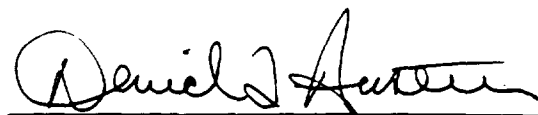
JM294 Health in Industry, Transactions Bulletin No. 8, 11th Annual Meeting of Industrial Hygiene Foundation of America, Inc., November 7, 1946.

JM297 Industrial Hygiene Foundation of America, Inc. Memorandum on Plant of Johns-Manville Corp. dated July 11, 1947, Supplementing the General Report, "Preliminary Dust Investigation for Asbestos Textile Institute" of June, 1947.

JM298 Letter dated February 25, 1948, to Arthur Vorwald from J.P. Woodard.

- JM301 IHF Memorandum on Proposed Epidemiological Study of Lung Cancer in Asbestos Workers for the Quebec Asbestos Mining Association dated March 16, 1956.
- JM306 Letter dated December 6, 1956, to Hugh Jackson from Daniel Braun.
- JM310 Letter dated August 23, 1957, to Hugh Jackson from Daniel Braun with attachment: References of articles showing an association between lung cancer and asbestosis.
- JM313 Letter dated December 30, 1957, to Ivan Sabourin from Dr. K. Smith.
- JM319 Letter dated December 15, 1934, to V. Brown from G. Hobart.
- JM320 Letter dated December 18, 1934, to M.F. Judd from V. Brown.
- JM321 Report by the Industrial Health Service Policyholders Service Bureau of the Metropolitan Life Insurance Co., New York, entitled "Effects of the Inhalation of Asbestos Dust Upon the Lungs of Asbestos Workers."
- JM322 Letter dated December 21, 1934, to A.J. Lanza from V. Brown.
- JM323 Letter dated December 24, 1934, to M.F. Judd from V. Brown.
- JM381 Nima Committees, 1963-1964.
- JM386 June 16, 1966 - Minutes of the Health and Safety Committee Meeting of the National Insulation Manufacturers Association.

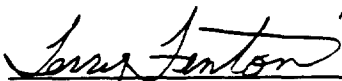
JM416 Confidential Memo dated June 12, 1961 to A.W. Spedding
from Leon B. Horowitz.



David T. Austern

Subscribed and sworn to before me
this 1st day of ~~February~~, 1991.

MARCH



Notary Public

My commission expires: My Commission Expires May 14, 1994

PLAINTIFF'S
EXHIBIT

JM 3

84

Bridgeport, Conn.
Oct. 1, 1935

Mr. Vandiver Brown, Attorney,
Johns-Manville Corp.,
22 East 40th St.,
New York City.

My dear Mr. Brown:

Enclosed is copy of a letter received from Miss Rossiter, of "Asbestos."

As I see it personally, we would be just as well off to say nothing about it until our survey is complete. I think the less said about asbestos, the better off we are, but at the same time, we cannot lose track of the fact that there have been a number of articles on asbestos dust control and asbestosis in the British trade magazines. The magazine "Asbestos" is in business to publish articles affecting the trade and they have been very decent about not re-printing the English articles.

I shall be pleased to have your opinion in the matter.

Very truly yours,

SS-G.

Enc.

President

PLAINTIFF'S
EXHIBIT

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"ASBESTOS" 86

Published by



16th Floor, Inquirer Bldg.
PHILADELPHIA, PA., U. S. A.

September 25, 1935.

C. Van Buren
Mr. Sumner Simpson, President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Dear Sir:

You may recall that we have written you on several occasions concerning the publishing of information, or discussion of, asbestosis and the work which has been, and is being done, to eliminate or at least reduce it.

Always you have requested that for certain obvious reasons we publish nothing, and, naturally your wishes have been respected.

Possibly by this time, however, the reasons for your objection to publicity on this subject have been eliminated, and if so, we would like very much to review the whole matter in "ASBESTOS".

Our thought is that we could either prepare from data which we have in our files, or obtain from Mr. W. A. Godfrey of the Cape Asbestos Company, London, who is much interested in the subject, an article on the work done in England and then follow it with an article written by someone in your organization, as to the work done here.

W. A. Godfrey
We understand from Mr. Stover that your North Charleston plant, contains very complete dust control equipment and a description of such equipment, if you approve, would make a very interesting part of the article. Possibly even you could supply a photograph or two showing some part of this dust control equipment.

We await with much interest your reply. If there is no serious objection it would seem to be a most interesting subject for the pages of "ASBESTOS", and possibly a discussion of it in "ASBESTOS" along the right lines, would serve to combat some of the rather undesirable publicity given to it in current newspapers.

Very truly yours,

"ASBESTOS" *J. D. P. R. R.*

Johns-Manville

TWENTY-TWO EAST FORTIETH STREET
NEW YORK, N.Y.



Tuesday
my
850

October 3, 1935

Mr. S. Simpson, President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

My dear Mr. Simpson:

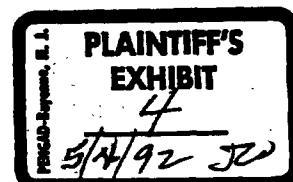
I wish to acknowledge receipt of yours of October 1st enclosing copy of the September 25th letter from the editor of the magazine "ASBESTOS". I quite agree with you that our interests are best served by having asbestosis receive the minimum of publicity. Even if we should eventually decide to raise no objection to the publication of an article on asbestosis in the magazine in question, I think we should warn the editors to use American data on the subject rather than English. Dr. Lanza has frequently remarked, to me personally and in some of his papers, that the clinical picture presented in North American localities where there is an asbestos dust hazard is considerably milder than that reported in England and South Africa.

I believe the question raised by Miss Rossiter might well be considered at the committee meeting scheduled for next Tuesday, at which I understand both you and Mr. Judd will be present.

Very truly yours,

Vandiver Brown
Vandiver Brown
Attorney

VB:T



in files
McClellan will
see Stokes & tell
him not to publish
St. Vincent

84-12-1

MEMORANDUM OF AGREEMENT

November 20, 1936

THE UNDERSIGNED hereby agree to underwrite certain experiments with asbestos dust to be conducted by Dr. LeRoy U. Gardner at the Saranac Laboratory, Saranac Lake, New York.

The general nature of these experiments and the cost thereof were explained at the meeting of certain brake lining manufacturers held in New York City on November 19, 1936.

The purpose of this memorandum is to confirm the agreement between the Undersigned to underwrite the cost of these experiments amounting to \$5,000 per year for a period of three (3) years, or a total of \$15,000.

The Undersigned agree to share equally the costs of said experiments. For example, if ten parties sign this Agreement, the annual contribution of each will be \$500. It may be more or less, depending on whether the number of those signing is more or less than ten.

It is understood that payments to Dr. Gardner will, for the sake of convenience, be made directly by Johns-Manville Corporation or by Raybestos-Manhattan, Incorporated, and that the others of the Undersigned will reimburse Johns-Manville

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... of Raybestos-Manhattan, Incorporated for their pro
rata share of such payments as made.

AMERICAN BRAKE BLOCK CORPORATION
(Limited to \$250.00 per annum)

By W. H. [Signature]
Vice President

ASBESTOS MANUFACTURING COMPANY

By L. H. [Signature]
Treas.

GATKE CORPORATION
(Limited to \$250.00 per annum)

By James L. [Signature] Pres.

JOHNS-MANVILLE CORPORATION

20 By E. M. [Signature]
Vice-President

KEASBEY & WATTISON

By H. [Signature]
Vice-President

RAYBESTOS-MANHATTAN, INCORPORATED

By A. [Signature]
Treas.

RUSSELL MANUFACTURING COMPANY

By Francis [Signature] Pres.

THERMOID RUBBER COMPANY

By _____

UNION ASBESTOS & RUBBER COMPANY
(Limited to \$250.00 per annum.)

By T. [Signature]
Secretary-Treasurer

UNITED STATES GYPSUM COMPANY
(Limited to \$250.00 per annum)

By C. H. [Signature]
Secretary-Treasurer

By _____

By _____

By *W. H. Miller*

SOUTHERN ASBESTOS COMPANY

By *Geo. L. Gabel, Pres*

06018

JOHNS-MANVILLE CORPORATION

TWENTY-TWO EAST FORTIETH STREET

NEW YORK, N.Y.

EXECUTIVE OFFICES

February 27, 1937

Mr. Sumner Simpson,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Re: Asbestos Dust Experiments -
Dr. L. U. Gardner

Dear Mr. Simpson:

The United States Gypsum Company signed the Memorandum of Agreement relating to the underwriting of Dr. Gardner's experiments with asbestos dust, limiting its participation to the sum of \$250 per annum, or a total of \$750 for the three-year term of the experiments.

I believe that we have now fully canvassed the industry. The co-operation of the following companies has been obtained on a basis whereby their respective contributions are limited to \$250 per annum:

- (1) American Brake Block Corporation
- (2) Gatke Corporation
- (3) Union Asbestos & Rubber Company
- (4) United States Gypsum Company.

The participation of the above named companies will provide \$1,000 a year, leaving the sum of \$4,000 per year to be pro-rated between the following companies who have not limited their participation in the enterprise:

- (1) Asbestos Manufacturing Company -
- (2) Johns-Manville Corporation
- (3) Keasbey & Mattison
- (4) Raybestos-Manhattan, Incorporated
- (5) Russell Manufacturing Company
- (6) Thermoid Company and Southern Asbestos Company.

The six companies last above named will, therefore, be called upon to contribute the sum of \$666.67 per year for the three-year period.

I am enclosing herewith, for your records, a photostatic copy of the Memorandum of Agreement and photostatic copies of my letter to Dr. Gardner of November 20, 1936 and his reply of November 23, 1936, which set forth the substance of the arrangement between Dr. Gardner and the group.

Copies of this letter, together with copies of the enclosed photostats, are being sent to each of the other participants.

Last December Johns-Manville Corporation sent Dr. Gardner its check for \$1250, constituting advance payment for the first quarter of 1937 on account of his annual retainer. Your Company and others of the group will be billed shortly for your share of this payment under the terms of the Memorandum. Johns-Manville Corporation is willing to continue making these advances to Dr. Gardner at the commencement of each succeeding calendar quarter during 1937, unless you or others prefer the matter be handled differently. I believe, however, that Dr. Gardner will prefer, in the matter of payment, to deal with one member of the group and it is my opinion, in which I believe you concur, that this represents the most satisfactory procedure.

Johns-Manville Corporation has likewise provided Dr. Gardner with 1200 pounds of asbestos fibre which he considers satisfactory for his purposes, although it has been found necessary for him to subject it to a "ball milling" process in order to reduce it to the desired degree of fineness. He estimates that this quantity will be sufficient for the first year's experiments and we will be very glad, at our expense, to provide him with similar quantities for the other two years.

I have also sent Dr. Gardner a photostatic copy of the Memorandum of Agreement so that he is fully advised as to the identity of those companies whose support he is receiving. At the same time I advised Dr. Gardner that those concerns which had limited their contributions were to participate just as fully in the benefits resulting from his experiments as were the others.

Very truly yours,

Vandiver Brown
Vandiver Brown
General Attorney

VB:T
Enclosures

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PLAINTIFF'S
EXHIBIT

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JOHNS-MANVILLE CORPORATION

TWENTY-TWO EAST FORTIETH STREET

NEW YORK, N. Y.

EXECUTIVE OFFICES

May 11, 1937

Raybestos-Manhattan, Inc.,

Bridgeport, Conn.

Attention: Mr. S. Simpson, Pres.

Dear Mr. Simpson:

I am enclosing herewith copy of Dr.
Gardner's first progress report dated May 5, 1937
on the asbestosis experiments being conducted by
him at the Saranac Laboratory.

Very truly yours,

Vandiver Brown
Vandiver Brown
General Attorney

VB:T

Enclosure

PLAINTIFF'S
EXHIBIT

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First Progress Report on Asbestosis Experiments

at the Saranac Laboratory. May 5, 1937.

To furnish a better understanding of the disease, asbestosis, and to provide standards as a basis for its diagnosis by x-ray films, a group of animal experiments has now been started.

It is expected that anatomical changes will be produced in the lungs of animals inhaling fibrous asbestos which will cast shadows on an x-ray film comparable to those seen in human beings. Since the animals can be killed as seems advisable it will be possible to compare the anatomical changes in their lungs with the shadows seen in the films.

To make certain whether the fibrosis in the lung is due to the chemical composition of asbestos or whether it is the result of a mild irritation in the walls of the air spaces resulting from the action of a fibrous foreign body (i.e. its physical structure) injection experiments are in progress. If no fibrosis results from accumulations of asbestos in other organs it may probably be assumed that chemical stimulation of the tissues is not responsible for the pulmonary fibrosis.

As a further check on the physical vs. the chemical hypothesis, the action of ground serpentinite is being compared with that of chrysotile. Since they both have the same chemical composition the comparison should be instructive whatever the result.

To check the effect of mere fibrous structure, a search for other fibrous minerals was made. None other than those classified as asbestos could be discovered which had the same structural composition. However, because of our interest in the action of gypsum, a sample of satin spar (fibrous) and also one of soda tremolite were selected for comparative testing.

Finally, the action of various members of the asbestos group, amphibole, amesite, crocidolite and anthophyllite are all being compared with that of chrysotile.

It is too early to report more than the fact that the experiments have been started. For the inhalation of chrysotile, dust furnished by Mr. Fisher from a plant at Manville, W. J. is being employed. As it was received, the dust was not sufficiently fine for experiments of this type and we were forced to grind it

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in a ball mill. Considerable time was spent in experimenting with a proper type of mill for the purpose. This difficulty was overcome and inhalation was begun on March 22.

In the dusting room we placed 30 guinea pigs, 20 rats, 8 rabbits and 3 cats. More of the latter will be procured as they become available. A dust concentration of approximately 175 million particles per cubic foot of air is now being maintained. This may later be changed. Over 90% of the particles are less than 5 microns in diameter. Since significant results cannot be expected to develop until exposures have been continued for from 1 to 2 years there can be little to report before the expiration of that time.

The various injection experiments are further advanced although it is too early to report any results. For this purpose all dusts have been analysed chemically and petrographically. They were then ground and fractionated by allutriation. Only particles 1 to 3 microns in diameter were used. Their composition was again checked by the same methods of analysis. The various tests are tabulated for your information.

Chrysotile (Thetford)

a. Intravenous Injections.

Have proved difficult. 7 rabbits have died, apparently from mechanical effects, without receiving significant quantities of the dust. Further attempts are in progress.

b. Intraperitoneal Injections - 5 guinea pigs, March 31, 1937

One killed after one month. No gross fibrosis.

Amphibole

a. Intravenous Injection. 4 rabbits still in progress. Have each received 11 doses totalling 0.55 grams. No fatalities.

b. Intraperitoneal Injection. 5 guinea pigs. Feb. 5, 1937

2 killed after 12 and 30 days respectively. Dust plaques without gross fibrosis.

Amesite

a. Intravenous Injection. 4 rabbits still in progress. Have each received 11 doses totalling 0.55 grams. No fatalities.

b. Intraperitoneal Injection. 5 guinea pigs on Feb. 5, 1937

2 died of infection. 1 killed after 1 month. Most of the dust absorbed; no fibrosis.

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Crocidolite

- a. Intravenous Injection. 4 rabbits have each received full dose of one gram in 20 injections. None killed.
- b. Intraperitoneal Injection. 7 guinea pigs.
 - 2 died of infection.
 - 1 killed after 1 month. Pigmented dust plaques without fibrosis.

Anthophyllite

- a. Intravenous Injection. 4 rabbits have each received full dose of 1 gram in 20 injections.
 - 2 killed after 3 1/2 to 6 months respectively.
 - No evidence of fibrosis in the lungs, spleen, liver or bone marrow.
- b. Intraperitoneal Injection. 5 guinea pigs.
 - 3 killed after 1, 4 and 8 months respectively.
 - Disappearing reaction with gross evidence of fibrosis.

Serpentine

- a. Intravenous Injection. 4 rabbits have each received full dose of 1 gram in 20 injections. All alive and well.
- b. Intraperitoneal Injection. 5 guinea pigs.
 - 2 killed after 1 and 4 months respectively
 - Soft pigmented dust plaques without fibrosis.

Fibrous Gypsum - Satin Spar

- a. Intravenous Injection. 4 rabbits have each received 11 of 20 injections, or a total of 0.55 grams. No fatalities.
- b. Intraperitoneal Injections - not made.

Soda Tremolite

- a. Intravenous Injection. 4 rabbits have each received total dose of 1 gram in 20 injections. All alive and well.
- b. Intraperitoneal Injection. 5 guinea pigs.
 - 1 killed after 1 month. Small pigmented dust plaques without fibrosis.

None of these early results is regarded as significant and no conclusions will be drawn until the observations have been continued for at least one year. It is not yet clear whether the difficulties with intravenous injection of chrysotile are merely a matter of technique or whether this substance is essentially toxic. We are attempting to discover the cause.

JOHNS-MANVILLE CORPORATION

TWENTY-TWO EAST FORTIETH STREET

NEW YORK, N.Y.

EXECUTIVE OFFICES

May 3, 1938.

Sumner Simpson, Esq.,
President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Dear Mr. Simpson:

I wonder if you have seen the 1936 report of The Saranac Laboratory. If not, I suggest you obtain a copy from Dr. Garner and note the references to Asbestosis on Page 9 of the "Report of the Director".

Included in the report are reprints of several articles or addresses delivered by various persons connected with the Laboratory. One of these by Dr. Garner is a paper read before a meeting of the American Institute of Mining and Metallurgical Engineers in February, 1936. In this you will note also certain references to asbestosis on Page 5.

There is also a reprint of an article by Dr. Garner entitled "Etiology of Pneumoconiosis" reprinted from the November, 1935 issue of the Journal of the American Medical Association. In this article your attention is directed to a reference to Asbestosis on Pages 12, 13, and particularly at the top of Page 14.

The information covered by these references has presumably been derived from the experiments which Dr. Garner is conducting for, and with funds provided by, the group of members of the Asbestos Textile Industry. The Progress Reports which we have received to date would seem to indicate as much. This raises a question upon which I would like to have your thoughts, namely, whether Dr. Garner's use of this material is proper in view of the following paragraph from my letter of November 20, 1936, in which I outlined our proposal to Dr. Garner:

"It is our further understanding that the results obtained will be considered the property of those who are advancing the required funds,

who will determine whether, to what extent and in what manner they shall be made public. In the event it is deemed desirable that the results be made public, the manuscript of your study will be submitted to us for approval prior to publication."

The proposal contained in this letter was accepted by Dr. Gardner in a letter of November 23rd, from which I quote the following paragraph:

"The Saranac Laboratory agrees that the results of these studies shall become the property of the contributors and that the manuscripts of any reports shall be submitted for approval of the contributors before publication. "

Sincerely,

Vandiver G Brown
Vandiver Brown,
General Attorney.

VB:y



THE SARANAC LABORATORY
FOR THE STUDY OF TUBERCULOSIS
OF THE EDWARD L. TRUDEAU FOUNDATION
SARANAC LAKE, N.Y.

February 24, 1943

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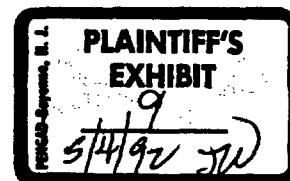
Mr. Vandiver Brown
Johns-Manville Corporation
22 East 40th Street
New York, New York

Dear Mr. Brown:

I have at last succeeded in analyzing most of our voluminous experimental data and assessing the results. I realize that this should have been completed before this, but the emergency has left me short-handed in the Laboratory and also necessitated doing a good deal of extra traveling. I hope that the sponsors of our study of asbestosis will be charitable and realize that the work has far exceeded its original scope.

We have done over 40 different experiments, many of them divided into several parts, which involved exposure of animals for 1 to 3 years to various dusts. The business of preparing microscopic sections and chemically analyzing the tissues on more than 600 animals has been a job in itself. My time for studying sections and analyzing data has been so limited that we are behind our schedule. I have still not had time to write a full report of this work which will of necessity be monographic. However, for the benefit of the contributors, I am submitting a table of contents and an annotated outline to indicate conclusions and the line of argument to be developed. The latter itself occupies 15 pages, but I hope they will find it sufficiently interesting to read. I shall work the final manuscript as I have opportunity.

There are a few experiments still in progress which should be completed by the time we are ready for them. The work on methods of dust determination, I consider important enough to include in the study. The question of cancer susceptibility now seems more significant than I had previously imagined. I believe I can obtain support for repeating it from the cancer research group. As it will take two or three years to complete such a study, I believe it would better be omitted from the present report. If it should become possible to make this study, I hope that I may count on some of your members to supply me with enough pure, long fibre asbestos for the purpose.



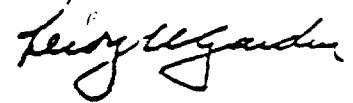
Mr. Vandiver Brown

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February 24, 194

Naturally, I shall welcome any criticism that you or any of the other contributors would care to offer. Should any of them want to discuss details, I would be pleased to meet with them. May I take this opportunity to thank all the sponsors through you for the support that we have had.

Sincerely yours,



Leroy U. Gardner, M. D.
Director

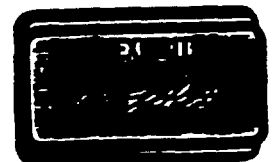
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OUTLINE OF PROPOSED MONOGRAPH ON ASBESTOSIS
Saranac Laboratory Study under Grant from Asbestos Association

PART I HUMAN ASBESTOSIS

- I Human Pathology - a study of 25 autopsy cases, Illustrated
- 2 X-ray Patterns in Asbestosis, Illustrated
- 3 Ash and Mineral Values in Human Asbestosis
- 4 Complications of Asbestosis
 - (a) Susceptibility to infection
 - i Tuberculous
 - ii Non-Tuberculous
 - iii Cancer of the lung
- 5 Disability, causes and comparison with silicosis
- 6 Diagnosis
 - (a) History of adequate exposure
 - (b) X-ray film pattern
 - (c) Physical examination
 - (d) Asbestosis bodies in sputum, their significance



PART II Experimental Asbestosis

I Methods

- (a) Inhalation exposure to plant dusts.
- (b) Injection into lungs through trachea of pure mineral
- (c) Injection of pure minerals into other organs.

2 Species Susceptibility

Man, guinea pigs, rabbits, cats, white mice and rats
dogs.

3 Peculiar Characteristics of Asbestosis

- (a) Unusual localization of chrysotile fibre in lungs.
- (b) Rate of resultant tissue reaction more rapid than to quartz.
- (c) Reaction to chrysotile not progressive after exposure ceases; again the reverse of the situation in silicosis
- (d) Asbestosis Bodies

- 1 Composition and methods of formation.
- 11 Occurrence in different species.
- 111 Formation does not parallel development of fibrosis
- 111 Gradual disappearance after exposure ceases.

4 Comparative Effects of Different Asbestiform minerals.

- (a) Canadian Chrysotile.
- (b) Arizona Chrysotile, low iron.
- (c) Crocidolite
 - 1 Bolivian specimen, stiff and elastic.
 - 11 South African, soft and flexible.
- (d) Anthophyllite
- (e) Amosite.
- (f) Tremolite.

5 Effects of Control Minerals

- (a) Granular Serpentine, same chemical composition as chrysotile.
- (b) Glass Wool, a synthetic silicate fibre.
- (c) Brucite, a fibrous magnesium hydroxide almost free of silica

6 Chemical Composition of Asbestiform minerals in Relation to Irritation.

- (a) Nothing in composition correlated with relative irritant capacity.
- (b) Preliminary acid treatment
 - 1 Hydrochloric acid
 - 11 Carbonic acid

(c) Effects of Aluminum

7 Physical Properties in Relation to Irritation

- (a) Length of fibre
- (b) Effect of Crushing
- (c) Heat treatment

8 Nature and Significance of Asbestosis Body

- (a) Formation
- (b) Protective effect preventing further irritation
- (c) Ultimate solubility in tissue

9 Theories of Action of Asbestiform Minerals

- (a) Chemical - reasons for considering invalid
- (b) Mechanical - experimental demonstration of.

10 Complications

- (a) Infection, tuberculosis and other varieties
- (b) Cancer of lung - experimental data suggestive but not proven

11 Disability

12 Essential Features of Hazardous Exposure

- (a) Nature of dust - fibrous component and size factors
- (b) Atmospheric Concentrations - probably lower than for quartz

- i Inadequacy of standard impinger sampling method which does not collect the dangerous fibres
- ii Electrostatic precipitator sampling preferable but method must be modified

(c) Duration of Exposure

13 Recommendations for a New Standard of Safe Atmospheric concentrations of Asbestos Dust

- (a) The Quasi-official standard of 4 to 5 million parts per cu. ft.
- (b) Work upon better method of sampling
- (c) Necessity for comparison of results with X-ray film in employees

14 Prevention

- (a) Chemical means not practical

(4)

- i Acidosis necessary to dissolve fibre in lungs worse than Asbestosis
- ii Aluminum Therapy inapplicable
- iii Chief reliance still upon dust prevention with special emphasis upon the fibrous components

ASBESTOSIS - ANNOTED OUTLINE INDICATING RESULTS

PART I - HUMAN ASBESTOSIS

1 Human Pathology and X-ray Patterns - Description

Based upon 23 human autopsies

2 Ash and Mineral Values in Human Lungs.

3 Complication of Asbestosis

(a) Susceptibility to Infection

- i Tuberculous- High incidence in English experience not duplicated in surveys of American Plants. Available autopsy statistics deceiving because of selection of material.

- ii Non-Tuberculous- The same reason probably applies should be checked by analysis of absenteeism among asbestos workers.

- iii Cancer of Lung Ditto, but there are now on record 10 cases of lung cancer in asbestos workers. Compared to the total number of autopsies on asbestosis, this incidence is excessive. No such frequency has been discovered in silicosis or other forms of pneumoconiosis except the Schneeberg mine of radioactive ores. The evidence is suggestive but not conclusive that asbestosis may precipitate the development of cancer in susceptible individuals.

4 Disability

Clinical experience suggests that truly disabling asbestosis is manifested by less striking X-ray changes than a corresponding degree of silicosis. Such disability in asbestosis is due to disease within the lungs and not to secondary heart disease. As in silicosis, associated pulmonary infection increases the amount or severity of the dust fibrosis with resultant accentuation of disability. There is urgent need for a careful physiological study of pulmonary function in asbestosis of varying severity. Undoubtedly, there are many diagnosable cases with no significant disability.

5 Diagnosis depends upon three factors.

- (a) History of adequate exposure, usually 5 to 6 years, sometimes longer, at work where both the concentration and character of the "asbestos" dust are hazardous.

- (b) Evidence of disease in a characteristic X-ray pattern.
- (c) A physical examination which reveals certain characteristic signs and may reveal evidences of disability if present.
- (d) Asbestosis bodies in the sputum are confirmatory when the previous factors are all positive. However, the bodies may be absent, particularly in the absence of bronchitis infection. Asbestos bodies unsupported by other evidence is not made a diagnosis. Occasional ones have been found in about 16 autopsy specimens of persons with no known exposure and no fibrosis, probably of non-occupational origin.
-

PART II Experimental Asbestosis

I. Methods

- (a) Inhalation Exposures to Plant Dust - Specific fibrosis in lungs, but no changes elsewhere.
- (b) Injections of Suspensions of Pure Minerals into Trachea - Similar results.
- (c) Injection of Suspensions of Pure Minerals into other organs - Fibres dissolved; no asbestosis bodies; tissue reaction confined to phagocytosis and encapsulation. Compare the asbestos corpus of human subjects.

II. Species Susceptibility

Unlike free silica, asbestos does not produce its specific effect in any organ of any species of animal. It causes fibrosis only in the lungs of man and those of a few of the species tested.

Species	Fibrosis	Asbestos Bodies	Species	Fibrosis	Asbestos Bodies
Man	4+	4+	Cat	+	+
Guinea Pig	2+	3+	White Mouse	0	0
Rabbit	+	2+	White Rat	0	0
(* = very small typical asbestos bodies)			Dog	0	0

III. Peculiar Characteristics of Asbestosis

- (a) Localization of fibrous minerals in lungs differs from that of granular dust particles.

- 1 Fibres like chrysotile having a certain degree of flexibility and elasticity accumulate within the finest air tubes; granular dust is carried further on and is widely scattered through the terminal air spaces.
- (b) Rate of tissue reaction to asbestos is much more rapid than to an active dust like quartz. Evidences of formation appear as soon as sufficient concentration of fibres has localized in specific areas; with quartz, there is a latent period of months.
- (c) Reaction to asbestos does not progress on cessation of exposure. Young scar tissue that may have formed, contracts and becomes more dense but the area of involvement decreases in size. In silicosis, the young nodules become larger after exposure ceases.
- (d) Asbestosis Bodies are a specific concomitant of this form of pneumoconiosis. They are due to a deposit of protein and iron upon the surface of inhaled fibres. In guinea pigs they form after about 60 days of contact with the tissue. They are abundant in man and guinea pigs, (See paragraph 2 above) but much larger in the former probably because the larger sized air tubes admit larger fibres. In cats, rabbits and mice, there is an atypical coating of a few of the fibres after much longer residence in the lungs; in rats and dogs no bodies could be discovered. From paragraph 2 it is apparent that their occurrence does not parallel development of fibrosis. In lung injection experiments, the bodies have not developed until after fibrosis is well advanced. The number of bodies seems to decrease several years after exposure ceases.

V Comparative Effects of Different Asbestos Minerals

- (a) Canadian Chrysotile - highly irritating.
- (b) Arizona Chrysotile (low in iron) equally irritating and produces just as many asbestosis bodies as the Canadian product with over 11 times as much iron.
- (c) Crocidolite - The South African blue asbestos is known to cause asbestosis. Only a limited supply of this material in pure form was available, most of it was used earlier in the work in non-productive experiments. For the later critical injection tests into the lungs, a Bolivian variety was substituted because of its high purity. Its fibres were much straighter, stiffer and more elastic than the cottony South African variety. Perhaps because of these peculiarities, it has not given reactions comparable to chrysotile. It produced asbestosis bodies but did not localize in the terminal air tubes nor cause any fibrosis. Tests now being repeated with a typical South African crocidolite with physical characteristics simulating chrysotile.

- (d) Anthophyllite - stiff, straight fibres - atypical asbestosis bodies forms slowly but no localization or fibrosis in lungs.
- (e) Actinolite - Ditto.
- (f) Amphibole - Ditto.
- (g) Tremolite - Ditto but very few asbestosis bodies - Observation being continued.

V Control Mineral

- (a) Granular Serpentine of same chemical composition as chrysotile is inert causing no fibrosis in lungs or other organs. It attracts iron from the lungs but of course, no "bodies" develop.
- (b) Glass Wool (a synthetic silicate) fibres are not inhalable from air-borne suspensions, apparently because of their stiffness (the diameter is not responsible as some used were less than 1 micron thick). On injection into the lungs, they do not localize in the air tubes but are widely scattered. They cause no fibrosis. After 3 or 4 months in contact with lung fluid, a few glass fibres take up iron but remain smooth. They never show the swollen ends and lateral projections of the true asbestosis bodies.
- (c) Brucite of interest because it is a fibrous mineral practically free of silica (0.9%). Crystallographically the arrangement of its Mg and OH groups in each unit cell is similar to that in chrysotile. The sample used also contained about 16% iron, probably from contaminating magnetite. The fibres are stiff and needle like. Observations not yet completed but after 2 months in the lungs, typical asbestosis bodies develop but there is as yet no fibrosis. The fibres are scattered through the lung instead of being localized inside the terminal air tubes and tissue reaction occurs around, instead of within the tubes.

VI Chemical Composition in Relation to Irritation

- (a) Working in the following chemical compositions can be correlated with variations in capacity to provoke tissue reaction.

(See Table Next Page)

	Chrys- otile	Green- land- otile	Amphib- ole	Amphib- ole	Amphib- ole	Amphib- ole	Amphib- ole
S ₂ O ₃	37.43%	34.99%	37.43%	46.21%	53.04%	56.20%	0.99%
Fe ₂ O ₃	2.15%	15.07%	0.51%	4.06%	3.09%	7.01%	4.99%
Fe ₂ O	0	4.99%	0	33.80%	0	0	0.99%
Al ₂ O ₃	0.35%	1.02%	0.25%	1.09%	1.89%	0.55%	0.45%
CaO	0.05%	0.70%	0.44%	2.01%	12.22%	4.45%	0.40%
MgO	39.77%	12.25%	29.54%	0.89%	23.20%	20.52%	50.99%
Na ₂ O	0.39	6.92	0.52	0.33	0.10	6.72	0.31
K ₂ O	0.02	0.57	0.15	0.10	0.12	0.39	0.15
Loss < 105°	4.30	0.02	0.52	0.84	0.32	0.34	0.53
> 105°	14.92	2.55	2.42	1.51	3.59	2.72	20.65

(b) Acid treatment of chrysotile fibres

i One hour in dilute or concentrated HCl does not alter appearance of fibre but after such treatment it rapidly dissolves and disappears on injecting into living tissues.

ii Treatment with CO₂ bubbled through water or lung tissue suspensions of chrysotile fibres causes partial solution with liberation of silica and magnesia.

(c) Colloidal alumina does not neutralize the effects of asbestos as it does quartz. On injecting chrysotile suspended in aluminum hydrate solution, fibrils and asbestos bodies develop at the usual rate. It remains to demonstrate whether the fibres become coated with a layer of aluminum monohydrate as has been proved in the case of quartz. If they have, the coat does not affect their capacity to irritate tissue.

VII Physical Properties in Relation to Irritation of Lung Tissue

(a) Length of Fibre

Short chrysotile fibres under 3 microns are practically inert. 20 to 50 micron fibres cause typical fibrosis. The effects of longer ones could not be tested for technical reasons.

(b) Crushing completely destroys the fibrous structure of chrysotile. With loss of structure, all capacity to irritate disappears.

- (c) Heat At ignition temperatures, water is driven off but the fibre-structure is preserved. Fibres become extremely brittle. The physical change alters typical localization within the lungs, no fibrosis develops, reaction limited to phagocytosis. No asbestosis bodies formed.

VIII Nature and Significance of Asbestosis Bodies

- (a) Bodies probably result from deposition of iron and organic matter on a slowly dissolving fibre of asbestos. The source of the iron is more likely to be the lung tissue than the mineral itself as the coating is just as heavy on fibrous minerals of low iron content as upon those high in iron.
- (b) The effect of asbestosis body formation is assumed to be protective although it has not been possible to isolate a large enough quantity of these structures in unaltered form for purposes of test. The smooth rounded ends presented by the bodies would not be mechanically irritating.
- (c) If they were capable of causing irritation, the fibrosis in the lungs should progress after exposure ceases which it does not.
- (d) The gradual disappearance of bodies (and fibres) long after exposure points to ultimate solubility in tissue fluids.
- (e) The bodies are probably a fortuitous concomitant rather than a cause of fibrosis.

IX Theories of Irritant Action of Asbestiform Minerals

- (a) Chemical These experiments do not confirm the theory that asbestosis is merely a form of silicosis resulting from free silica liberated in the solution of a silicate molecule. If this were true asbestos, like quartz, should cause fibrosis in any organ of any species for the experiments have shown that injected asbestos dissolves in these locations. However, it does not cause such reaction in any location but the lungs of a few species.

(b) Mechanical Irritation

We are proposing the theory of mechanical irritation which is manifested only in the lungs because this organ is the only one whose normal physiological functions involve a high degree of mobility. Experiments designed to prove the necessity for motion in this tissue have failed for technical reasons. For this theory to be applicable, it is necessary that the fibres be concentrated in the five terminal air tubes. It has been shown that only chrysotile of the asbestiform minerals thus far has the proper physical characteristics to insure such localization. It is also essential that the fibre shall persist long enough before it dissolves in the lungs of species like mice, rats, dogs. It apparently dissolves so rapidly that it exerts no irritation. Similarly rapid solution may explain in part, the lack of fibrosis in organs other than the lungs.

The fibres must be long enough so that they cannot be completely surrounded by phagocytic cells which would prevent contact of these round, broken ends with the delicate cells supporting the air tubes. Observation has demonstrated that these conditions are realized in guinea pigs treated with long fibre chrysotile and fibrosis results. With the other asbestiform minerals that have been tested, some or all of the prerequisites were lacking and no fibrosis developed.

- (c) If the irritation were chemical, fine serpentine which has the same chemical composition as chrysotile should have also caused fibrosis. The crushed chrysotile should have been more active than intact fibres, because of the greater surface areas exposed to body fluids. On the assumption that chrysotile, like quartz, becomes coated with a very thin layer of aluminum on treatment with colloidal aluminum hydroxide, capacity to cause fibrosis should be destroyed if the action were chemical but such is not the case.
- (d) The heavy coating resulting from asbestosis body formation apparently does stop tissue reaction but here the effects are probably mechanical for reasons cited.
- (e) Heat sufficient to alter chemical structure & destroys power to irritate but it also alters essential physical characteristics that affect localization of the fibres in the lungs.

X Complications

(a) Susceptibility to Infection

- i Tuberculous - Asbestos behaves like most other minerals^{dust} in this respect and not like quartz which specifically increases native susceptibility to the tubercle bacillus. This infection may spread for a time but then heals. The resultant fibrosis accentuates that caused by the mineral fibre.
- ii Non-Tuberculous - of no greater frequency than in animals inhaling dusts of other kinds. Occasional epidemics of pneumonia occur in our dust rooms, but these are due to methods of housing rather than to dust; they can also occur in unexposed animals.

iii Cancer of Lungs

^{particularly} No experiments were designed to elucidate this point but certain evidence suggests that asbestosis may actually favor development of tumors in susceptible species.

- 1 In guinea pigs, rabbits, rats, cats and dogs lung tumors are rare.
- 2 When these species were subjected to 2 to 3 years inhalation of asbestos dust, the incidence of lung tumor was not increased.

- 3 Some strains of white mice do develop tumors without apparent cause.
- 4 Such a strain of white mice was unintentionally used in three inhalation experiments with asbestos.
- 5 Of 11 mice inhaling long fibre asbestos for 15 to 24 months developed malignant tumors in their lungs and 6 of them had tumors in other organs. The incidence rate 21.8% is excessive.
- 6 Of 22 mice inhaling short fibre asbestos for not longer than 12 months only 3 developed lung tumors. Rate 13.6%
- 7 As controls, we have only the experience with mice in other dust experiments.
For short periods, there were 51 mice exposed to 4 other kinds of dust for 10 to 12 months. Incidence of lung tumors 1.9%.
For long periods, there were 143 mice exposed to 4 different kinds of dust, including pure quartz, 23 to 31 months. For all this group of mice the average incidence of lung tumors was 13.8%; the highest rate (25%) was in a subgroup exposed to flint dust.

Thus the incidence of lung cancer in the long fibre asbestos mice was over 16 times the average for mice inhaling other dusts for comparable periods and over 3 times the maximum for any other group. Mice exposed to the practically inert short fibre asbestos showed fewer lung tumors although 7 times more than those in short exposure to other dusts.

These observations are suggestive but not conclusive evidence of cancer stimulating action by asbestos dust. They are open to several criticisms. The strain of mice was not the same in the asbestos experiment as in many of the others cited; apparently the former were unusually susceptible. Not enough animals survived the dust for longer than the 15 months apparently necessary to produce many tumors. There were no unexposed controls of the same strain and age and no similar controls exposed to other dusts. It is hoped that this experiment can be repeated under properly controlled conditions to determine whether asbestos actually favors cancer of the lung.

XI Disability

Cannot be determined in animals. The accidental deaths were from the same causes met with in all our dust inhalation experiments.

XII Essential Factors of Hazardous Exposure

(a) Nature of Dust

- i The hazard increases with the proportion of intact fibres in the dust. Granular material and crushed fibre are inert diluents.
- ii The long fibres must be thin enough (1-3 Microns) and short enough (under 50 Microns?) to be inhaled.
- iii Very short fibres (under 3 Microns) are practically inert.

(b) Atmospheric Concentration Still under study.

Apparently this factor is lower than in the case of dusts composed of granular minerals but methods of estimation are misleading.

- i The average standard Public Health Service impinger count in the long fibre asbestos dust room was 40 million particles per cu. ft. of air. This concentration caused fibrosis visible to the naked eye in 20 to 24 months. For comparison the average impinger counts in an experiment with pure quartz was 120 million particles per cu. ft. and fibrosis developed at about the same rate.
- ii However, impinger counts are deceptive because by this method of sampling very few fibres, which are the significant elements in the dust are collected.
- iii Sampling with an electrostatic precipitator is a much more efficient means of collecting fibres from air-borne suspensions. Samples from our long fibre asbestos room showed that the dust in the air contained 32.5% of fibres few of which had been collected or counted in the impinger sample. The latter sampled largely the inert granular particles.
- iv As ordinarily employed precipitator samples are weighed and the results expressed in mg. per cubic foot of air. There is no means of converting such values into numbers of particles particularly when these vary in size, shape and specific gravity.
- v Simultaneous sampling with precipitator and standard impinger yielded the respective values of 0.65 mg and 60 million particles per cubic foot of air.
- vi Theoretically the best index of hazard would be either the number or weight of fibrous elements in the dust.

(c) Duration of Exposure

- i Fibrosis visible to the naked eye after 12 months exposure, increases in extent in subsequent 12 months.
- ii The span of life of our most susceptible laboratory animal, the guinea pig has prevented continuing exposure longer than three years. In this period only the comparatively early stages of asbestosis have been produced. With the knowledge that we have gained, it is probable that more extensive disease could have been produced with a purer long fibre chrysotile. The long lived species, like cats, dogs are unfortunately not susceptible.
- iii For these reasons X-ray changes have been minimal and we were not able to fulfill one of the objectives of this program.

XIII Recommendation for a New Standard of Safe Atmospheric Concentration of Asbestos Dust.

- (a) While there is no official standard, the tentative one of 4 or 5 million particles per cubic foot of air is frequently quoted.
- (b) This is probably unreliable because it is based upon sampling with a standard impinger which we have shown does not collect most of the fibres that are the source of hazard.
- (c) We now think that a standard should be based upon samples collected with an electrostatic precipitator if it is feasible to determine readily the relative proportion of fibres in such material.
- (d) Work is still in progress upon the latter point.
- (e) To be of value the new standard would have to be correlated with the X-ray findings upon employees exposed to different concentrations of dust.

XIV Prevention of Asbestosis

The experiments have failed to develop any practical chemical means of neutralizing the action of fibrous asbestos.

- (a) To alter the human lung so that it would dissolve asbestos fibres rapidly like a rat would necessitate ~~(however)~~ creating an acidosis which would be worse than the effects of the fibrosis.

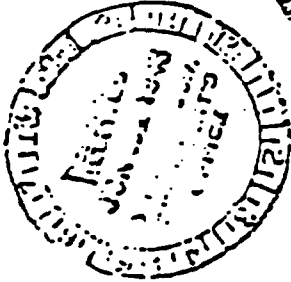
- (b) Apparently aluminum, which is so effective against free silica, has little influence upon fibrous chrysotile.
- (c) However, it would be of great theoretical interest to treat a few cases with real dyspnea from asbestosis by aluminum inhalation. We are by no means certain whether the favorable results upon advanced silicosis are due to a chemical neutralization of quartz in the lungs. Aluminum might have some more general pharmacological effect which influences dyspnea.
- (d) Chief reliance must still be based upon control of dust in the air and, in view of these experiments, particularly upon the fibrous components of such dust.

Henry G. Gaden

"ASBESTOS"

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PLAINTIFF'S
EXHIBIT

JM 30

June 18, 1943.

Mr. S. Simpson, President,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Dear Mr. Simpson:

The attached copy of letter written by the Northwest Magnesia Association to the Department of Labor & Industries of the State of Washington, has been sent us apparently by the Secretary of the Association, Elliott DeForest, without any comment whatever, and in the envelope of the Asbestos Supply Company, First Ave. at Jackson, Seattle, Washington. Mr. DeForest is connected with the Asbestos Supply Company.

There does not seem to be anything we can do about it under the circumstances, and we are passing it along to you thinking it might interest you generally, and perhaps you might like to contact Mr. DeForest on the subject.

If you would prefer that the matter be handled thru us, we would be glad to write Mr. DeForest at your direction; otherwise you need not return the letter.

Very truly yours,

"ASBESTOS"

A. S. Rossiter,
Editor.

TJ

PLAINTIFF'S
EXHIBIT

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5/4/92

RM 76-3-22
4-29-77

4-2

C O P Y

Seattle, Washington
June 14, 1943

Mr. John E. Morgan, Supervisor of Safety
Department of Labor & Industries
State of Washington
Olympia, Washington

RE: Proposed General Safety Standards -
Standard 49. Article A-5. ASBESTOSIS

Dear Mr. Morgan:

Our Association has given due consideration to the above mentioned subject and submit to you the following recommendations.

Inasmuch as any dust which might occur in any of our operations during the application of material in which asbestos might be used is not of any different character from the ordinary dust that is developed in thousands of occupations, we feel that it is adequately classified under Standard 45 in the general classification of "Hazards and Protective Devices." The relative quantity of asbestos in the materials that use the name "asbestos" is quite small. As a matter of fact, magnesia is 85% of most of the pipe covering which is generally referred to as asbestos amongst those uninformed.

In our entire practice of handling asbestos in the State of Washington, and our Association members have been in this business over 40 years, we have no knowledge of anyone who is even acquainted with the coined word "Asbestosis" much less ever having contracted the disease. We feel that if such a so-called disease were advertised to the general public, and our workmen in particular, that it would give them an excuse upon which to place claims for all sorts of allied ailments and our particular industry would be unduly burdened by such parasites.

Our Committee, consisting of Mr. V. S. Jenkins and Mr. T. F. Bellamy, who were interviewed by John E. Morgan and Herman Luft at the Smith Tower offices of the Department of Labor & Industries, report that the recorded singular case of Asbestosis as noted in the medical journals occurred in England some 40 or 50 years ago under most unsanitary and inhuman working conditions. Since this foreign disease has not come to our attention, we feel it should be left in Europe where it belongs and not brought to our local communities and create hysteria and fear amongst the families of our contented workmen who are now enjoying good health and living to a ripe old age, which is significant of the Pipe Coverers Union as compared with the other trades.

These statistics of your Department confirm the soundness of this argument by the low rate which we have, and we wish to continue enjoying this low rate by not allowing our standards to be adulterated. Therefore, we heartily recommend that this entire Paragraph A-5 be deleted from your code, and pledge our cooperation to your Safety Standards, which as we interpret them, is using good common sense on all occasions.

On all our operations where the slightest amount of dust might arise from any sawing, your representative will concur that we have proper ventilation and respiratory devices. However, when it comes to installing our material in cramped quarters of war vessels, we have proven that it is of more value to consider safety in regard to giving a man proper vision and not allowing him to be encumbered with respirators, air hoses, hoods, etc.

Looking to you for favorable action in this matter, we remain

Very truly yours

NORTHWEST MAGNESIA ASSOCIATION

Elliott DeForest
Secretary

April 30, 1948

Mr. Ernest Buchlack,
President,
Kensley & Mattison Company,
Amaler, Penna.

Dear Mr. Buchlack:

You are correct in your understanding that there is not complete identity between those who sponsored Dr. Gardner's experiments and those who are presently members of the Asbestos Textile Institute. I believe it will be helpful for yours and Mr. Reinhart's consideration of this subject if I provide you with the following list of those who contributed:

Kensley & Mattison Company
Raybestos-Manhattan, Inc.
Johns-Manville Corporation
Southern Asbestos Company
Union Asbestos & Rubber Company
Oetis Corporation
Asbestos Manufacturing Co.
Russell Manufacturing Co.
United States Gypsum Company
American Brake Block Co.

The last four enumerated above are not members of the Institute. The first four enumerated above made the most substantial contributions, pledging and paying \$1,000 per year during each of the four or five years that support was extended to Dr. Gardner. The amount paid by the others was \$12 per year, and Russell Mfg. and Asbestos Mfg. Co. discontinued their contributions earlier than the others.

I am not sure just how the small committee should be created but, on the basis of contributions, it would appear that the four who contributed the most would be justified in setting up a committee composed of a representative of each. I would appreciate yours and Mr. Reinhart's views.

Sincerely,

Vandiver Brown,
Secretary.

Very
cc Mr. J. D. Reinhart
Raybestos-Manhattan, Inc.

PLAINTIFF'S
EXHIBIT

JM 159

PLAINTIFF'S
EXHIBIT

5/4/92 JW

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

4400 Fifth Avenue

Pittsburgh 13, Pa.



REPORT OF
PRELIMINARY DUST INVESTIGATION
FOR

ASESTOS TEXTILE INSTITUTE

JUNE, 1947

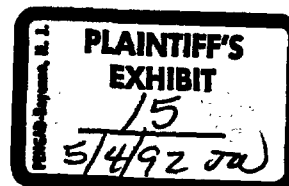
By

W.C.L. Emerson
Head Engineer

Industrial Hygiene Foundation of America, Inc.

By John F. McMahon
Managing Director

June 18, 1947



5-12.7

of
PRELIMINARY DUST SURVEY
for
ASBESTOS TEXTILE INSTITUTE

June, 1947

OBJECT OF INVESTIGATION

This project was a preliminary investigation of the asbestos problem in textile plants of members of the Asbestos Textile Institute with the immediate object of defining the specific nature and the magnitude of the problem in all its phases. From such a definition, the character of a long-term project could be outlined. An original objective of most immediate importance was to facilitate the exchange of information between member companies on successful methods of dust control and otherwise to promote a general improvement in that field.

SUMMARY

The facts upon which this report is based were obtained on during the past three months, to all plants of Institute members (except one, who wished the visit postponed to a later date). Complete cooperation was extended at all plants. Dr. C. Richard Walmer, Medical Director, Industrial Hygiene Foundation, participated in visits to three plants in development of the medical concepts of this report.

The problem is seen to be composed of three aspects which are discussed in three sections of the report and summarized herewith, **ENGINEERING, MEDICAL, and PHYSICAL TESTING.**

Engineering. -- Mechanical methods were seen in use in one or two plants which effected practical dust control in all operations, bringing concentrations down to five million or lower with one or two exceptions. It is proposed to prepare formal detailed descriptions of these methods for general distribution to members of Asbestos Textile Institute.

Medical Supervision of Workers. -- Only five plants have had any medical x-ray surveys of employees. In the others, therefore, there is a serious lack of information as to the incidence of asbestosis. The lack is more serious, in a sense, because in most of these plants no compensable cases of asbestosis have occurred to draw attention of top management to the problem. While the medical survey conducted by one plant recently shows only about 5 per cent of the employees with asbestosis, two other plants appear to have 20 per cent of their employees affected.

Medical supervision of workers in this industry is of utmost importance for the protection of both employee and employer, not to mention financial considerations. Therefore, it is strongly recommended that each plant institute a program of medical and x-ray examinations of all exposed workers as early as practical.

Physical Testing (Dust Counts, etc.) -- The "maximum permissible dustiness" for asbestos is commonly taken to be five million particles per foot. This represents good attainment in the dust control program. It is emphasized, however, that dust elimination to this extent does not positively assure that no asbestosis will develop in some workers after a long working life (greater than 20-25 years). Scientific evidence is obscure on this point. It is recommended, therefore, that studies be initiated aimed to develop another

variatick, because it is suggested that when control below five million is attained, present dust count methods may not properly measure the remaining hazard.

A detailed summary of recommendations for a long-term investigation is given at the end of this report.

I - ENGINEERING

PRESENT STATUS OF DUST CONTROL

Practically all plants visited have had one or more dust count surveys made of their operations and these data were available for the present study. In addition, a few samples were taken by the investigator in most

These records were studied and a range of concentrations judged most representative selected for the summary given in Table I. Where relatively extreme values appear it is an indication of too few data to permit a good estimate.

Figures in the last column are selected to indicate the magnitude of readily attainable dust concentrations with dust control measures now in use; or judged to be most typical of an operation where no special dust control measures are employed, e.g., ring spinning.

Discussion of Concentrations

The available dust count data for operations in the preparation of yarn are highly variable and reflect the poorer accuracy in sampling inherent in operations that are intermittent and miscellaneous in character. These figures are, therefore, considered much less reliable than those for other departments.

The figures for carding room dustiness indicate that with reasonable good enclosure and exhaust of the machines, concentrations well below the five million are obtainable. Four of the plants visited exceed the five million limit materially.

All the data for mule spinners exposure indicates a wide variation in dustiness, ranging from two to eight million, but the volume of data are

TABLE 1

PRESENT STATUS OF DUST CONTROL IN DIFFERENT PLANTS:
DESCRIBED IN TERMS OF AVERAGE DUST COUNTS

	A	B	C	D	E	F	G	H	I	J	Most Typical with Control
Preparation	-	1-3	5-7	3-9	-	1-8	2-7	-	20	7-11	Below 7
Carding	2-3	1-2	10-25	4-12	1 1/2-3	2-4 1/2	2-3	2-3	30-50	4-17	2-3
Mule Spinning	-	1-3	6	-	3-7	2	-	-	-	8	-
Ring Spinning	2-4	1-5	-	1-4	3-5	1-2	2-8	8	13-18	5-6	3-5
Twisting	2-6	1-5	5-7	2	5-8	2-4	2-10	-	13-18	4-9	4-7
Weaving	1-2	1-5	11-15	2-5	-	1-5	2-10	4-7	-	2-4	1-3
Spooling, Winding	2-4	-	-	2	2-7	-	2	5-7	3	5	-

great enough to yield a good average. Concentrations for ring spinning are from one to five million although there is no strong indication in the data of marked differences between this operation and mule spinning.

There is a similar wide variation in data for twisting (two to million), but there is some justification in these data for the opinion held that this is one of the dustier operations in the finishing end of the mill. It is believed that occasional high values in both ring spinning and twisting reflect in some cases the sampling procedure. If the large impinger is maintained in one location and there is a strand breakage in that immediate vicinity, the resulting whipping dust will be reflected in that single sample and will not, therefore, be representative of the worker's exposure.

Dustiness in weaving operations reflects the use of water for dust control in some plants and exhaust systems in others. The lowest concentrations of one to two million obtained in Plant A reflect highly efficient weaving methods there employed. Concentrations less than four to five million are readily attainable by local exhaust methods as indicated by the results in several plants.

The data for spooling and winding operations are included for completeness, but reflect miscellaneous operations and conditions. The dust reported is often due to the effect of other machinery in the same room. Considerations therefore affect the reliability of these data, as in the case of operations in the preparation room.

EXISTING DUST CONTROL PRACTICES

The following discussion of dust control practices in the industry is merely an outline. To be useful to those who are responsible for the engineering in each plant, they will need to be set forth in the form of detailed specifications describing details of construction, specification for sheet metal contractors, for purchase of fans of proper capacity and design and operation of dust collectors.

Preparation

Highly variable practices prevail in different plants and the miscellaneous character of operations within a single plant makes it impracticable to formulate many general statements. However, it may be said that such control as is realized results from the use of modern equipment that is well closed and which usually incorporates pneumatic conveyors with ceiling condensers. The large movement of air involved in pneumatic transport serves a useful additional purpose of preventing the escape of dust from the primary equipment. Discharge of stock from ceiling condensers into bins, stock boxes or feed hoppers is a dust usually not under control. The blending operation is another source which is often not satisfactorily controlled. With the exception of these two common operations, most of the dust control procedures required will be more or less specific for each plant.

Carding

As has been noted, reduction of dustiness in carding to concentrations of three million or less is easily attained by good enclosure of machine and carefully designed exhaust. Moreover, experience of several

companies proves that it does not interfere seriously with manufacturing operations nor with quality of roving produced.

Our investigations indicate the superior advantages of having walls of the enclosure of wood to facilitate small clearance by rubbing tact at the edge of the main cylinder, thus avoiding excessive air infiltration at that point. Wood covers have the advantage of resistance to corrosion which was evident in installations with sheet metal covers.

Connection of the enclosure to the exhaust system by means of ducts of ample dimensions, i.e., large cross-sectional area is of major importance to avoid localized high air velocities close to the webbing in main cylinder. This detail was not always observed.

In view of similar degrees of success, judged by dust counts, between various installations, the best criterion of superior design as regards exhaust from the machine was in the relative economy respecting volume of air exhausted per machine. Our observations indicated rather extreme variations as indicated in the following table of exhaust rates recording set in five representative plants:

<u>Plant</u>	<u>Air Exhausted Per Set</u>
A	1500 cfm
B	2200 cfm
E	3800 cfm
G	5400 cfm
H	2000 cfm

It is apparent from this investigation that 2000-2500 cfm per set of breaker and finisher cards is ample exhaust capacity if the system properly designed.

All five of the systems described in the table serve their purpose satisfactorily from the viewpoint of operation, but it does not mean that they would be equally satisfactory to others. Thus the plant with high exhaust capacity (G) has a unique interplant tunnel connection, so that exhaust from another plant supplies replacement air without added cost, for or winter discomfort.

Plant E controls dust by completely housing each pair of cards in a spacious room, exhausted at a rate of 2000 cfm. Sidewalls are easily reached for repairs. Most plants would not prefer this arrangement.

As far as the dust count data can show, the card room of Plant E with 2200 cfm is equal if not superior to that of Plant F with 3800 cfm, recently installed system.

The fundamental features of best card dust control systems observed are as follows:

1. Wood enclosure with hinging arrangement.
2. Liberal clearance between worker rolls and curve of cover permitting air passage at low velocity.
3. Large chamber connection on cover, to duct.
4. Duct branch not over 5", preferably 4".
5. No blast gate dampers in branch line.
6. Exhaust influence over comb, either by extension of main cover or by separate hoods.
7. Exhaust space under machine, not over 4" duct.
8. Enclosure and exhaust of feed hopper, not over 4" duct.

Two installations include an exhaust branch to prevent the dust originating in the space between the ring doffers and the main cylinder.

Spinning

Maintenance

One plant has installed ventilation for their ring spinning for which management believes has reduced dust in this operation. It consists in a series of exhaust openings under the frame, near the floor, running the length of each frame. Time did not permit demonstrating to our own satisfaction whether a measurable improvement had been effected or not. This should be done by a series of dust measurements with exhaust on and off. The volume of air exhaust is insufficient to effect a true local exhaust action, and if it is effective it must, therefore, be an effect of simple dilution.

Twisting

Interest in control of dust from twistors is widespread in the industry and Plants A and B have installed an exhaust system like the one described for the spinning frames in Plant A. Here again the operators believe a marked improvement has resulted. Dust count data is needed that will measure the degree of improvement.

Winders

Maintenance

Cop winders have been exhausted in Plants A and B with reported beneficial reduction in dustiness. We do not have quantitative data on this point. The exhaust arrangement for Foster winders was developed many years ago and is well known. The tendency to elimination of this machine makes the problem one of little practical interest now.

In most plants, dust from other equipment, such as spinning and twisting which are commonly in the same room, is of greater importance than from winding operations.

June, 1947

Weaving

One plant has a superior method of suppressing dust in weaving wet methods and dust count records indicate a complete suppression of dust. It involves a water spray head mounted above the warp at the rear of the harness with a mechanical screw arrangement for constant movement of the head transversely to the warp. They believe it to be more effective than system common in several plants wherein the warp is passed over wetted rolls.

It is apparently not practical to recommend 100 per cent wet weaving throughout the industry. Moreover, we are satisfied that it is practical to control dust in this operation by local exhaust, where dry weaving is considered imperative for special properties of the cloth. One of the best exhaust arrangements includes an exhaust opening directly under the warp at the rear of the harness frame with a slot exhaust opening carried by the lay beam, latter connected to the stationary part of the exhaust system, either by flexible hose arrangement or by an all metal swivel joint.

Duct Work

The actual arrangement of duct work and exhaust fan present no unusual problems where good practice in sheet metal fabrication is followed. Points are of sufficient importance to require emphasis. Special care should be exercised in the fabrication to avoid sharp projections on the inside to create points of lodgment for fibers. Secondly, it must be designed to provide adequate transporting velocities. Velocities below 2000 fpm, in the experience of the industry, may permit settlement of material and gradual clogging. Therefore, allowing a margin of safety, the design should provide for velocities of 3000 fpm.

The problem of distribution of planned air flows to the different branches of the system is of importance in the design of all dust exhaust systems. The use of dampers in branches to adjust air flows is avoided in the best systems. Their function in effecting balance between branches best attained in the original design. Design procedures to effect this objective are available but will not be elaborated at this point.

Dust Collectors

Five plants in the survey employ the well-known burlap dust bag for filtering air from various exhaust systems. The favored filtering area is determined on the basis of one square foot for each air flow of 2 cfm. Most arrangements are such as to permit cleaning by whipping with a bamboo pole or a buggy whip by men who remain on the clean air side of the filter cloth. In one system, the men are required to enter the dust side for cleaning purposes, and final cleaning is carried out once weekly with the use of a central station vacuum cleaner. Practices in different plants are varied to frequency with which the burlap filter is freed of its dust load by wh

While these dust collectors work well, we are not prepared to recommend them to the exclusion of some commercial types of filters having air shakers. Several engineering elements enter into the design of a dust collector system, involving principally a proper estimate of pressure drop in the elements of the system and especially that through the filter proper (back). If the pressure drop estimate in the filter is incorrect, the system will not operate properly. If the basic resistance of the filter, i.e., that immediately after shaking the cloth, is subject to a constant increase over a pe

of weeks, the system operation will suffer. Apparently, some of the older commercial flat bag type of collectors did exhibit that difficulty. Modifications in the design of such units have, however, been incorporated in recent models and those difficulties may have been eliminated.

Two plants employ commercial collectors of the flat bag or envelope type. Another plant uses a cloth tube commercial collector and also one filtering element is of paper, which is replaced at intervals of several weeks. A study of operating details of these commercial collectors is indicated in this study, including considerations of original cost and operating cost.

Recirculation

Several plants return air from the dust collectors to the work area to conserve heat in the cold weather. We are not prepared at this point either to condone or to condemn this practice except in cases where there is obviously leakage of dust through the filter and consequent recontamination of the air inside the plant. The practice is generally frowned upon where dusts that are hazardous to health are being handled. We believe there are certain circumstances where the practice might be permissible provided adequate safeguards are incorporated in operating procedures. The large volumes of air involved in dust control represent a tremendous problem as to heat loss and boiler capacity which cannot be passed over lightly.

II - MEDICALPRESENT MEDICAL FACILITIES AND PRACTICES

Every plant has connections with a local specialist in radiology who is employed for diagnostic work on an irregular basis. Three have their own x-ray machines used by the local specialist, but only one has a well-established schedule of periodic medical examinations.

Half of the plants have no positive information as to the incidence of asbestosis among their workers. The situation in these respects is indicated in Table II.

TABLE II.PRESENT PRACTICES AND FACILITIES AS TO MEDICAL
X-RAY EXAMINATIONS IN VARIOUS PLANTS

Plant	Recent X-ray ¹ Survey Made	Periodic X-ray Examinations Made	Have Own X-ray Machine
A	Yes	No	Yes
B	No	No	No
C	Yes	No	No
D	Yes	No	No
E	No	No	No
F	No	No	No
G	No	No	No
H	Yes	Yes	Yes
I	No	No	No
J	Yes	No	Yes

¹Within last few years, and results available to plant or its physician.

ESTIMATED INCIDENCE OF ASBESTOSIS

The incidence of asbestosis among employees of those plants where employees were examined in recent years, shows a marked variation as indicated by the following:

Plant A Plant A has recorded cases diagnosed as asbestosis to the extent about 20 per cent, and in the past nine years has compensated, on the average, two cases per annum. Total textile employment about 400.

Plant C on the basis of a recent systematic survey, estimates asbestosis incidence to be about three to four per cent.

Plant D has results from an incomplete survey in which four cases were found among those volunteering for examination with a total textile employment of around 150. They have compensated one case in about 10 years. Three more are pending.

J-M Plant H with a textile employment of 300 finds five or six cases annually that the physician believes show early changes due to asbestos.

Plant J has counted potential cases of asbestosis amounting in number to about 20 per cent, comparable with Plant A.

The other plants have conducted no systematic x-ray surveys of their own and have no information as to incidence among their employees. None of these has had cases requiring compensation.

While we have no complete data on history of employment and job turnover in the several plants, it is apparent that there is, at least superficially, a marked inconsistency in this picture. Also, it is clear that

June, 1947

a serious lack of information prevails generally on this aspect of the problem.

The story in North Carolina is worth special mention. This state instituted 10 years ago, a system of periodic medical examinations for all workers in dusty industries and, hence, all asbestos textile workers have been x-rayed and clinically examined for a longer period, on a periodic basis than any other asbestos textile plant in this group. If the state examiner finds that workers should discontinue their employment because of rapidly developing asbestosis they have the authority to effect this change. They see to it that workers who should receive workman's compensation due to disabling asbestosis are processed. So far as we have been able to ascertain, neither event has occurred to any employee of the two North Carolina asbestos plants in this group.

These observations suggest that there may well be a marked divergence in medical procedures, interpretations, and attitudes respecting the diagnosis of asbestosis.

There is a very urgent need for a concerted cooperative medical effort to develop improved diagnostic procedures and uniformity of interpretation.

IMPORTANCE OF PERIODIC MEDICAL EXAMINATIONS

One of the most important elements of a program of protecting health of workers in dusty occupations is the periodic medical examination. The lack of scientific information regarding all aspects of asbestosis is serious. This cannot be over-emphasized. The obvious procedure to help overcome this deficiency is to employ every tool now available that will throw more light on the facts. The importance of the periodic medical x-ray examination can perhaps best be emphasized by stating that dust count investigations cannot, at the present state of knowledge, give us assurance as to the extent of our success in eliminating the hazard.

Regular examinations serve to protect the worker by giving early indication of health impairment due to dust, and permit intelligent action to be taken to avoid further serious health deterioration. This is particularly true if the detection is early enough and there is no progression to late stage asbestosis.

More important, for the long term, the accumulation of factual information regarding the health status of exposed workers, statistically interpreted in relation to dustiness studies and to mechanical developments in control equipment, will eventually indicate when the battle of asbestosis control is being won. This aspect of the problem is elaborated in the following section.

The inventory provided by such a medical program is just as important to intelligent action in this problem, as material inventories are to the proper conduct of business.

The question as to whether a plant should purchase its own x-ray equipment is an economic one involving consideration of cost of local outside medical and x-ray facilities and of loss of employee time in travel, etc.

Diagnostic Panel

To further the objective of improvement and uniformity in diagnostic procedures, a medical section of the program is proposed in the form of a MEDICAL ASSISTOSIS PANEL to be composed of outstanding medical men in this field, and of the physician designated by each company as the one responsible for its medical and diagnostic work. The composition, as to outside medical personnel, of this panel would be determined by its objectives: the assembling of the best possible medical brains and the mutual education in diagnostic procedures that comes from exchanges of scientific experiences and information.

The panel would meet, perhaps semi-annually, and consider the significance of x-ray films and other clinical data brought to the group by a participating physician. Dr. C. Richard Warner's services would be available for the organization and other details.

STATISTICAL STUDIES OF MEDICAL RECORDS

There are two very important questions concerning the physiological nature of asbestos that have not yet been answered by any published investigation:

1. What is the expectation of asbestosis in workers exposed more than 15-20 years to low concentrations of asbestos dust? Among the 500-odd workers who composed the subjects in the U.S. Public Health Service study, there were abnormally few who had been exposed for more than 15 years and practically none over 20 years. These facts seriously affected the conclusions that could be drawn.

2. Is there a progression to advanced asbestosis after exposure of an individual has been discontinued or has been reduced to very low levels due to action of dust deposits from earlier exposure? This question is of very great importance to intelligent medical supervision of workers in the plants.

It is virtually certain that statistical investigations of existing records would throw valuable light on these questions.

None of the plants visited during this inquiry have sufficient extensive and systematic records to provide satisfactory answers to these questions, but the medical department of Metropolitan Life Insurance Company under Dr. A. J. Lanza, have x-rays of a number of men obtained in the early 1930's which could provide the nucleus of some useful information, dependent on how many of the original group are available for re-x-ray.

The most outstanding store of information is in the records of the Division of Industrial Hygiene of the North Carolina Department of Health who, in accordance with state law have x-rayed workers in this, and other dusty industries, almost annually for the past 10 years. A study of these records would undoubtedly cast much light on the question of progression. Through officials of the company members in North Carolina, we already have assurances of their full cooperation in any investigations, and although we have not discussed the matter with them directly as to details, there is every reason to suppose that the desired information would be made available to us for the purposes described.

In addition, a general x-ray and medical survey of workers in one or two plants with a long history of high order of dust control would be of great value for this purpose.

III - PHYSICAL

SIGNIFICANCE OF DUST COUNTS

Correlation between development of asbestosis and some pertinent measure of dustiness, e.g., dust counts, can be developed by periodically serving and recording data on both aspects -- periodic medical examination of exposed workers together with the periodically measured dust exposure of each. However, to be useful for preventive purposes, these procedures have to be extended into the past wherever data is available. This was the procedure employed in the studies of the U.S. Public Health Service in North Carolina plants (Public Health Bulletin No. 241, 1938).

The main value of dust counts in asbestos plants is to obtain data on dust concentrations that can be compared with that study, and thus lead to conclusions as to probability of development of asbestosis in the particular plant being studied.

In that study, dustiness of different occupations was measured in the usual manner, and also the incidence of asbestosis by medical and x-ray examinations of the men employed. A statistical comparison of the two sets of data led the investigators to the conclusion that new cases of asbestosis would probably not occur if dust control measures were undertaken to ensure that no dust exposures exceeded five million particles per cubic foot (measured in the same manner).

APPRAISAL OF REDUCED DUST HAZARD

Having reached a degree of dust control represented by the dust count limit of five million, it is then proper to ask: "What degree of assurance is afforded by existing knowledge that asbestosis will not, in fact, develop in the future if dustiness is kept below that level?"

If there are factors, at present unknown, that will indicate a need for still better dust control, what will that limit be?

The information available does not permit complete assurance that five million is thoroughly safe nor has information been developed permitting a better estimate of safe dustiness.

It is nevertheless of the greatest importance either that such assurances be sought or a new yardstick of accomplishment be found for accurately measuring any remaining hazard in the dust zone below five million for the elimination of future asbestosis depends upon the degree of control effected now.

Measurement of Dustiness

One basis of uncertainty as to applying present conventional counting techniques to the measurement of asbestos dust hazards below the five million level is summarized in the question -- are the fibers of asbestos the causative agent or the non-fibrous "cubical" particles that look like those of other industrial dusts? The non-fibrous particles in most textile operations comprise 80-95 per cent of the total dust seen in dust counting.

While it is proven that asbestos dust is the cause of asbestosis there is no certain information as to what shape or size of dust is the causative factor. The correlation studies of the U.S. Public Health Service

employed conventional dust count techniques which, in effect, related incidence of asbestosis to the number of non-fibrous particles of a size ranging from one to five or 10 microns.

For illustration, suppose the causative dust element is something different, e.g., fibers that are less than 50-60 microns long, and less than 1-2 microns in diameter. The conventional dust count method would be satisfactory only if there were a fairly constant ratio between the two types of dust; it would, in that case, provide an adequate index.

Preliminary Studies on Qualities of Asbestos Dust

With a view to eventual development of supplementary methods for measuring asbestos dust concentrations on a weight basis, we have conducted some preliminary studies directed to the colorimetric determination of total silica in the minute quantities of asbestos dust obtained in a typical atmospheric sample. This requires development since it could provide a valuable tool for further investigation.

Sub-microscopic particles and fibers.

Another aspect of the dust examination problem on which preliminary work has been done involved studies with the electron microscope. We pose the two following questions:

1. Ordinary dust particles, one to three microns in diameter, comprise most of the particles in the dust count. They look like ordinary industrial dust and we refer to them as "cubical" as distinguished from "fibrous" particles. The question is: are these particles in fact non-fibrous or are they bundles of fibers?

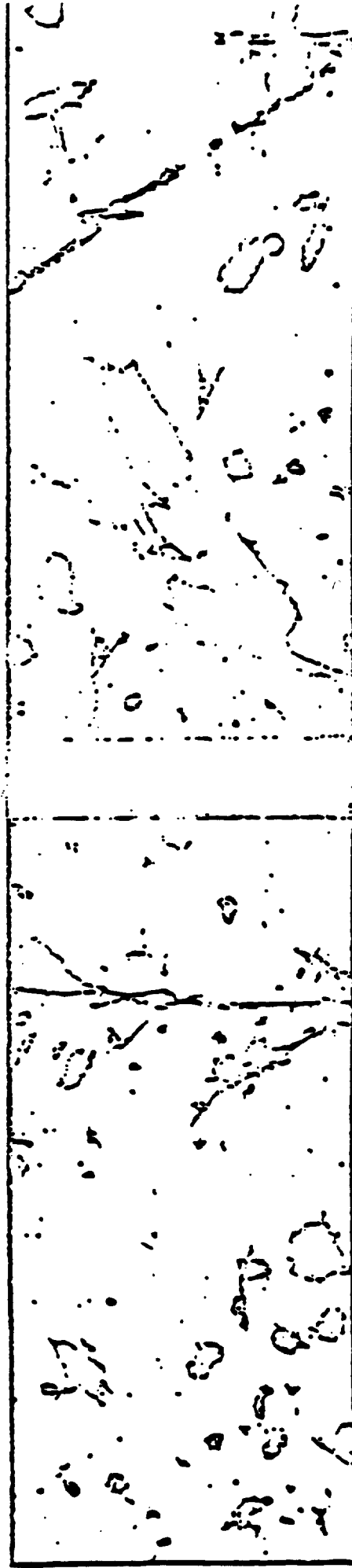
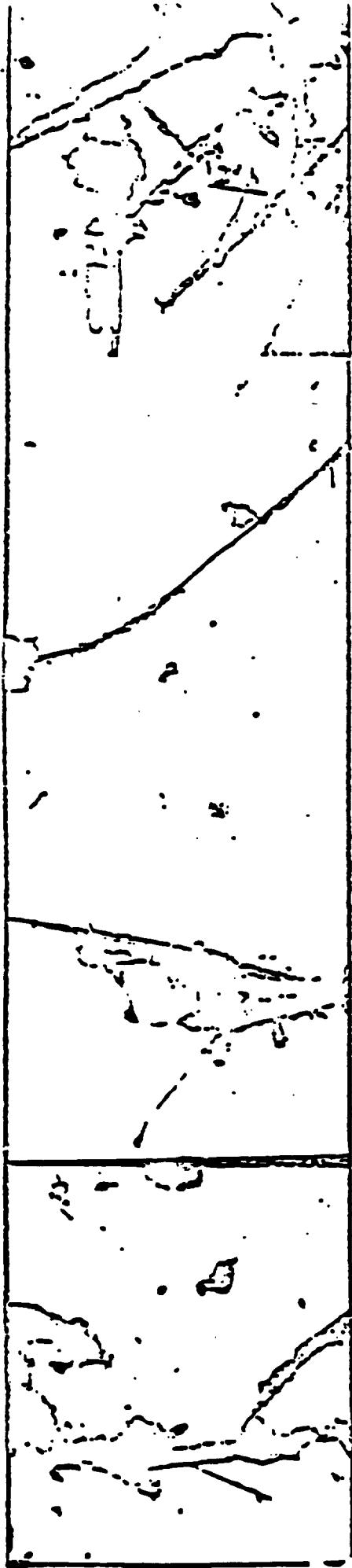
2. Secondly -- since the limit of resolution of the microscope lenses used in dust counting does not permit seeing particles very much smaller than one micron, one may ask if there are many fibers of great length, but such small width that they are invisible?

Samples of atmospheric dust were obtained for examination by the electron microscope, by mounting the small specimen slide used with this instrument, in the dust collecting zone of the electric precipitator. In order to eliminate very large fibers, the air being sampled was caused to pass first through a glass spiral coated with adhesive on its interior. This subjects the dust particles to centrifugal force and the largest ones would be precipitated out, much as they might be in the nasal passages of man.

Studies with other industrial dusts employing this spiral indicate that very rarely do cubical particles larger than three to five microns succeed in passing through the several turns of the spiral.

In samples obtained with this apparatus in a card room having a good dust control, we obtained pictures, some of which are reproduced in the attached Figure. They demonstrate first, that the cubical particles seen with a low power light-microscope are in fact bundles of fiber resembling a little size handful of partially opened fibers.

The picture further demonstrated that there are many fibers of considerable length, some fully 50 microns, whose other dimension is only a fraction of a micron; the fiber is therefore invisible in the dust counting microscope.



ELECTRON PHOTOMICROGRAPHS OF AIR-BOUNE ASBESTOS DUST - MAGNIFICATION 5500 X

THIS CIRCLE 1. MICRON DIAMETER -



They also showed some fibers a few microns in length whose diameter is only 0.01-0.02 microns, although the commonest particles are bundles of fibers about 0.1 micron in width.

In addition to the light these observations throw on the sub-microscope character of asbestos dust, they are cited to indicate the other qualities that might be pertinent to evaluation of dust exposure, to supplement the dust count technique now in use.

DIFFERENT BUSINESS OF STOCK

In investigations of the type being presently considered, a primary aim must be to develop improvements in dust control with the minimum of variation and expensive experimentation on a plant scale. At the stage of development of the industry, causes of dust are very often not obvious. Examination of dust count records made available to us, combined with the tests we performed ourselves, provide numerous instances of variation, the cause of which is not apparent.

We undertook recently to measure the amount of dust in the roving of different manufacturers by suspending a measured quantity of roving in alcohol then making a dust count in the same manner as with air samples. The result would be expressed in millions of particles per yard of roving or per gram and would be of great advantage in relating differences in dustiness to the causative factor. Such a measurement technique would be essential in appraising the actual value of oil.

We do not have sufficient data on this effort on which to draw conclusions. There are difficulties to be overcome, and the solution depends more laboratory experimentation.

Another test method which would be of value is a standardized mechanical abuse of roving in a small vessel while sucking a stream of air with resulting dust as in the sampling for ordinary dust counts. A test of this kind, in conjunction with the dustiness index would be of value in evaluating the oiling practice, or it might take the place entirely of the procedure previously outlined.

OUTLINE OF RECOMMENDED PROCEDURES
FOR ASBESTOSIS INVESTIGATIONS

X. ENGINEERING

A. Dissemination of Existing Information

Provide factual information to Institute members with least possible delay; prepare bulletins with design sketches on some or all of several subjects listed below, to be distributed singly as ready. Additional field observations required in many cases.

1. Carding dust control: for various makes of machines
2. Dust in preparation, miscellaneous operations
3. Wet weaving equipment
4. Exhaust for dry weaving
5. Exhaust for winders, etc.
6. Design of duct work
7. Design of dust house

B. Development of New Techniques for Dust Control

In this category, the problems for which there are no present answers: like twisting, spinning, appraisal of operation, efficiency and cost of commercial dust collectors, etc.

II. MEDICAL

A. Institution of Periodic Medical Examinations

This is urgently recommended to all companies. Medical advice as to organizations procedures will be given by the Foundation upon request.

B. Organization of a Diagnostic Panel for Asbestosis

Arranged by the Foundation's Medical Director and organized to meet in Pittsburgh at suitable intervals for scientific review of diagnostic problems, reading of x-ray films, etc. Panel to consist of individual company physician or medical consultants together with other medical authorities to be determined.

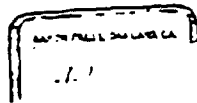
C. Statistical Study of Existing Medical Records

Designed to find answers to important questions concerning medical and physical nature of asbestosis; especially concerned with records of State of North Carolina, Metropolitan Life Insurance Company, etc.

III. PHYSICAL TESTING -- (Further Dust Studies)

Studies of physical and chemical characteristics of asbestos dust designed, in conjunction with medical studies, to provide more significant information concerning the nature of the dust exposure; to develop supplementary techniques for measuring remaining asbestosis hazard after reduction of dust to meet the present standard; to insure that effective control of dust has been attained.

This is a step by step program aimed at the elimination of asbestosis cases from the plants of Asbestos Textile Institute members.



November 6, 1963

Mr. Hugh M. Jackson
Industrial Health Prog
Jones-Manville Corpora
22 East 40th Street
New York 16, New York

PLAINTIFF'S
EXHIBIT

JM 306

Dear Hugh:

At the time of our meeting you and I discussed the status of the ATI study, and I promised to send you material which might be helpful. I realize that you will not be using it until January or February, but thought I would send you what we turned up immediately. We will continue to search and will send you anything more that we find before the time of your meeting.

In the American Journal of Medicine for November 1963, Laselbacher, Klaus, and Hardy have an article entitled, "Asbestosis and Bronchogenic Carcinoma". They report one case but review the literature and they state that "about 10,000 workers are probably engaged in potentially hazardous asbestos manufacturing operations in the United States. Most of the industry is engaged in asbestos textile manufacturing...." As early as 1936 Lanza estimated that about 12,000 individuals were employed in the chief asbestos plants in the United States, of whom 10,000 might be exposed. Minshaw and Garland in their book, "Diseases of the Chest", just off the press, state in part "exposure occurs in industrial plants where asbestos products are fabricated and among those who install insulating materials; the spinning and weaving of asbestos in combination with other textiles also results in exposure".

The Laselbacher article collects 20 cases including their own, of which 10 apparently occurred in this country. The occupations of these 10 cases were as follows: three weavers, two pipe insulators, one pipe coverer, one asbestos mill worker and sorter, and three not known. The occupations of the other 10 (foreign) cases were as follows: spinner; mattress and opening departments; packer-stores department; carder, spinner, and weaver; pre-spinning-assembly room; machine adjuster; bagger; pipe coverer; "asbestos worker"; and one who spent 18 years in an asbestos plant although the occupation is not given.

PLAINTIFF'S
EXHIBIT

16
5/4/92 JW

Mr. Hugh M. Jackson

December 6, 1956

One conclusion of this article is that asbestos is associated with bronchogenic carcinoma in 13.9% of the cases cited in the literature.

Doll, "Mortality from Lung Cancer in Asbestos Workers", British Journ. Ind. Med., April 1955, presents data on 18 cases of lung cancer diagnosed at autopsy among 105 consecutive autopsies of workers in a large asbestos works. Fifteen of the 18 had asbestosis and three did not. These individuals were not minors, of course, and their occupations included: nine weavers, three fiberizers, two disintegrators, one bag carrier, two spinners, and one maintenance man. In addition, we have found articles reporting at least seven other cases, mostly in the foreign literature and many of which do not specify the occupation.

L. W. Smith, "Pneumoconiosis and Lung Cancer", Compensation Medicine, November 1949, states that the American and English figures correspond so closely that it becomes more and more difficult to absolve asbestos as a potential factor in the development of pulmonary cancer. He quotes a recent editorial in the JAMA as follows: "As the available evidence shows that the occurrence of cancer of the lung is related to pulmonary asbestosis and is not merely a possible sequela of exposure to asbestos dust....", and states that claims for compensation will become of increasing frequency due to the general increase of carcinoma of the lung.

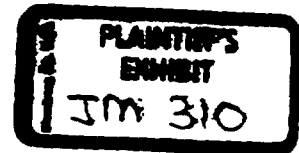
I hope that this material will be helpful to you in enlightening the representatives of the textile industry. We will continue to send "ammunition" as we uncover it.

With kindest personal regards.

Sincerely yours,

Daniel C. Braun, M.D.
Medical Director

DCB:II



August 23, 1957

Mr. Hugh M. Jackson, Manager
Industrial Health Program
Johns-Manville Corporation
22 East 40th Street
New York 16, New York

Dear Hugh:

Thank you for your letter of August 19 regarding the September meeting of the ATL.

As a matter of fact, having completed the literature search, it is apparent to us that the possibility of an association between lung cancer and asbestosis is much more likely to exist in asbestos factories than in mining operations. For example, of 99 cases which had been reported up to 1955, at least 80 appear to have occurred in asbestos workers other than miners. A number were women, and the occupations given were: weaver, carder, mattress maker, logger, bagger, pipe coverer, spinner, etc.

Two specific articles which mention the type of exposure and the job is that by Doll (1) and that by Isselbacher, et. al. (2). Seventeen cases studied by Gloyne and 31 reported by Merewether, as well as three mentioned by Harrison and one each by Curston and Cwen occurred in England. If my information is correct, there is no mining of asbestos in England, and these must all have been workers in textile or similar jobs. In this country, the ten cases reported were apparently all in textile workers. The first case, reported in 1935 by Lynch and Smith was a weaver in an asbestos factory for 21 years. Isselbacher's cases involved a contractor's helper engaged in cutting and sawing asbestos board and sorter in an asbestos mill.



Mr. Hugh M. Jackson

-2-

August 23, 1957

The QAMA study is in the final stages which are, of course, the slowest. All of the statistical analysis has been completed, and the report is 99% written. What remains is mainly minor revisions, typing the manuscript and proofing. It should go to the print shop by the end of this month.

I hope this supplies you with what you need for the meeting. If there is anything further, please let me know and I will try to get it to you in time.

Sincerely yours,

Daniel C. Braun, M.D.
Medical Director

DCB:la

Enclosure

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