

1920s Alcoa Member of National Safety Council

9 Q Okay. Let me represent to you, sir,
10 that Alcoa has answered and in sworn answers to
11 interrogatories that it was a member of the National
12 Safety Council going all the way back to the 1920's.

13 Would that surprise you?

14 A No, not at all.

15 MR. WATERS: I hand that back to you all.

16 Q Let me show you, sir, the National Safety
17 News, Volume 32, No. 3, September 1935, which is a
18 journal or a trade journal, if you will, that was
19 distributed to members of the National Safety Council.
20 And in particular I want to show you an article
21 contained in that particular issue titled, "No Halfway
22 Measures in Dust Control."

23 Do you see that?

24 A Yes.

Asbestosis since 1920s - p. 66

23 Q Now, in your training and when you first
24 arrived at Alcoa, did you learn that this
25 relationship, the fact that asbestos could causes
1 this disease, had been known since the 1920's?
2 A "This disease" being asbestosis?
3 Q Yes, sir.
4 A Correct.

Thomas Bonney testimony

1930 Alcoa in asbestos business

Aluminum Company of America

New Kensington, Pa.
December 20, 1930.

Capt. Henry Williams, U.S.N.
United States Navy Department
Bureau of Construction & Repair
Washington, D. C.

“Cellular asbestos aluminum foil insulation.”

Re: Cellular Asbestos Aluminum Foil Insulation

Dear Capt. Williams:

Please refer to your telegram 5518 of December 19th.

We have requested Mr. W. L. Steffens of The Philip Carey Company to communicate direct with the Bureau of Construction and Repair regarding matters of price, shipment, speed of delivery, etc. He has also agreed to furnish the two panels with flat asbestos on the outside replacing foil, which he will ship direct to the Brooklyn Navy Yard.

We were unable to ascertain the European method of protecting the foil against salt air corrosion but in past experimental work 5 protective coatings were developed which are extremely resistant to salt water and acetic acid. These coatings have been applied to foil and made up into insulating panels (16" x 36") with 4 layers of corrugated asbestos paper and 5 layers of foil. The numbers 1 to 5 on the panels designate the different types of protective coatings. These panels are being forwarded today to the Brooklyn Navy yard, by parcel post, marked for the attention of Mr. John Lind.

1934 Alcoa Dusty Jobs No Protection

Re: Dusty Work Conditions (confidential)

MR. J. M. VANE
BADM WORKS

July 15, 1934.
MR. M. M. ANDERSON
PITTSBURGH OFFICE

RE: DUSTY WORKING CONDITIONS

(CONFIDENTIAL)

Your letter of June 14, 1934 relative to the above was referred to the writer for attention. I have accordingly made a survey of the Badm plant and in collaboration with Mr. L. G. Daniel have arrived at the following conclusions.

CARBON PLANT

The majority of materials used in the process of manufacturing carbon are of necessity dry and make for a rather bad dust condition.

Petroleum Coke: This coke is received in hopper bottom cars and at present, due to reduced operations, is for the most part unloaded directly into a four-roll crusher. There is some dust from crushing density of same depending on dryness of coke. One man is employed approximately twelve hours per week. The installation of exhaustor or providing operator with respirator would improve this condition. We have had no complaints and no protection is used at present.

In full time operation the coke is unloaded into outside storage and operators exposure is increased proportionately.

The crushed coke is carried by conveyors to storage, where there is possibly more dust encountered than in crushing. However, the crane man is the only one exposed - from one to three hours per day. While we have not had any complaints from this source, our suggestion would be to provide crane man with respirator rather than the installation of dust collector.

The coke is then passed thru the calciner and

BDN 032151

FOX 042797

- There is dust from crushing...No protection is used at present. (p.1)
- This operation is very dusty...do not use any protection at this time. (p.2)
- This operation is very dusty...No protection is being used at present. (p.2)
- This being the dustiest operation we have....we do not use any protection. (p.3)
- This process is very dusty....No protection is used. (p.6)

1935 Alcoa founding member of IHF

MELLON INSTITUTE OF INDUSTRIAL RESEARCH
UNIVERSITY OF PITTSBURGH

Pittsburgh, Pa.

January 21, 1935.

Enclosure
(4)
Page 1

Mr. Roger A. Hitchins, President,
American Refractories Institute,
No. 1608 Walnut Street,
Philadelphia, Pa.

My dear Mr. Hitchins:

In accordance with your request as Chairman of the Organization Committee which was formed at the conference on dust problems held in Pittsburgh on January 16, we are giving you our ideas regarding the important problems involved and the type of organization that should be established. I am enclosing a plan for the study of dust problems and the organization chart.

If this work were to be centralized in Mellon Institute, it could be carried out as a part of the research. The director appointed to handle the investigation would also be the head of the institution organization which the industries would set up. In this way, the work could be carried out in a most confidential manner as to who was supporting the research and no one would know what industries or individuals were contributing to the fund. This would enable the organization to get soundly established, so that if later on it was desired to come out as an independent organization, it could do so.

Hoping that this gives you the information which you wish, I am

Sincerely yours,

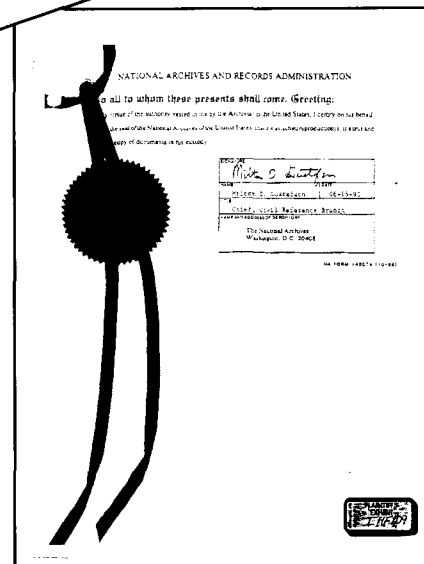
(signed) E. R. Veidlein

Director

ERV-W
enclosures

COPY

“...the work could be carried out in a most confidential manner as to who was supporting the research and no one would know what industries or individuals were contributing to the fund.”



1935 Alcoa at IHF Founding

DR. ARMSTRONG
THIRD VICE PRESIDENT

With reference to our recent conversation, I will endeavor to summarize the present status of the dust question in industry and our relation to it.

Viewed broadly, the problem of dust in industry is the problem of tuberculosis in industry. Conversely, it may be stated that the problem of tuberculosis in this country today is an industrial one. It is true that the death rate from tuberculosis in general has been steadily falling for a number of years. It is also true that the vital statistics in this country and abroad show definitely an inordinate amount of tuberculosis in what might be summarized as the dusty trades.

The specific action of silica dust is well known as is the fact that those exposed to silica dust have an extremely high tuberculosis death rate. In the last few years, there has been an extraordinary number of large mines brought by employees' demand, employers on the basis of exposure to silica dust so that at the present time it is estimated that these dangerous mines are well in excess of \$100,000,000. Now there is a very marked tendency of employers who are exposed to dust other than silica dust to bring damage suits against their employers, all along pulmonary injury and this state of affairs has produced a point where whole industries are in a turmoil, handicapped on the one hand by lack of definite knowledge of the action of these dusts on the lung and on the other by the inadequacy of the law to protect them.

The Metropolitan has had a co-operative agreement with the Public Health Service (formerly with the Bureau of Mines) to carry on dust studies. As the budget was originally set up for the Picher Clinic, the mine operators (Group policyholders) contributed \$16,000 a year, the Government \$9,000 a year and the Metropolitan \$5,000 a year. Later when the Picher Clinic was turned over to the operators, our relationship with the Public Health Service continued both we and the Public Health Service contribute \$6,000 a year for co-operative dust studies.

We have also contributed \$5,000 a year for several years to the Saragat Laboratory for the study of tuberculosis for studies on the pathologic effects of dusts. Last year, this office was instrumental in getting both the Association of Stock Casualty Companies and the Association of Mutual Casualty Companies each to contribute \$5,000 a year.

The object of these studies, particularly at Saragat, has been to increase our knowledge of the action of silica dust in the body, its relation to tuberculosis, and the determining of methods of prevention and control of the silica dust hazard. With respect to the Public Health Service, we have been more concerned with formulating accurate and speedy methods of determining whether given dust is harmful and as a matter of fact, such a technique has been

Anderson, M. M.,
Aluminum Company of America,
Culpeper Building,
Pittsburgh, Pa.

Fratt, Dr. F. C.,
Kodak Research Laboratory,
Aluminum Company of America,
New Kensington, Pa.

McCounoughy, Dr. J. B.,
Aluminum Company of America,
New Kensington, Pa.

1935 Alcoa IHF Meeting Roster

Representatives at Sillsdale Hotel

Aigeltinger, Arthur,
Southern Wheel Company,
230 Park Avenue,
New York, N. Y.

Barrett, L. P.,
Jones & Laughlin Steel Company,
201 J. & C. Building,
Pittsburgh, Pa.

Anderson, M. M.,
Aluminum Company of
Gulf Building,
Pittsburgh, Pa.

Anderson, M. M.,
Aluminum Company of America,
Gulf Building,
Pittsburgh, Pa.

Atwood, F. H.,
Harrison-Walker Refractories Co.,
Farmers Bank Building,
Pittsburgh, Pa.

Avey, Dan M.,
(American Foundrymen's Assoc.)
Ponton Publishing Company,
Cleveland, Ohio.

Ayers, E. N., President,
Ayers Mineral Company,
Zanesville, Ohio.

Baker, E. O., Gen. Supt.,
Penna. Glass Sand Corporation,
Huntingdon, Pa.

Barnum, W. J., Claims Attorney,
Youngstown Sheet & Tube Co.,
Youngstown, Ohio.

Burg, Dr.
(United &
858 Lock
N.S., Pitt

Buyer, R.
Central T
Ambridge,

Bidwell, A.
Abingdon
Abingdon,

Blank, E.
Jones & L
Sill House
Pittsburgh

Dieners, H. M. 100
2000 Grant
Pittsburgh

Dole, R.
Engineer
Pittsburgh
Grant Bldg
Pittsburgh

McAra, D. C., Works Mgr.,
Allis-Chalmers Manufacturing Co.,
N.S., Pittsburgh, Pa.

McCounoughy, Dr. J. B.,
Aluminum Company of America,
New Kensington, Pa.

McCounoughy, Dr. J. B.,
Aluminum Company of America,
New Kensington, Pa.

MacLachlan, Dr. W. W. G.,
Medical Arts Building,
Pittsburgh, Pa.

Mann, J. M., Vice President,
Consolidated Feldspar Company,
East Liverpool, Ohio.

Marshall, J. C.,
Union Carbide Company,
Niagara Falls, N. Y.

Mather, S. L., Vice President,
Cleveland Cliffs Iron Company,
Union Trust Building,
Cleveland, Ohio.

Matthews, T. C.,
Pennsylvania Pulverizing Company,
Lewistown, Pa.

McKinney, Dr. Mort,
Merry Hospital,
Pittsburgh, Pa.

Meiter, Dr. E. G., Director,
Industrial Hygiene Laboratory,
Employers Mutual Liability Insurance
Company of Wisconsin,
800 Empire Building,
Milwaukee, Wis.

Meller, H. B., Chief,
Bureau of Smoke Regulation,
Department of Public Health,
Pittsburgh, Pa.

McKee, F. G.,
Owens-Illinois Glass Company,
Toledo, Ohio.

Murphy, Walter B.,
Director of Plant Personnel,
Atlantic Refining Company,
3144 Pennsylvania Avenue,
Pittsburgh, Pa.

University Hospital,
Philadelphia, Pa.

Peters, Dr. S. E.,
(Mine Doctor, Fgh. Steel)
Youngstown, Pa.

Pierce, R. L.,
The M. A. Hanna Company,
Cleveland, Ohio.

Pierce, R. M.,
Mine Safety Appliances Company,
Braddock, Thomas & Meade Streets,
Pittsburgh, Pa.

Pitt, William J.,
DeVilbiss Company,
Toledo, Ohio.

Polster, R. G.,
Vice Pres. in Charge of Operations,
Allan Wood Steel Company,
Carnegie, Pa.

Poth, J. J., Jr.,
American Radiator Company,
40 West 40th Street,
New York, N. Y.

Powell, A. R.,
Hoppers Research Corporation,
Hoppers Building,
Pittsburgh, Pa.

Davidson, E. K.,
J. K. Davidson & Bro.,
44nd & Davison Streets,
Pittsburgh, Pa.

Dickey, C. W., Manager,
Compensation Division, Service Dept.,
E. I. du Pont de Nemours & Co., Inc.,
Wilmington, Del.

Dodge, J. S., Insurance Manager,
Pittsburgh White Glass Company,
Pa.

Kille, E. A.,
Director of Safety & Welfare,
Whodling Steel Corporation,
Wheeling, W. Va.

Kugel, Dr. I. C.,
Welfare Director,
The Corrigan, McKinney Steel Co.,
Cleveland, Ohio.

Fisher, H. T.,
Youngstown Sheet & Tube Company,
Youngstown, Ohio.

Flint, F. C.,

Frery, Dr. F. C.,
Research Laboratory,
Aluminum Company of America,
New Kensington, Pa.

Philip,
of Public Health,
Street,

Feldspar Company,
Pa., Ohio.

Sherr & Company,
Ind.

St. T.,
Lifes Iron Company,
Building,
Ind.

St. Company,
Ind.

Frery, Dr. F. C.,
Research Laboratory,
Aluminum Company of America,
New Kensington, Pa.

Furston, S. K.,
Attagulphus Clay Company,
260 South Grand Street,
Philadelphia, Pa.

Gehrman, Dr. C. H.,
Medical Director, Service Dept.,
E. I. du Pont de Nemours & Co., Inc.,
Wilmington, Del.

Gentholt, A. J., Asst. Gen. Attorney,
Republic Steel Corporation,
Republic Building,
Youngstown, Ohio.

Gentel, A. M.,
Apprentice Clerk Company,
Pittsburgh, Pa.

1936 Saranac Secret

-2-

November 20, 1936

LeRoy U. Gardner, M. D., Director,
The Saranac Laboratory,
Saranac Lake, New York.

Dear Dr. Gardner:

- (4) Whether the fibrosis resulting from exposure to asbestos dust is occasioned by the silicon content of the asbestos or by its fibrous structure.
- (5) Whether the presence of "asbestos bodies" has any diagnostic significance.

It is also our understanding that these experiments will require approximately three years, which will mean that they will not be concluded until about the end of the year 1939; and that they will cost \$5,000 annually, or \$15,000 in all.

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 advisable that the results be made public, the manuscript of your report will be submitted to us for approval prior to publication.

"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."

that, among other questions which it is anticipated these experiments will answer, are the following:

- (1) What concentration of dust is necessary to produce the fibrosis of the lungs which is designated as asbestosis.
- (2) Whether exposure to asbestos dust will produce asbestosis without the existence of previous infection and whether the X-ray changes found in advanced human asbestosis can be reproduced in animals without infection.
- (3) Whether the fibrosis produced by asbestos is of the progressive type, that is, will the fibrosis increase (once it has started) after exposure to the dust has ceased.

I will advise you later of the names of the other contributing parties.

I shall appreciate your informing me at the earliest possible moment whether the arrangement as outlined herein meets with your approval.

Sincerely yours,

Vandiver Brown
Vandiver Brown
General Attorney

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1944 Alcoa IHF asbestos study

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INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

Industrial ventilation survey of the U. S. Alcoa Div. of
Raybestos-Manhattan, Inc., Monaca, Pa., March 14, 15, 16, 17, 1944.

ELECTRON MICROSCOPE EXAMINATION OF DUST

It was felt that an examination of the air-borne dust by the electron microscope would throw some additional light on the fundamental problem of asbestosis even though we draw no definite conclusions therefrom. One school of thought maintains that the pulmonary condition results from a mechanical action of asbestos fibers on lung tissue, yet the dust seen in

Through the courtesy of the research laboratories of the Aluminum Company of America, which is a member of Industrial Hygiene Foundation, electron microphotographs of air-borne dust have been obtained and are appended hereto. The dust was collected with the electric precipitator in

Two questions were propounded by us to the laboratory, as follows:

1. Are the cubical (non-fibrous) particles that are seen in the light microscope used for counting actually composed of unbroken bundles of fiber as in the parent rock? (Particles of this shape comprise over 85% of those seen and counted.)

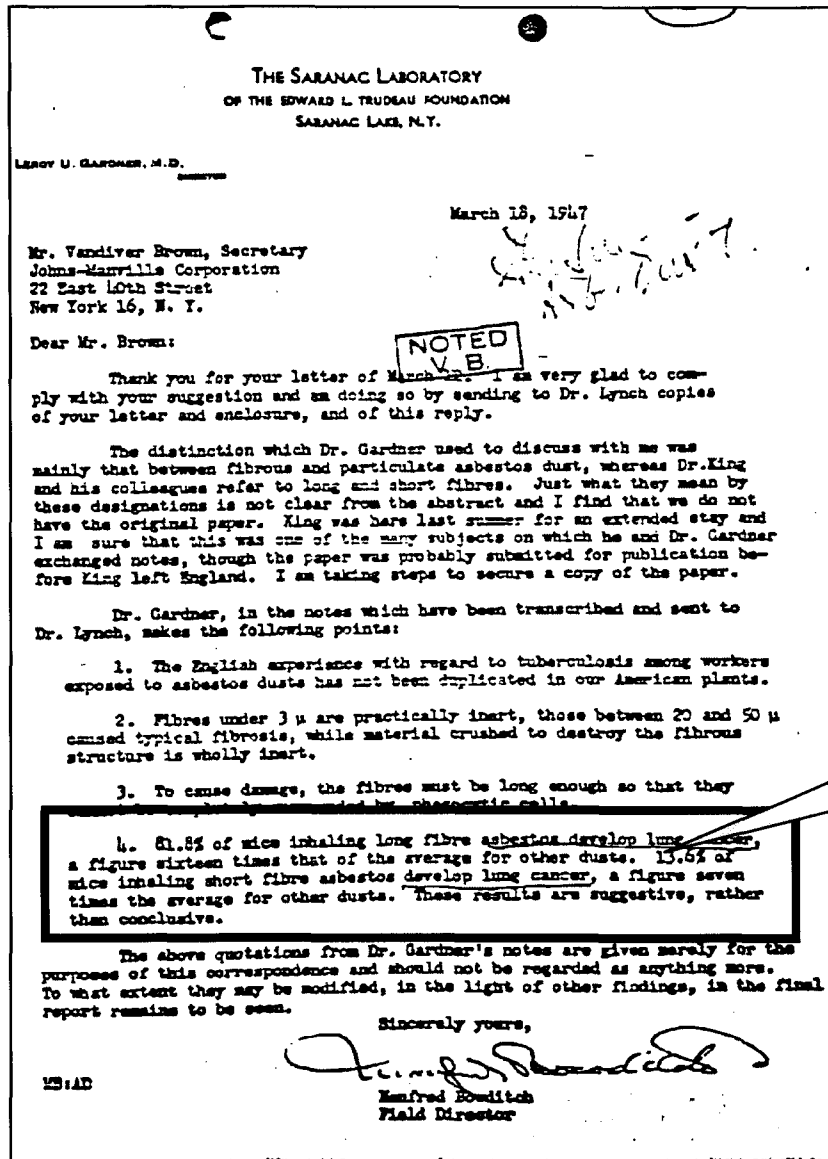
2. Is there a large quantity of fibers whose length is several microns but which are invisible by the light field set-up because their diameter is below the limit of resolution?

The report included the following:

MT-001300

“Through the courtesy of the research laboratories of the Aluminum Company of America, which is a member of the Industrial Hygiene Foundation, electron microphotographs of air-borne asbestos dust have been obtained and are appended hereto.

1947 Saranac Cancer



81% of mice inhaling long fibre asbestos develop lung cancer, a figure sixteen times that of the average for other dusts.

1948 Saranac Cancer Out

NEW YORK UNIVERSITY
COLLEGE OF MEDICINE
(UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE)
457 FIRST AVENUE, NEW YORK 16, N.Y.

DEPARTMENT OF PREVENTIVE MEDICINE
Institute of Industrial
Medicine

TELEPHONE: KEDOR 4-1111
NO 7-1800
December 14, 1948

Dr. Arthur Forwald
Saranac Laboratory
Saranac Lake, New York

Dear Arthur:

With respect to the asbestos report, Part I, September 30, 1948, a meeting of the representatives of the underwriting companies was held in New York. The report was favorably received and it was the general feeling that it was a most satisfactory and excellent job. It was the feeling of this group that all references to cancer or tumors should be omitted (Paragraph 75, Page 31 - the ductory paragraph under "CONCLUSIONS" - Paragraph 92, Page 39). This report would likewise call for the elimination of any tables relating to this subject matter.

The group felt that there ought to be more definite reference to the non-progressive character of the fibrosis produced by the asbestos.

If practicable, they would like to see a more definite statement with respect to the size of the fibres which do the damage. Inquiry was also made as to whether there was any relation to the number of fibres per cubic foot of air.

It was felt that the language in Conclusion D, that is, that a typical fibrosis could be produced by an atmospheric suspension of asbestos dust containing only "an extremely small proportion of long fibres" was too vague and should be defined more specifically.

In addition to the above comments there are other suggestions which relate more to form and emphasis:

To the extent permitted by the results of the experiments make the "CONCLUSIONS" and the introductory "ABSTRACT" more definite, and reduce the number of words whose meanings are not precise. For example, in the "ABSTRACT" the words "seems", "relatively", "apparently", "is believed" and in "CONCLUSIONS", page 40, the words "primarily", "extremely small proportion".

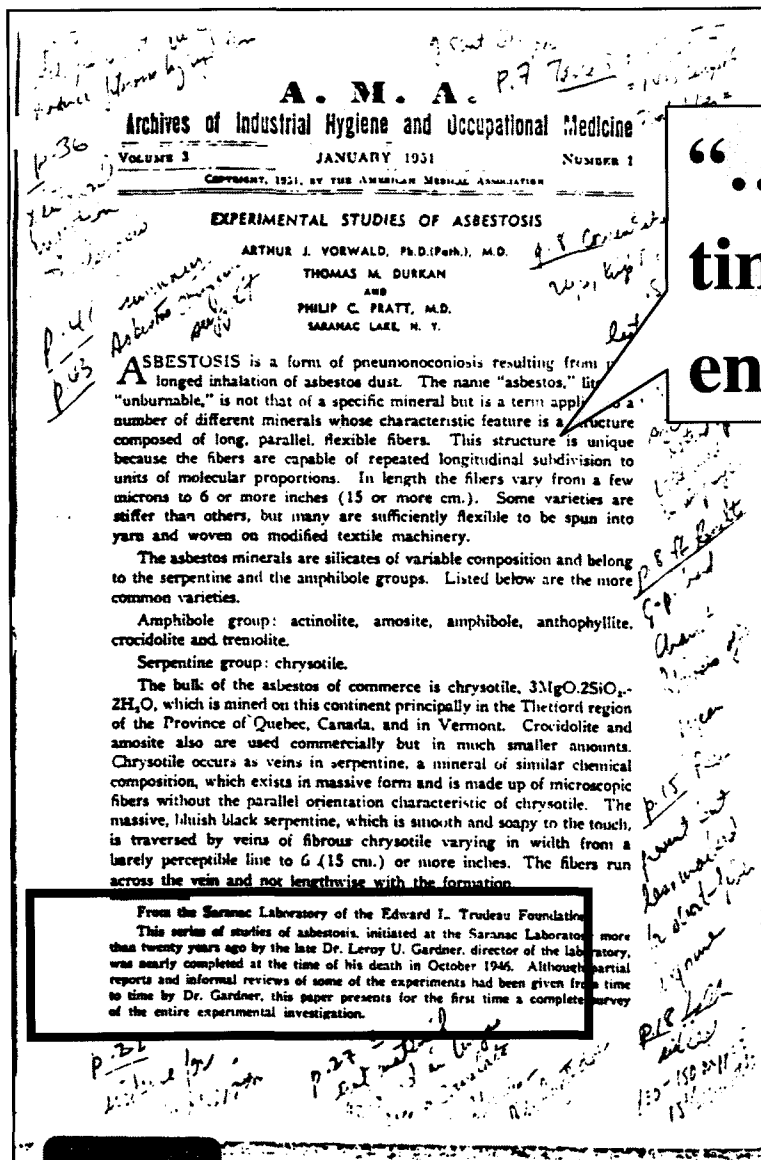
As far as practicable conform the "ABSTRACT" to "CONCLUSIONS". For example, "CONCLUSIONS" states that "short asbestos fibres do not produce fibrosis", whereas "ABSTRACT" says that "short fibres are relatively inert".



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...a meeting of the representatives of the...companies was held in New York... It was the feeling of this group that all references to tumors should be omitted...

1951 Saranac Published Version



“...this paper presents for the first time a complete survey of the entire experimental investigation.”

1947 IHF Asbestos Study

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

4400 Fifth Avenue
Pittsburgh 13, Pa.

REPORT OF
PRELIMINARY DUST INVESTIGATION
FOR
ASBESTOS TEXTILE INDUSTRIAL
JUNE, 1947

By

W.C.L. Henson
Head Engineer

Industrial

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

4400 Fifth Avenue
Pittsburgh 13, Pa.

W.C.L. Henson
Head Engineer

June 18, 1947

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1947 IHF Asbestos Study Alcoa Conx

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 posed the two following questions:

1947 IHF Asbestos Study

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.

1947 IHF Asbestos Study

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.

1955 Alcoa knows of asbestos cancer danger

Page 62

1 Q Then it talks about "A major impetus in
2 this renewed interest is the report by Doll showing an
3 increase of lung cancer in a group of asbestos textile
4 workers." Do you see that statement?

5 A Yes.

6 Q Do you recall, sir, that the Doll study was
7 published in 1955?

8 A Yes.

18 Q Do you recall, sir, that Alcoa received
19 that study at approximately the time it was published
20 in 1955?

21 A I can't say exact date, but I know we
22 learned of that study early on.

1955 Alcoa knows of asbestos cancer danger

3 Q In any event, sometime in that time frame
4 let's say the mid 1950's, Alcoa would have been aware
5 of the existence of this report concerning lung cancer
6 in asbestos workers?
7 A Yes. Certainly we in the health department
8 and industrial hygiene would be.

1957 IHF Confidential Version of Cancer Paper

Confidential

Restricted Copy...27

#3

CONFIDENTIAL

53.

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

4400 FIFTH AVENUE

PITTSBURGH 13, PA.

TABLE 18 - Part II

Statistical Analysis of the Causes of Death

Thetford Mines

Cause	Asbestosis	No Asbestosis	Total
-------	------------	---------------	-------

The number of lung cancer deaths combined with asbestosis is larger than would be expected in each cohort and in the combined cohorts. This difference is significant at the 95% level...

AN EPIDEMIOLOGICAL STUDY OF LUNG CANCER IN ASBESTOS MINERS

Report to

QUEBEC ASBESTOS MINING ASSOCIATION

Quebec, Canada

September, 1957

Cause	Total	Percentage
Lung Cancer	9	5.0
No Lung Cancer	172	95.0
Total	181	
Percentage	17.7	

Figures in parenthesis are the "expected"

Six deaths from unknown causes not included

The number of lung cancer deaths combined with asbestosis is larger than would be expected in each cohort and in the combined cohorts. This difference is significant at the 95% level using the chi-square test of significance. The importance of the under-reporting of asbestosis can be observed in Table 19.

1958 IHF Asbestos Study Published

An Epidemiological Study of Lung Cancer in Asbestos Miners

DANIEL C. BRAUN, M.D., and T. DAVID TRUEN, M.A., Pittsburgh

Ever since the pronounced increase in the incidence of lung cancer among males became apparent, there have been attempts to associate it with one or another of the various elements in the environment of man. The approach used by some workers has been to suspect one or several substances and then set about in an intensive search for lung cancer among persons who have had any exposure to those materials. In this connection, Smith¹² writes: "The tendency of authors reporting the coincidental occurrence of primary lung cancer with silicosis or with any other theoretical etiologic conditions, has been to emphasize the percentage relationship in extremely small series of cases, with control cases which are not in any way comparable."

It would seem inevitable that asbestos should come under scrutiny in this manner, because prolonged exposure to this material is known to cause a specific type of pneumoconiosis, and because persons who show this form of pneumoconiosis often come to autopsy and provide a ready source of material for study. It was in this way that reports of the simultaneous occurrence of lung cancer and asbestosis began to accumulate after the report of a case by Lynch and Smith¹³ in 1935. Within the next 10 years, about 15 additional cases were reported, and in 1954 Merewether¹⁴ reviewed all deaths from asbestosis recorded in England since March, 1924. Lung cancer occurred in 16% of these cases. Gloyne¹⁵

whose work is also frequently referred to as establishing a connection between asbestosis and cancer of the lung, reported in 1951 that cancer of the lung was present in 14.1% of asbestosis cases examined by him. In 1941, Nordmann and Sorge¹⁶ claimed to have produced lung cancer in mice which they exposed to asbestos dust.

Since 1951, additional cases of cancer of the lung, coexisting with asbestosis have been reported, and, according to Hueper¹⁷ about 100 such cases had been reported up to 1955. As a result, an association between the two diseases appears to have been accepted by many authors, and several writers were using the term "asbestosis cancer" of the lung. Werber¹⁸ in 1952, stated categorically that in 7% to 17% of cases of asbestosis, after a latent period of about 1½ to 20 years, carcinoma becomes established in the lung.

On the other hand, not all authors accepted this alleged association without reservation. Sampe¹⁹ in 1939 reported that he had discovered no cases of lung cancer among 620 cases of asbestosis which he had examined; and in 1942, Holleb and Angrist²⁰ expressed the opinion that the number of cases of asbestosis with lung cancer was too small for statistical evaluation. In 1947, Wegelius²¹ reported 126 radiologically diagnosed cases of asbestosis among 476 workers in Finland, and found no cases of lung cancer in this group. Goldblatt and Goldblatt in their section of Merewether's latest book,¹⁴ state: "But at no stage in all these impressive researches was any clue obtained which might have offered any support to the possibility that asbestos could act as a carcinogen. There

"...do not have a significantly higher death rate from cancer..."

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Braun—Truen

1960 Alcoa knows of asbestos meosthelioma danger

9 Q It goes on to state, again at page 11,
10 "Another investigation by Wagner, et al., showed a
11 significant increase in mesotheliomas in persons
12 exposed to crocidolite asbestos in the South African
13 Cape Blue mining area." Do you also recall that
14 Dr. Wagner's study in 1960 had identified
mesothelioma
15 as an asbestos cancer?
16 A I don't recall that specific one, but I am
17 sure that I was aware of it at the time.

**Alcoa admits knowing of mesothelioma in the late
1960s**

Page 206

1 A It may have been in the literature, and I
2 may have seen it at the time, but I certainly didn't
3 associate mesothelioma with asbestos until the late
4 '60's.

Thomas Bonney testimony

Alcoa knowledge of need to inform workers

24 **Q** Okay. Let's put it that way, the way you
25 worded it, if the material has an opportunity to cause

Page 75

1 cancer, you would agree that the employee should be
2 advised of that risk so that they can take
3 precautions, avoid creating or furthering that
4 opportunity?

5 **A** That's right. Yes.

6 **Q** Nothing different about that duty or
7 responsibility of a good corporate citizen in the
8 1950's as compared to the 1970's, is there?

9 **A** Yes. I think there was more communication
10 today than there was in the past.

Duty to inform workers 75

11 Q Okay. There may be more communication
12 today than there was in the past, but you will agree
13 with me, certainly, that workers in the 1950's who
14 faced a hazardous substance that might cause cancer,
15 that they deserved to be told about that, didn't they,
16 so that they could take precautions for their own
17 health and safety?

18 A They deserve -- if there is a risk to their
19 health, they deserve to be told that there is a risk
20 to their health.

Thomas Bonney testimony

1996 - Alcoa chief industrial hygienist sees his first Alcoa written asbestos program

Page 77

1 Q "Pursuant to this management plan, this
2 manual establishes a written Asbestos Management
3 Program." Did I read that correctly?

4 A Yes.

5 Q Are you aware or were you aware before
6 today, sir, that prior to August 1996 Alcoa Rockdale
7 did not have a written asbestos management program?
8 Were you aware of that fact?

9 A I don't know whether they did or didn't.
10 They may have had an informal one, but I am not
aware
11 of any written. This is the first time I have seen a
12 written asbestos program.

Alcoa Gets and reads IHF Abstracts

12 The IHF abstracts that we talked about
13 earlier?

14 A Yes.

15 Q Those were available when you arrived in
16 1948 and continued to be available when they were
17 published, as they came out?

18 A Yes. To the best of my knowledge we had
19 them throughout my working career.

20 Q A. J. C. A. I. " " " "

Alcoa gets and reads IHF Digest

Page 87

1 Q Were you a member of the Industrial Hygiene
2 Foundation?

3 A No.

4 Q Was Alcoa a member?

5 A Yes, they were associated with the IHF.

6 Q And you and Mr. Cralley would oversee from
7 time to time publications from the Industrial Hygiene
8 Foundation?

9 A Yes.

10 Q Including what are called the abstracts
11 where the Industrial Hygiene Foundation lists a
number

12 of significant abstracts concerning new articles in
13 the medical and scientific literature?

14 A Yes.

15 Q And the purpose of you and Mr. Cralley
16 reviewing those materials was so that you could keep
17 up to speed with new developments, possible hazards in
18 the workplace; correct, sir?

19 A That's right.

Alcoa knows that TLV was not for cancer

18 **Q** Do you recall, sir, that the threshold
19 limit values with respect to asbestos were established
20 not to address possibility or the probability of lung
21 cancer, but rather to address the potential for an
22 individual to develop asbestosis?

23 **A** Yes, I recall that was the reason.

20 **A** Yes.

21 **Q** But as we have already stated, the TLV, and
22 as you had indicated you knew beforehand, is that TLV
23 was not designed to addresses the possibility of
24 cancer; correct, sir?

25 **A** That is right.

1952 Alcoa aware of by danger to bystanders

25 Now, would you agree, sir, with the

Page 132

1 Department of Public Health in 1962, when they
2 express
3 concern about other workers, not necessarily workers
4 cutting the material, creating the dust, but other
5 workers who might be in the vicinity or inside the
6 building, actually, is that a concern that you at
7 Alcoa would have shared?

8 A This is standard industrial hygiene
9 practice.

10 Q And the reason -- am I correct, sir, that
11 the reason for that standard industrial hygiene
12 practice is so that bystanders who might be in the
13 vicinity of the cutting of asbestos materials, so that
14 they can avoid exposure?

15 A Yes.

16 Q And this piece of information is just as
17 valid in 1952 as it is in 1962, isn't it?

18 A Yes.

Thomas Bonney Testimony

1962 Asbestos use widespread

INTERNATIONAL PAPER CORPORATION May 4, 1962
FROM THOMAS B. BONNEY
PITTSBURGH OFFICE

To INDUSTRIAL HYGIENE
COMMITTEE CHAIRMAN

RE: INDUSTRIAL HYGIENE NEWSLETTER
SAWING MARINITE

“Re: Industrial Hygiene Newsletter
Sawing Marinite.”

In recent months several incidents have occurred that prompted us to take a closer look at the potential problems associated with the sawing of Marinite. In the past, because of erroneous information given us about the composition of this material, we may have advised you poorly about the proper handling of it. In order to correct this, especially in view of the widespread use of Marinite, we felt that this Newsletter would be timely and appropriate.

Marinite is an insulating refractory board manufactured by Johns-Manville. It consists of a mixture of asbestos fibers and diatomaceous earth bonded with an epoxy resin. In Alcoa it is widely used for headers in DC Casting Units and for trough linings. In order to be used for these applications, it is necessary that the Marinite first be sawed into appropriate sizes and shapes. Sawing generates a considerable amount of dust which is the main, if not the sole, cause of difficulty in handling this material. Were it not for the presence of the epoxy binder, proper ventilation would ensure a supply of keeping the sawdust time-weighted exposures below 1 mppcl, the threshold limit value for asbestos. However, the epoxy binder complicates the picture.

Although the surface of a cured epoxy resin is completely inert, this is not true of the interior. In fact, the interior contains a large amount of unreacted resin and asbestos. When sawed, these materials are released and sawing epoxy resin systems are likely to generate a significant amount of dust.

“In Alcoa it is widely used for headers in DC Casting Units and for trough linings.”

ARCH 18227

Bonney to Industrial Hygiene Committee Chairman, 5/2/62

ALC 19

30

1962 Alcoa aware of asbestos danger to bystanders

6 Q Then we have Alcoa 14, and this is when you
7 appear to get involved. Now, let's just stop there.
8 The documents we have looked at so far, that it
9 appears were circulated to you, am I correct,
10 Mr. Bonney, that as of that date, early 1962, you
11 would have been aware that there was at least a
12 potential hazard from sawing of the marinite asbestos
13 material to those who might be sawing it as well as
14 those those who might be in the vicinity?
15 A Yes.

Late 1960s Alcoa admits asbestos cancer connection

1 | didn't ever read the full article, Alcoa would have
2 | been aware that asbestos workers were prone to
3 | develop
4 | lung cancer which could cause death?
5 | A Well, you got to look at this in the
6 | context of time. This was a single study, and it was
7 | not generally accepted until the further studies came
8 | along in the late '60's that confirmed that. Any
9 | scientific study, you come up with a hypothesis, which
10 | is what Doll has here. And you required the rest of
11 | the scientific community to confirm that, well, that
12 | confirmation didn't come until much later.

1965-70 Alcoa Cancer knowledge

4 Q Will you agree with me, sir, that the
5 nature of the risk, the significance of the hazard, is
6 tremendously enhanced once you recognize that it also
7 causes cancer?

8 A Oh, yes, and this is where we were in that
9 learning phase, between let's say '65 and '70, we were
10 reading these.

Thomas Bonney testimony

Alcoa response to knowledge of choking dust cloud in factory

Whatley vs. Alcoa

Thomas B. Bonney; February 25, 1

Page 151

1 insulation on steam piping systems, for example, that
2 it would be necessary from time to time to cut or saw
3 asbestos-containing products so that they could be
4 fitted properly?
5 A Yes. I was aware that this was the case.
6 Q Am I correct that you do not have any
7 recollection of Alcoa ever doing dust monitoring or
8 dust studies prior to the 1970's in order to determine
9 what levels of asbestos dust were created when that
10 cutting and sawing took place?
11 A That is correct.
12 Q Now, do you recall, sir, that in 1964 there
13 was an additional flurry of activity and concern about
14 the cutting and sawing of marinite material?
15 A Certainly was.
16 Q There was, you recall that one?
17 A Yes.
18 Q Is it fair to say, sir, that before the
19 commencement of your deposition today you had
20 recalled
21 the 1964 incident but did not recall the 1962 incident
22 that we discovered?
23 A Yes.
24 Q All right. Fair enough.
25 For the record, the last letter we
discussed from -- memo from Mr. Cralley was Alcoa 17.

Page 152

1 Alcoa 18 is a memorandum from yourself to Mr.
2 Thomas
3 McClintock at Vernon, March 3, 1964. Do you see that?
4 A Yes.
5 (Thereupon, Alcoa Deposition Exhibit No. 18
6 was marked for identification.)
7 Q And it discusses marinite and says, "Since
8 you have had similar problems in the past, you will
9 probably be interested in the attached
10 correspondence." Do you see that?
11 A Yes.
12 Q There are a couple of attachments,
13 including one that's from Mr. Farrah at Industrial
14 Hygiene Laboratory in New Kensington?
15 A Yes.
16 Q And to somebody's name I can't read,
17 unfortunately, but it appears that you would have
18 reviewed this document; is that correct?
19 A Yes.
20 Q Mr. Speer.
21 Let me show you a March 9th attachment to
22 Dr. Farrah from Mr. Speer at New Kensington
23 regarding
24 the marinite material. Do you see that?
25 A Right.
26 Q "Several of the men in the shop have

Page 153

1 the captioned marinite they experience some
2 discomfort
3 on account of clogging of the sinus and difficulty in
4 breathing." Do you see that?
5 A Yes.
6 Q What was the date on that?
7 Q March 9, 1964. A couple weeks before your
8 memo attaching it.
9 Second page Mr. Speer says, "Will you
10 please arrange to have your division make this check
11 for us? We will arrange to give you advanced notice
12 when we will be machining marinite on the lathe, as w
13 consider this the most objectionable operation. If
14 there is additional information needed or if we can
15 help in any way, please let us know, Mr. Speer,"
16 signed by Mr. Speer.
17 Now, did you know Mr. Speer?
18 A Yes, I know him. Not well, but the name
19 I know very well. I apologize.
20 Q Do you recall or do you know why they were
21 machining marinite on a lathe, cutting it on a lathe
22 at the laboratory; any recollection of that?
23 A Oh, yes. The laboratory had miniature
24 operations that mimicked what they did at the plants.
25 Q I take it from your earlier discussion that
you would disagree with Mr. Speer when he says that

"Several of the men in the Shop have expressed to the foreman that during the machining of ... marinite they experience some discomfort on account of clogging of the sinus and difficulty in breathing."

Page 154

1 this cutting of the marinite is an objectionable
2 operation?
3 MR. WALKER: Mr. Bonney, would it be
4 helpful for you to read the entire letter?
5 THE WITNESS: No, I don't think so. At
6 least right now.
7 A Yes, I would say that it was objectionable
8 on the basis of what is on the front page there. The
9 men were objecting to it. It irritated them, so by
10 that reason alone, it was objectionable.
11 Q Did you consider it a matter of some
12 concern in that time frame?
13 A Not of any significant health concern, no.
14 Q Now, on the next page, memo, Alcoa 16, from
15 yourself to the industrial hygiene committee chairman
16 regarding sawing of marinite. Do you see that?
17 A Yes.
18 Q Do you recall that there was some potential
19 concern that there might be epoxy resins involved with
20 this material?
21 A Very clearly that was our initial concern.
22 We felt that was of more concern than asbestos.
23 Q Well, it's interesting you say that, but in
24 the 1962 correspondence we just reviewed, there
25 wasn't
any reference to those things, was there?

Q. "Did you consider it a matter of some concern in that time frame?"
A. Not of any significant health concern, no."

Alcoa - no need to measure to determine hazard -210

Page 210

1 Q If, in fact, sir, precautions were not
2 taken and marinite continued to be cut and sawed at
3 various Alcoa facilities without protective
4 mechanisms, that's a circumstance that you would be
5 critical of; is that a fair statement?

6 A Not necessarily. I think one would have to
7 look at the specific operation. Sawing marinite at
8 one location may not be the same as another operation.

9 Q Okay. So from your perspective, if workers
10 are being exposed to marinite dust, let's say, in
11 1966, '67, '68, without any protection, without any
12 instruction on the hazards, that's just fine?

13 A Again, it would be dependent upon the
14 degree of the exposure, the magnitude of the exposure.

15 Q So in your opinion, 1964 to 1969, let's
16 say, workers can be exposed to asbestos dust without
17 concern unless the level is perceived as being
18 sufficiently high to trigger a concern?

19 A Yes, that's true of asbestos and anything.
20 There has to be a sufficient dose before we are
21 concerned.

22 Q Okay. In order to establish what that dose
23 is, you will agree with me that it's necessary to do
24 industrial hygiene monitoring; correct, sir?

25 A Monitoring, whatever that might consist of.

Page 211

1 Q Okay. In terms of determining how much
2 dust is actually in the air?

3 A Measurement, or for certain hazards, you
4 can do it visually.

“Q. In order to establish what that dose is you will agree with me that it's necessary to do industrial hygiene monitoring, correct sir?

A. Monitoring, whatever that might consist of.

Q. In terms of determining how much dust is actually in the air?

A. Measurement, or for certain hazards, you can do it visually.”

Should inform and protect workers exposed to visible dust

1 concern on your part?

2 A Yes, it would.

3 Q Those conditions would be in your mind
4 either unsafe or potentially hazardous; fair enough?

5 A Fair enough.

6 Q And you would anticipate that after 1965,
7 workers at various Alcoa facilities would have been
8 and should have been instructed to take precautions
9 and avoid exposures to visible asbestos dust in the
10 work place?

11 A Yes. I think we are on record for that.

Absence of precautions is improper

8 non-response
9 Q Whether or not you agree with the statement
10 in the letter, sir, you will agree with me that if the
11 statement is correct, as indicated in this Alcoa
12 document, that that would indicate a violation of
13 company practices and policies that should have been
14 in place by 1965, because of your concern with
15 exposure to visible dust?

16 A If no precautions were taken, we would say,
17 yes, that was in conflict with our position.

Q At least with respect to the Port

1961 In Alcoa's Mailbox

Cancer/Asbestos Cause Accepted

Modern Occupational Medicine

Edited by
A. J. FLEMING, M.D.
Medical Director, E. I. du Pont de Nemours & Co.
AND
C. A. D'ALONZO, M.D.
Assistant Medical Director, Medical Division
Associates
J. A. ZAPATA, M.D.
Director, Haskell Laboratory for the Study of Lung Disease
E. I. du Pont de Nemours & Co.

66 Illustrations
Second Edition—Third Printing



Lea & Febiger

PHILADELPHIA

1960

Occupational Chest Diseases 467

extent of the latter damage is often underestimated until tomography or angiography are resorted to.

Massive fibrosis tends to develop mainly in the parts of the lung which are in constant agitation, such as the lung apex, the supradiaphragmatic zone of the lower lobes, and the subpleural zone of the lower lobes.

“Pulmonary carcinoma has been observed with such high frequency in employees of the asbestos industry that a causal relationship has been accepted by most authorities. Indeed, pulmonary carcinoma is compensable as an occupational disease in England, Germany and South Africa...Pleural mesothelioma is also quite prevalent...”

Pulmonary carcinoma may occur in asbestos subjects more frequently than it is in the general population. The fibrous barriers caused by the asbestososis.

Pulmonary carcinoma has been observed with such high frequency in employees of the asbestos industry that a causal relationship has been accepted by most authorities. Indeed, pulmonary carcinoma is compensable as an occupational disease in England, Germany and South Africa. Most of the carcinomata are squamous cell epitheliomata. Pleural mesothelioma is also quite prevalent, especially in crocidolite industries.

A neoplasm may spread diffusely throughout the lung in spite of extensive interstitial fibrosis. This does not readily occur in silicosis.

1965 - IHF Digest Newhouse and Thompson

Industrial Hygiene Digest

January, 1966

bone marrow had been adequately excluded. The findings correlate with the histopathological changes which are reported to occur in the lungs of silicotic patients; they indicate a high degree of stimulation of the reticulo-endothelial system. If these changes are considered together with the industrial history and clinical and laboratory data, they may provide a clue to the diagnosis of silicosis and help in the differential diagnosis from other diffuse pulmonary lesions.

71 **Mesothelioma of Pleura and Peritoneum Following Exposure to Asbestos in the London Area.** Muriel L. Newhouse and Hilda Thompson. *Brit. J. Ind. Med.* 22, 261-269 (1965).

A series of 69 patients from the London Hospital with a diagnosis of mesothelioma confirmed by necropsy or biopsy has been studied for possible exposure to asbestos. The series consisted of 41 men and 28 women; 27 of the patients had peritoneal and 56 pleural tumors. The earliest death recorded was in 1917, but only ten of the series died before 1950 and 40 (48%) between 1960 and 1964. In 76 of the series full occupational and residential histories were obtained. Forty (52.6%) gave a history of occupational or domestic (living in the same house as an asbestos worker) exposure to asbestos compared with nine (11.8%) out of 76 patients from the same hospital suffering from other diseases ($P < 0.001$). None of the 17 suspected cases of mesothelioma, rejected on pathological grounds, was found to have had any exposure to asbestos. There was also evidence that neighborhood exposures may be important. Among those with no evidence of occupational or domestic exposures, 30.6% of the mesothelioma patients and 7.6% of the in-patients with other diseases lived within half a mile of an asbestos factory ($P < 0.01$). Out of the 31 patients with occupational exposures only ten were in jobs scheduled under the Asbestos Regulations of 1931. The interval between the first exposure and the development of the terminal illness of mesothelioma ranged between 16 and 55 years. In 47 patients in the mesothelioma series, lung tissue or sputum was available for examination. In 30 (62.5%) either asbestosis or asbestos bodies were present.

72 **Diffuse Mesothelioma of the Pleura and Asbestos.** P. C. Elmes, W. T. E. McColl, and O. L. Wade. *Brit. Med. J.* 1, 350 (Feb. 6, 1955).

Mesothelioma of the pleura is an uncommon tumor and, in recent years, studies have indicated a relationship of this tumor to exposure to asbestos. The occupational histories of 42 patients with diagnosed mesothelioma were contrasted to 42 control patients with regard to their exposure to asbestos. Thirty-two of the 42 patients with diagnosed mesothelioma had a history of exposure to asbestos which was considered to be heavy exposure in eight and a light exposure in 24. In the 42 control patients there was a history of exposure in only nine, and in two of these it was considered heavy. The difference between these two groups was highly significant. In another study it was shown that the finding of asbestos bodies in lung tissue was significantly related to the history of industrial exposure to asbestos. When the lungs of 24 patients with diagnosed mesothelioma were examined for the presence of asbestos bodies, 21 of the 24 patients showed this finding. In contrast, asbestos bodies were found in only six of the 24 controls, a highly significant difference. The occupational histories of these patients revealed that the interval between the first exposure to asbestos and the diagnosis of mesothelioma was often long and in some cases exceeded 40 years. Exposure to asbestos, even though many years before and transient,

73 **Relation Between Exposure to Asbestos and Mesothelioma.** I. J. Selikoff, J. Churg, and E. C. Hammond. *New Engl. J. Med.* 272, 560 (March 18, 1965).

Ten deaths due to mesothelioma were found in a study of 307 consecutive deaths among asbestos-insulation workers in New York and New Jersey. There were four pleural mesotheliomas (1.3%) and six peritoneal mesotheliomas (1.9%). This is probably an underestimate of the true incidence, since, of the remaining 297 deaths, only 110 cases were autopsied. These figures can be contrasted to a prospective study of the American Cancer Society in which only three deaths due to mesothelioma were noted in 31,652 deaths of patients between 30 and 89 years of age. In an autopsy series of 2,500 deaths, asbestosis was found in 26. There were four mesotheliomas of the pleura, three mesotheliomas of the peritoneum, and seven bronchogenic carcinomas recorded in the patients with asbestosis. No mesotheliomas were found in the absence of asbestosis. Cases of diagnosed mesothelioma from the files of the Armed Forces Institute of Pathology were reviewed and in all cases where lung tissue was available it was examined for asbestos fibers. Asbestos fibers were found in five of the 19 pleural mesotheliomas and in 17 of the 26 peritoneal mesotheli-

“Mesothelioma of the Pleura and Peritoneum Following Exposure to Asbestos in the London Area.”

“Diffuse Mesothelioma of the Pleura and asbestos.”

“Relation Between Exposure to Asbestos and Mesothelioma.”

bone marrow had been adequately excluded. The findings correlate with the histopathological changes which are reported to occur in the lungs of silicotic patients; they indicate a high degree of stimulation of the reticulo-endothelial system. If these changes are considered together with the industrial history and clinical and laboratory data, they may provide a clue to the diagnosis of silicosis and help in the differential diagnosis from other diffuse pulmonary lesions.

71 **Mesothelioma of Pleura and Peritoneum Following Exposure to Asbestos in the London Area.**
Muriel L. Newhouse and Hilda Thompson. Brit. J. Ind. Med. 22, 261-269 (Oct. 1965).

A series of 83 patients from the London Hospital with a diagnosis of mesothelioma confirming mesothelioma has been studied for possible exposure to asbestos. The series consisted of 41 men and 42 women; 27 of the patients had peritoneal and 56 pleural tumors. The first death recorded was in 1917, but only ten of the series died before 1950 and 40 (48%) between 1960 and 1964. In 76 of the series full occupational and residential histories were obtained. Forty (52.6%) gave a history of occupational or domestic (living in the same house as an asbestos worker) exposure to asbestos compared with nine (11.8%) out of 76 patients from the same hospital.

Of the 40 patients with a history of exposure to asbestos, 31 were accepted for the study. The remaining nine, rejected on pathological grounds, was found to have had any exposure to asbestos. There was also evidence that neighborhood exposures may be important. Among those with no evidence of occupational or domestic exposures, 30.6% of the mesothelioma patients and 7.6% of the in-patients with other diseases lived within half a mile of an asbestos factory ($P < 0.01$). Out of the 31 patients with occupational exposures only ten were in jobs scheduled under the Asbestos Regulations of 1931. The interval between the first exposure and the development of the terminal illness of mesothelioma ranged between 16 and 55 years. In 47 patients in the mesothelioma series, lung tissue or sputum was available for examination. In 30 (62.5%) either asbestosis or asbestos bodies were present.

-- Auth. abstr.

Forty (52.6%) gave a history of occupational or domestic (living in the same house as an asbestos worker) exposure to asbestos.



Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL
ENGINEERING
CHEMICAL
TOXICOLOGICAL
LEGAL

JANUARY, 1966
(Vol. 30, No. 1)

INDUSTRIAL HYGIENE FOUNDATION
MELSON INSTITUTE
4400 FIFTH AVENUE • PITTSBURGH, PA. 15213

Elmes, W. T. E. McCaughey, and

recent years, studies have indicated occupational histories of 42 patients with regard to their exposure to asbestos. Mesothelioma had a history of exposure to asbestos in 24. In the nine, and in two of these it was considered highly significant. In another study the exposure was significantly related to the history of 24 patients with diagnosed mesothelioma. 21 of the 24 patients showed this history. Of the 24 controls, a highly significant difference was revealed that the interval between the first exposure to asbestos and the development of the terminal illness was often long and in some cases many years before and transient, is an occupational exposure to asbestos in the pleura. -- J. Occ. Med. Abstr.

I. J. Selikoff, J. Churg, and
J. Selikoff (1965).

Of 27 consecutive deaths among asbestos workers, there were four pleural mesotheliomas (1.3%) which may be an underestimate of the true incidence, since many of the workers were not autopsied. These figures can be compared with the incidence in which only three deaths due to mesothelioma occurred between 30 and 89 years of age. In an analysis of 100 cases of mesothelioma, there were four mesotheliomas of the pleura and even bronchogenic carcinomas recorded in the absence of asbestosis. Cases from the Institute of Pathology were reviewed and examined for asbestos fibers. Asbestos fibers were found in 17 of the 26 peritoneal mesotheliomas.

EXHIBIT

ALC-453

1966 - IHF Digest NYAS to Alcoa's Mailbox

Industrial Hygiene Digest

(with penalties for entry refusal),
local clean water taxation, require
Government to call abatement conferences on intras
governors, and eliminate six-month intervals bet

Biological Effects of Asbestos, NYAS 1965

BOOKS, PAMPHLETS AND NOTICES

- 323 Biological Effects of Asbestos. New York Academy of Sciences. 2 East Sixty-third Street, New York, N. Y. 10021. 766 pp. (December 31, 1965). AVAILABLE FROM: New York Academy of Sciences. PRICE: Not given.

This series of papers is the result of a conference held by the New York Academy of Sciences on the same subject (October 19-21, 1964), covering the following general areas: Asbestos Materials in Modern Technology; Lung Tissue and Mineral Matter: Problems of Pathogenesis; Human Exposure to Asbestos; Industrial Problems; Community Studies, Dust Controls and



Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

APRIL 1966
(Vol. 30, No. 4)

...diseases is recommended. Appendix 3 presents in tabular form statistics on asbestos production, updating data in the U.S. Bureau of Mines Information Circular of 1959 to 1962 and data on other countries up to 1963 is present.

1966 - Alcoa at IHF asbestos industry meeting

DRAFT 8-2-66

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

MELLON INSTITUTE, 4400 FIFTH AVENUE

PITTSBURGH, PA. 15213

Subject: Summary of Needs and Plans for Asbestos Research

The purpose of this session of the Industrial Hygiene Foundation Management Planning Meeting, held in the Hunt Room of the Webster Hall Hotel on July 19, was (1) to help develop a better concept of the asbestos industry's environmental and occupational health research needs and what is being done to meet them and (2) to provide the Surgeon General with a summary report and any recommendations which may be developed from the meeting to aid in setting, clarifying, and reaching sound and realistic health conservation goals in the national interest.

The meeting was sponsored by the Foundation's Policy and Planning Committee.

Those attending the meeting were:

Name	Company
Bowman, H.M.	Truhot Chemical Corporation
Colwell, M.O.	Aluminum Company of America
Davison, E.K.	Davison Sand & Gravel Company
deTreville, R.T.P.	Managing Director of IHF
Edwards, F.H.	Owens-Corning Fiberglas Corporation
Grant, L.B.	Pittsburgh Plate Glass
Gross, P.	Director of IHF Research Laboratory
Hatch, T.F.	University of Pittsburgh (retired)
Hazard, W.G.	Owens-Illinois Glass Company
Minard, D.	University of Pittsburgh
Schrenk, H.H.	Mine Safety Appliances Company
Smith, F.W.	Mine Safety Appliances Company
Smith, K.W.	Johns-Manville Corporation
Smyth, H.F.	Mellon Institute
Truschel, Pat	Special Assistant, IHF
Wright, G.W.	St. Luke's Hospital

"The purpose of this session...was to help develop a better concept of the asbestos industry's environmental and occupational health research needs..."

"Those attending the meeting were:
M. O. Caldwell, Aluminum Company of America
F. H. Edwards, Owens Corning
L.B. Grant, PPG
W. G. Hazard, Owens Illinois
K. W. Smith, Johns Manville
R.T.P. deTreville, IHF
George Wright, St. Luke's Hospital"

MT-001441

Alcoa recognition of duty

INDUSTRIAL HYGIENE PROGRAM

- OBJECTIVES & GOALS -

CORPORATE POLICY

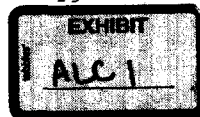
Alcoa's Industrial Hygiene Program is dedicated to providing employee protection from health hazards in the working environment of Alcoa's facilities. There is a corporate commitment to do the right and moral thing for Alcoas worldwide. In achieving that objective, we would expect to also meet at least the minimal health protection requirements mandated by government regulations or other recognized authorities, as appropriate. If regulated exposure levels or conditions are not deemed to provide adequate health protection, or if no regulatory controls are in effect, Alcoa may establish its own exposure levels to be met throughout its worldwide facilities.

The objective of Industrial Hygiene is the "Control" of the plant environment to provide protection from health hazards. In support of the objective, Industrial Hygiene has the specific responsibilities to "Anticipate, Recognize, and Evaluate" potential health hazards. Once health hazards are identified and quantified, their control may become a "shared responsibility" with other Alcoa management groups. Examples are not limited to, but might include:

1. Plant and/or corporate Operating management
2. Plant Superintendents and Supervisory Personnel
3. Engineering Departments
4. Process Control Departments
5. Safety Personnel
6. Medical Personnel
7. Research & Development
8. Others

Establishing and implementing an effective Industrial Hygiene Program at an Alcoa facility is the responsibility of each Location Manager. He should assure that the people who have the delegated responsibilities for Industrial Hygiene also have the authority and the recognition within the plant organizational structure to meet and fulfill their charge of employee protection from potential health hazards.

The corporate Industrial Hygiene Division is a staff resource to the plants to conduct their individual programs. This group is also responsible for overseeing all of the Company efforts for Industrial Hygiene. They will assist in developing corporate policy guidelines in controlling health hazards. They will develop and provide the professional resources to maintain and improve Industrial Hygiene Programs throughout Alcoa and its subsidiaries.



(MORE)

ARCH 19601

"The objective of Industrial Hygiene is the "control" of the plant environment to provide protection from health hazards. In support of the objective, Industrial Hygiene has the specific responsibilities to "Anticipate, Recognize, and Evaluate" potential health hazards."

MARLENE W.

PITTSBURGH

CONFIDENTIAL

1984 bystander exposure

RE: POINT

On August 7 and 8, I met with Ron Hiserodt, Plant Manager; Carey Keller, Safety Director; and Claude Scott, a retired Alcoa who was Safety Director in the 1970s regarding the use of asbestos products at Point Comfort operations.

Point Comfort operations had two divisions — smelting and refining. The smelting operation began in 1959 when the plant opened. Supposedly, it was in continuous operation until 1974 when the smelter was closed. It remained closed until the late 1970s (approximately 1978-79) when it was reopened for a brief period of time. It was closed because of the increased power costs associated with the natural gas driven engines used to produce the electricity. During its prime, there were seven pot lines contained in 14 buildings, two buildings per pot line (?) producing approximately 100,000,000 pounds per day. Each pot line had its own power generating plant with piston-driven engines.

The smelting operation used insulation extensively.

1. Each pot was lined with asbestos block cut to shape by the pot lining repair crew. The block was filled with an asbestos cement made with asbestos shorts mixed with molasses and hand trowled or thrown in.

The lining of the pots was always done by the repair crew. From 1950 to 1956, the lining was done in the pot room. Later, the operation was moved down to Building 54-E. The pots would first be filled with water to cool them down. When sufficiently cool, the carbon was broken up with picks, etc. Later, the pots were simply wet down in the pot room, transported by rail to the pot repair room where a man with a power tool cracked the carbon. In each of the above instances, however, once the carbon lining was cracked into pieces, the pot was upended with the aid of a crane and dumped on the ground. The pieces were picked up with shovels, the dust swept up. This was supposedly an extremely dusty operation. The crane operator and his helper would wear dust masks and the rest of the crew would leave the premises, but the dust would fairly well travel throughout the building and into the masonry shop which was next door.

“Dust would fairly well travel throughout the building and into the masonry shop which was next door.”

EXHIBIT

ALC III

8/27/84

1948 Alcoa Clothing Requirement

INTERNAL CORRESPONDENCE July 2, 1948
 FROM G. D. DICKSON To DR. LESTER V. CRALLEY
 PITTSBURGH OFFICE NEW KENSINGTON RESEARCH LABORATORIES
 RE: SAFETY CLOTHING AND EQUIPMENT

-3-

July 2, 1948

okay it as an equivalent item. However, we are opposed to the use of the old style gauze mask or respirator not approved by the Bureau of Mines. We urge you to exert your influence to persuade the employees to adopt the use of Bureau of Mines approved respirators. We recognize the diffi-

INTERNAL CORRESPONDENCE July 2, 1948
 FROM G. D. DICKSON To DR. LESTER V. CRALLEY
 PITTSBURGH OFFICE NEW KENSINGTON RESEARCH LABORATORIES
 RE: SAFETY CLOTHING AND EQUIPMENT

As an illustration of how this problem might be approached we cite the case at one of our locations where exposure to a chemical product necessitated a complete change of clothing and a shower following the day's work. Employees objected to this requirement and refused to cooperate with Management. Their union committee was asked to attend a meeting for a discussion of the subject and were tactfully told that a health hazard existed if employees wore their clothes home from work and if they failed to bathe following this exposure. When the seriousness of the situation was presented in a business like manner and was fully understood and appreciated by the union committee and employees, their attitude changed and the problem was solved. The significant point was, that when the employees were informed and recognized the merits of the program they cooperated. We

new type respirator, particularly they have been wearing. It is the Company precipitates a can be solved by patience directly with Management and have a twofold objective, health hazards and (2) to afford disability compensation

tem might be approached we cite re to a chemical product d a shower following the day's and refused to cooperate with to attend a meeting for a told that a health hazard from work and if they failed seriousness of the situation as fully understood and appre- their attitude changed and the s, that when the employees were gram they cooperated. We equipment they will also cooper-

ARD 043006

1948 Alcoa Knowledge Clothing and Information is essential

INTERNAL CORRESPONDENCE July 2, 1948
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PITTSBURGH OFFICE NEW KENSINGTON RESEARCH LABORATORIES
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Re: Safety Clothing and equipment

“...we cite the case of one of our locations where exposure to a chemical product necessitated a complete change of clothing following the day’s work...The union committee was asked to attend a meeting for a discussion of the subject and were tactfully told that a health hazard existed if employees wore their clothes home from work and if they failed to bathe following this exposure. When the seriousness of the situation was presented in a business like manner and was fully understood and appreciated by the union committee and employees, their attitude changed and the problem was solved.”

ARD 043004
FOX 042867

ARD 043006

1971 Alcoa Knowledge Clothing Requirement



INSULATION HYGIENE PROGRESS REPORTS

FROM THE INSULATION INDUSTRY HYGIENE RESEARCH PROGRAM

Irving J. Selikoff, M.D., Program Director
Vol. 3, No. 4 Winter 1971



Here Are Some of
Many Ways to
Reduce Dust

a. Protective Clothing

Protective clothing is required to keep contamination confined to the work areas. One method is to issue disposable coveralls which can be removed when leaving the work area or some time prior to entering the locker room and placed in plastic bags for disposal.

A complete report
national Symposium
Ship Repairing, at H

by Duncan A. Holm
and William B. Re

The general goal in all
work should be to maintain
environment.

Measurements of concent
asbestos fibers ("dust counts") in the
atmosphere can be used to identify
sources of contamination and to point
out deficiencies in control methods.
Primary reliance for control of ex-
posures, however, must be placed on
faithful observance of operating rules.

asbestos, however, two questions
must be carefully considered:

a. Has the substitute material been
tested? If not, it may turn out to
be of the same or greater hazard
than the material of known haz-
ard. This sort of thing has hap-

is to mix the mortar dockside
under controlled conditions and
package the mixed mortar in sev-
eral containers for transportation
to the job site.

Mortar is also available packaged
(Continued on second page)



Reduction of Dusts by Use of Local Exhaust Ventilation

a. Ventilation of Large Power Tools—Band Saws

Extensive use of band saws both
in dockside fabrication shops and
on board larger ships such as
aircraft carriers make emissions
from band saws a major source
of asbestos dust. Control devices
for such saws have been known
for years and are relatively sim-
ple. Conventional low-velocity,
high-volume systems, using a
negative pressure baghouse for

saws for cutting asbestos cement
board are well controlled with
these systems.

Control of Number of Workmen Exposed

a. Scheduling of Insulation Work

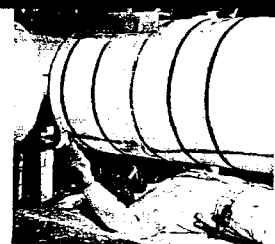
Standard industrial hygiene prac-
tices call for insulating operations
which contaminate the atmosphere
with toxic materials. Areas where
insulation work is being done
under conditions in which dust
might be created should be iso-
lated by non-flammable curtains or
other means. Whenever possible,
work should be scheduled to
minimize the numbers of other
tradesmen in the area. Ship con-
struction operations are more
readily scheduled than are ship
repair or ship-breaking jobs.
However, every effort should be
made to keep the number of men
exposed at a minimum. In par-
ticular, rip-out of old insulation
should always be isolated and, if
necessary, performed on an off-
shift. Trained workmen supplied
with proper protective equipment
should always be used for rip-out
work and it should be scheduled
for rapid completion.

Personal Protective Equipment

In addition to dust suppression and
dust control procedures, personal pro-
tective equipment is often necessary
to reduce exposure and limit the
spread of contamination. The equip-
ment described below is used in

a. Protective Clothing

Protective clothing is required to
keep contamination confined to
the work areas. One method is to
issue disposable coveralls which
can be removed when leaving the
(Continued on fourth page)



Use of dropcloth to contain wastes and
facilitate clean-up.

1973 Disposable clothing knowledge

FROM: R. C. HENKLE
ADMIN WORKS

TO: MR. M. J. CAPRIO
PITTSBURGH OFFICE - 19

May 22, 1973

ASBESTOS CONTROL QUESTIONNAIRE

The completed questionnaire was sent on March 20 to the thirteen locations which had swelling and/or dog operations; replies have now been received from all. Replies from the five "light only" locations have been forwarded to Mr. J. A. Dunbar in Pittsburgh. Copies of the remainder are herewith forwarded to him.

Mr. C. E. Sweeney and I have reviewed the replies from the eight joint swelling-light locations, and a brief summary is being made. In general, the plants appear to be aware of the detailed requirements of the OSHA regulations, and are working toward compliance with them. Table 1 summarizes the Industrial Hygiene and Medical section responses. Mr. T. E. Sweeney and Dr. W. M. Dawson are reviewing copies of the Industrial and Medical sections of the completed questionnaires, and it is assumed that they will take any action which appears to be appropriate to their areas of responsibility. The initial swelling surveys are still under way at Bidsa, Rockdale, Tennessee and Vicksburg; these plants are hereby requested to report to us their status as of July 31, 1973. Hensons alone has advised that no dust-count surveys are needed, on the basis of their elimination of fabrication of non-locked-in asbestos products. (This claim is being verified.)

The third section of the questionnaire dealt with compliance, materials, and

ASBESTOS HAZARD CONTROL - GENERAL

CHANGING WORK PRACTICES IS A SIMPLE, ECONOMICAL, AND PRACTICAL APPROACH TO CONTROL OF ASBESTOS DUST PRODUCTION

Some recommended practices are:

1. Use plastic waste bags for collection, transportation, and waste disposal of asbestos refuse.
2. Use a portable industrial vacuum cleaner for pick-up of asbestos waste and dust at the work site.
3. Use plastic impregnated paper coveralls and dust respirators for dusty operations of an incidental nature. The coveralls are throw-away and eliminate processing and cleaning.

Use down-draft ventilated portable work tables for assembly at asbestos materials at remote locations, mobile shops inside ships.

5. Precut all block insulation in shops under ventilated condition and deliver it to location.
6. Package pre-cut block insulation in plastic and add water to contain and maintain integrity of gores, identification, and ease of handling.
7. Reduce airborne asbestos dust 50 to 60% by prewetting the materials before handling.
8. Mix asbestos cement (15%) at remote locations under ventilated conditions. Mix small batches in plastic bags.
9. Spread plastic or canvas drop cloths at work site to contain and facilitate clean-up.
10. Conduct modular assembly of asbestos materials on piping prior to installation.

EXHIBIT
1
A/C 66

Some Recommended practices are:

3. Use plastic impregnated paper coveralls and dust respirators for dusty operations of an incidental nature. The coveralls are throw-away and eliminate processing and cleaning.

5/29/73

1973 Disposable clothing knowledge

"Asbestos Hazard Control - General

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4. Use down-draft ventilated portable work tables for pre-cutting and assembly at asbestos materials at remote locations, mobile situations or inside ships.
5. Precut all block insulation in shops under ventilated condition and then deliver it to location.
6. Package pre-cut block insulation in plastic and add water to contain dust, maintain integrity of gores, identification, and ease of handling.
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EXHIBIT

ALC 66

5/29/73

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11. Conduct modular assembly of asbestos materials on piping prior to installation.

1973 Disposable work clothes for asbestos

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10. Conduct modular assembly of asbestos materials on piping prior to installation.



FOX 040710

Not done at Wenatchee

1973 Clean up areas, bystanders

FROM R. C. KIMBLE
BATHING WORKS

TO MR. H. J. CAPRIO
PITTSBURGH OFFICE - 19

May 29, 1973

OSHA ASBESTOS COMPLIANCE QUESTIONNAIRE

The captioned questionnaire was sent on March 20 to the thirteen locations which had existing and/or past operations; replies have now been received from all. Replies from the five "last only" locations have been forwarded to Mr. J. A. Conner in Pittsburgh. Copies of the remainder are herewith forwarded to him.

Mr. G. E. Sonny and I have reviewed the replies from the eight joint Swelling-Lago locations, and a brief summary is being made. In general, the plants appear to be aware of the detailed requirements of the OSHA regulations, and are working toward compliance with them. Table I summarizes the Industrial Hygiene and Medical section responses. Mr. T. B. Sawyer and Dr. W. M. Sawson are reviewing copies of the Industrial and Medical sections of the replies.

11. Consider disposable forms of respiratory protection for onetime or intermittent use situations. (U.S. Bureau of mines Approved.)
12. Substitute non-asbestos products whenever suitable, acceptable and feasible.
13. Use enclosures to limit the spread of dust from unit operations.
14. Separate clean-up areas for workmen.
15. Limit exposure of other trades in the vicinity of asbestos work.
16. Develop asbestos work stations, either portable or stationary, to control dust production.
17. Develop suitable storage and storing areas.

Some practices that produce high asbestos dust levels:
and SHOULD be prohibited.

1. Do not clean up fallen asbestos debris with brooms or brushes.
2. Do not allow debris to be thrown from staging or from one deck to another.
3. Do not shake coveralls or drop cloths.
4. Do not remove respirators before asbestos dust laden clothing.
5. Do not clean dusty clothes with an air gun.
6. Do not vent asbestos dust picked up by ventilation into adjoining work areas, or ships compartments.
7. Do not wear respirators covered with asbestos dust.
8. Do not wear street clothes to handle asbestos materials or under known dusty conditions.
9. Do not use asbestos for welders pads.
10. Do not allow uncontrolled cutting, ripping, sawing, or bracking of asbestos in small enclosed spaces.

EXHIBIT

A/C 166

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1973 - Marinite Dust Violates Osha Asbestos Rules on Special Work Clothing

U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration			
CITATION*		CASH NO. B-8680	DATE 73-16
		AREA 2210	REGION 5
Citation Number <u>1</u> (page 2 of 3) Date issued <u>March 6, 1973</u>			
EMPLOYER <u>Aluminum Company of America</u>			
(Street <u>Highway 66 - P.O. Box 10</u>			
ADDRESS (City <u>Newburgh</u> State <u>Indiana</u> Zip <u>47630</u>			
An inspection of a workplace under your ownership, operation, or control located at <u>Newburgh, Indiana</u>			
Inspection made <u>January 15, 16, 17, 18, & 19 and February 20, 1973</u> and described as follows <u>Aluminum ore smelter, ingot casting and roll mills</u>			
has been conducted. On the basis of the inspection it is alleged that you have violated the Occupational Safety and Health Act of 1970, 29 U.S.C. 651, in the following respects:			
Item number	Standard or regulation allegedly violated	Description of violation	Date on which alleged violation must be corrected
4	29 CFR 1910.93a (d)(3)	Failure to require manual marinite routing helper in building 344 to wear special protective clothing when exposed to concentrations of airborne asbestos fibers above the ceiling level of 10 fibers per cc.	Immediately upon receipt of this citation
5	29 CFR 1910.134(a)(1)	Failure to provide effective engineering controls at the exit ends of the kilns in building 260 to prevent the escape of kiln gases and smoke into the work area.	Sup
6	29 CFR 1910.95(a)	Failure to require the employees at the #4 shear of the six stand continuous cold roll mill in the cold roll mill building and at the skin reclamation furnaces in the ingot plant to wear ear protection.	Immediately upon receipt of this citation
Area Director's Signature <u>J. F. Thompson</u>			
The issuance of a citation does not constitute a finding that a violation of the Act has occurred unless there is a failure to correct as provided for in the Act or, if contested, unless the citation is affirmed by the Occupational Safety and Health Review Commission.			
RIGHTS OF EMPLOYEES			
Any employee or representative of employees who believes that any period of time fixed in this citation for the correction of a violation is unreasonable has the right to contest such time for correction by filing a notice with the U.S. Department of Labor at the address shown above within 15 working days of the receipt by the employer of notice of proposed penalty or notice that no penalty is being proposed.			
*No person shall discharge or in any manner discriminate against any employee because such employee has filed any complaint or instituted or caused to be instituted any proceeding under or related to this Act or has testified or is about to testify in such proceeding or because of the exercise by such employee on behalf of himself or others of any right afforded by this Act." <u>Sec. 11 (c)(1) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 651.</u>			
The law requires that a copy of the enclosed citation(s) "shall be prominently posted" in a conspicuous place "at or near each place a violation referred to in the citation occurred." It must remain posted until all violations cited therein are corrected, or for 3 working days, whichever period is longer.			
*Alleged violations covered by this citation are those which are not serious violations within the meaning of the Act but which have a direct or immediate relationship to occupational safety and health.			

“Failure to require manual marinite routing helper...to wear special protective clothing when exposed to concentrations of airborne asbestos fibers above the ceiling level of 10 fibers per cc.”

ARD 042545

3/6/73

1973 sweeping, shaking, street clothes

FROM R. C. BLANKS
BACH WORKS

TO MR. H. J. CAPRIO
PITTSBURGH OFFICE - 19

May 29, 1973

OSHA ASBESTOS COMPLAINT QUESTIONNAIRE

The enclosed questionnaire was sent on March 30 to the thirteen locations which had sweeping and/or drag operations; replies have now been received from all. Replies from the five "tight ship" locations have been forwarded to Mr. J. A. Dunbar in Pittsburgh. Copies of the remainder are herewith forwarded to him.

Mr. G. R. Runney and I have reviewed the replies from the eight loose sweeping locations, and a brief summary is being made. In general, the plants appear to be aware of the detailed requirements of the OSHA regulations, and are working toward compliance with them. Table 1 summarizes the Industrial Hygiene and Medical Section responses. Mr. T. B. Runney and Dr. K. M. Dawson are reviewing copies of the Industrial and Medical sections of the completed questionnaires, and it is assumed that they will take the action which appears

11. Consider disposable forms of respiratory protection for onetime or intermittent use situations.
(U.S. Bureau of mines Approved.)
12. Substitute non-asbestos products whenever suitable, acceptable and feasible.
13. Use enclosures to limit the spread of dust from unit operations.
14. Separate clean-up areas for workmen.
15. Limit exposure of other trades in the vicinity of asbestos work.
16. Develop asbestos work stations, either portable or stationary, to control dust production.
17. Develop suitable storage and storing areas.

Some practices that produce high asbestos dust levels:
and SHOULD be prohibited.

1. Do not clean up fallen asbestos debris with brooms or brushes.
2. Do not allow debris to be thrown from staging or from one deck to another.
3. Do not shake coveralls or drop cloths.
4. Do not remove respirators before asbestos dust laden clothing.
5. Do not clean dusty clothes with an air gun.
6. Do not vent asbestos dust picked up by ventilation into adjoining work areas, or ships compartments.
7. Do not wear respirators covered with asbestos dust.
8. Do not wear street clothes to handle asbestos materials or under known dusty conditions.
9. Do not use asbestos for welders pads.
10. Do not allow uncontrolled cutting, ripping, sawing, or bracking of asbestos in small enclosed spaces.

EXHIBIT

ALC 66

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8. Do not wear street clothes to handle asbestos materials or under known dusty conditions.
9. Do not use asbestos for welders' pads.
10. Do not allow uncontrolled cutting, ripping, sawing, or breaking of asbestos in small enclosed areas."

1973 Anaconda Provides Work Clothes

"...there are specific rules and regulations regarding respirators and clothing provided and required while doing this work. Employees exposed to such levels should be informed of the necessity and proper procedure in removal of outer clothing (coveralls furnished by the company) after the dusty part of a job is completed. Further information must be made available on proper methods of clean up so that dust is not blown or swept as in the past but rather use a vacuum system."

With air-borne fiber concentrations based on time-weighted averages, most areas in the plant are within the present T-1; however, since these samples were taken it has been realized that, in some instances the results are not completely valid due to continuous exposure after the job was completed. This exposure to fibers after completion of a dusty asbestos job reflects the following causes: clothes are not changed immediately after job is finished, asbestos dust is left on floor which is constantly agitated by people walking through or by it, and through residual fibers suspended in the air for many hours. Bearing these exposures in mind, it is recommended that the areas showing 0.75 fibers/ml or higher, based on the time-weighted averages, be resampled to include these added exposures where applicable.

The sawing and drilling of Millboard into tapping boards was omitted in this report due to such excess of fibers on the filter it was impossible to count. The intention to resample this area with a low air volume of air was abandoned since elimination of

It must operate continue in the future
here are specific rules regarding respirators and
clothing provided and required while doing this work. Employees exposed
to such levels should be informed of the necessity and proper procedure
in removal of outer clothing, (coveralls furnished by the company), after
the dusty part of a job is completed. Further information must be
made available on proper methods of area cleaning so that dust is
not blown or swept up as in the past but rather use a vacuum
system.

cc.- C.E. Taylor
C.E. Fisher
P.A. McMaster

1977 Alcoa violates industry clothing standard

ALUMINUM COMPANY OF AMERICA
ALCOA BUILDING - 1000 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20004

1977 July 27

Paul Kotin, M.D.
Senior Vice President
Health Safety and Environment
Johns-Manville Corporation
Greenwood Plaza
Denver, Colorado 80217

Dear Paul:

We do not in any of our plants provide work clothing--specifically apparel--on a regular basis. The closest we come to that is disposable paper clothing for employees who periodically go into certain baghouses. But other than this, nothing else.

I would recommend your contacting either Mr. Larry Bisquet, Vice President and Director, Health Affairs, or Dick Henderson at Olin (the latter is their chief industrial hygienist) in Stamford, Connecticut as regards their clothing practice for workers in mercury cell room exposures. Off the record, I think they go a bit overboard, but it represents one point of view. For another, I would recommend review of the NIOSH proposed Mercury Standard in the work clothing section.

I hope these leads will be of help. Fortunately, in our mercury cell operations we have been able to control exposure without recourse to clothes. We do, however, provide a commercial laundry sized washer there, but largely on the premise of keeping mercury out of their home laundries.

Best regards from Gaby and me to you and Paul.

Cordially,
Bertram D. Dinman
Corporate Medical
vmd

Cordially,
Bertram D. Dinman, M.D.
Corporate Medical Director
vmd

111-001440

We do not in any of our plants provide workclothing--specifically apparel--on a regular basis. The closest we come to that is disposable paper clothing for employees who periodically go into certain baghouses. But other than this, nothing else."

July 27, 1977

1979 Management commitment

MR. G. D. HICKS
Page 2
1979 August 13

B. Work Practices

Many practices were observed which unnecessarily increase employee exposure to dust, noise, asbestos and coal tar pitch volatiles.

The use of inappropriate tools, equipment and procedures is commonplace; and in several cases, standard operating procedure. For example, transporting ore and bath in payloaders causes much dust to become airborne. Routing siphon tubes without local exhaust ventilation has much the same effect.)

C. Training

- In general, employees have not been adequately informed about the health hazards of their respective jobs, nor about the precautions needed to be taken. This is at least partially responsible for improper work practices, as well as both inadequate and incorrect usage of personal protective equipment. For example, workers have not received formal instruction in (law)

Massena's industrial hygiene staff is both concerned and competent. However, the effectiveness of the industrial hygiene program is dependent upon the support and commitment of Massena management at all levels. Conditions at Massena suggest that we must reaffirm this commitment if we expect to make progress in controlling health hazards. The Pittsburgh Industrial Hygiene staff is ready to supply any needed assistance.

II. Recommendations

Recommendations are divided into two categories. The first category deals with complex problems with plant-wide application. They generally require organized efforts or programs, rather than for correction of specific conditions. The second category is devoted to the latter.

Category I: Plant-Wide

- ①. A written, comprehensive respiratory protection program should be established and administered. As a minimum, the program should include sections 1910.134(b)(1) through 1910.134(b)(14) of the OSHA standards as detailed in Alcoa's respiratory protection standard. DUST - CTRV - SO₂ CO
2. A written program for the routine evaluation of all exhaust ventilation systems should be devised and implemented. The assistance of the Engineering Department may be necessary. The program should include measurements of face velocity and static pressure, as well as comprehensive visual inspections. MAINT & ENG
- entire plant.

“[The] industrial hygiene staff is both concerned and competent. However, the effectiveness of the industrial hygiene program is dependent upon the support and commitment of the...management at all levels. Conditions...suggest that we must reaffirm this commitment if we expect to make progress in controlling the health hazards. The Pittsburgh Industrial Hygiene staff is ready to supply any needed assistance.”

EXHIBIT

ALC 87

6/13/79

1969 Wenatchee Asb Grievance

FROM R. H. PATRICK

WENATCHEE WORKS

3-7-69

TO R. E. GROSSELMAN

WENATCHEE WORKS

Model. For Management, R. H. Patrick.

VALID

The grievance read as follows. "We grieve the lack of safety measures in the brick shop for our protection from the inhalation of asbestos dust."

VALID

Mr. Faulkner complained that there was a lack of dust collecting equipment to remove the asbestos bearing dust from the shop. This dust is created by the digging of transfer troughs in preparation for repairing or relining.

PROBABLY SHOULD BE REPAIRED

They also complained that the fan to the paint spray booth, which is used to remove the dust when mixing asbestos feathers, had not been repaired.

EQUIPMENT CANCELLED
FACE MASKS TO BE WORN

The writer also informed them that some very serious thought had been given to the problem and that J. E. Harris had assured him that something was forthcoming and that every effort would be made to resolve the dust situation before next fall.



ALCOA

WEN008 0408

OF ASBESTOS, 00011555

FOX 040887

1972 JM Asb Info to Wenatchee



Johns-Manville

Greenwood Plaza
Denver, Colorado 80217
(303) 770-1000

August 21, 1972

Aluminum Company of America
P. O. Box 221 - Dept. JWK
Wenatchee, Washington 98801

Attn: Mr. C. J. Shank

Gentlemen:

Enclosed are U. S. Department of Labor Mat covering toxicological information which y regarding Johns-Manville products.

If you require additional information and assistance, please contact us.

Very truly yours,

W. B. Reitze
W. B. Reitze
Manager, Accident Prevention
and Industrial Health

WBR:de

2000 Superex Block
Superex Cement
352 Cement
Commerical Grade Asbestos Paper Tape
Style 566 Commerical Grade Asbestos Rope

JAT - 80

MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME Johns-Manville Corp. & Subsidiaries		EMERGENCY TELEPHONE NO. 303-770-1000, Extn. 2020
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 5108, Denver, Colorado 80217		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Superex M
CHEMICAL FAMILY Amosite Asbestos		FORMULA

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N.A.			BASE METAL N. A.		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Amosite Asbestos Fibre				10	
For TLV see Federal Register 6/7/72, Vol. 37, No. 110; 8-hour time weighted average 5 fibres/ML greater than 5 microns in length. Ceiling concentrations NOT to exceed 10 fibres/ML.					

FOX 041224



Johns-Manville

Greenwood Plaza
Denver, Colorado 80217
(303) 770-1000

August 21, 1972

Aluminum Company of America
P. O. Box 221 - Dept. JWK
Wenatchee, Washington 98801

Attn: Mr. C. J. Shank

JAT - 80

*Here is the data on
asbestos content of
potlining materials - this
is the only copy. Please
look good at all per
Fed. HHS.*

Wcl

MATERIAL SAFETY DATA SHEET
ATTACHMENT #1 - SECTION II
RE: SUPEREX CEMENT

AMOSITE : ASBESTOS FIBER - TLV - See Federal Register 6/7/72, Vol. 37, No. 110 - 8-hour time weighted average 5 fibers greater than 5 microns in length/ML. Ceiling concentrations not to exceed 10 fibers/ML.

DIATOMACEOUS EARTH - Calcining results in 5% conversion to crystalline silica in form of cristobalite. TLV - use 1/2 the value calculated from the count or mass formula for quartz. Quartz - 250 ; % SiO₂. See OSHA Health Standards effective December 7, 1971.

1961 Marinite sawing levels

July 19, 1961

ALUMINUM COMPANY OF AMERICA COPY VERNON WORKS

Bldg. 5 - Sampling Sta. No. SPEC. Date 7-19 1961

Sample no. 1326 Analysis for ASBESTOS

Operation MARINITE SAWING Location UTILITY BLDG - PATTERN SHOP

SAMPLING DATA

Position BREATHING LEVEL, 0-6' FROM SAW

Time of Sampling 8:44 AM To 8:54 AM

Method of Sampling MIDSET IMPINGER

Absorbing Medium ISOPROPANOL Volume 10 ml

Suction Apparatus MIDSET IMPINGER PUMP

Volume of Air Sample 1 CF Duration Min. 10 Air Sampling Rate 3.1 CFM

REMARKS

1) SAWYER WEARS RESPIRATOR.

2) PORTABLE VACUUM ATTACHED.

Method IN 2-G-46T Collected by R.D. Thompson

ANALYTICAL DATA

ADJUSTED VOLUME 107.2

CELL VOLUME FACTOR 0.25

MEAN SAMPLE COUNT 207.6

BLANK 1.4

CALCULATIONS
$$\frac{(207.6 - 1.4) \times 4 \times 363.2 \times 10}{1} = 29.989728 \times 10^6$$

RESULTS 30.0 MPPCF (MAC = SAMPLE) Chemist R.D. Thompson

WEATHER CONDITIONS

Temp. of Sampling 76 °F. Humidity 54 % Sky OVERCAST

Temp. Outside 74 °F. Wind N.W.

Percentage of Windows Open ALL DOORS

REMARKS

“Marinite Sawing”

Results: 30.0 MPPCF

1962 bystander exposure

January 24, 1962

Dept. of Public Health

-3-

5. If large pieces of "marinite" are cut out of doors, the operator should be provided with a respirator approved for use against toxic dust (MSA Dustfoe or equal). The operation should be conducted so that all dust produced will be blown away from windows, doors and air intakes, so that other workers will not be exposed.

6. When making changes or when installing new exhaust systems, it is recommended that the principles of good duct design as advocated by the American Conference of Governmental Industrial Hygienists be followed. (See attached drawings, figures 6-6 through 6-9.)

In closing, we wish to thank you for the courteous cooperation and assistance given to this department during our study. If you return this report, please do not hesitate to let us know if any assistance we may be able to offer.

Sincerely yours,

Nemethi, M.D.
Officer

S. Hauger, S.S.
Dir. of Sanitation

"3. If large pieces of "marinite" are cut out of doors, the operator should be provided with a respirator approved for use against toxic dust...The operation should be conducted so that all dust produced will be blown away from windows, doors, air intakes, so that other workers will not be exposed."

Aluminum Company of America
5151 Alcoa Avenue
Vernon 38, California
Attention: Mr. Frank Leggett,
Safety Director

January 24, 1962

On January 12, 1962, representatives of the Vernon Health Department conducted a preliminary study of a "marinite" cutting operation in the pattern shop.

The pieces of "marinite" were cut on a band saw which is provided with a local exhaust connection to the lower pulley housing and a small hood located directly under the blade opening in the saw table.

Air movement observations were conducted during the cutting operation using smoke tubes and a velocimeter. Close observation of the blade as it passed through the material disclosed that fine dust was being generated from the top surface of the "marinite" similar to conditions that are encountered in crushing operations. This top surface generation explains why considerable dust was encountered even though an adequate exhaust hood was provided below the saw table.

In discussing this operation with Mr. Seythe and pattern shop personnel, I learned that "marinite" was cut rather infrequently and probably the time spent did not exceed an average of more than 12 hours monthly.

EXHIBIT
AIC 12

State of Calif. to Alcoa 1/24/62

Alcoa response to knowledge Ignore danger

July 29, 1964	Marinite situation is a masterpiece of misinformation Exh 21
August 27, 1964	Marinite is a Frankenstein monster Exh. 27
November 4, 1964	The shop people will be handling Marinite more and more. Exh 29

1964 Masterpiece of misinformation

7/29/64

LES

The whole Marinite situation has been, and apparently is trying to continue being, a masterpiece of misinformation.

I called George and told him to cease any work on the MMM (unless he hears otherwise from you) inasmuch as material that we were concerned about is ^{present} ~~present~~ - we think. I further stated that the entire story, from our standpoint, is completely untrue. Before we bail ourselves out (and I think we should) we'd better have all the facts. Our only recourse is to go back to Johns-Manville and ask them for a complete run-down on the ^{contaminant} ~~contaminant~~ toxicological aspects of this material and for their recommended methods for handling it. We should also present them with our experiences with it - especially our case of the asthmatic attack. (I've heard so many phony stories about this stuff I don't know who's telling the truth). Perhaps then they will tell us about the pinch of arsenic or old lace that they've added and neglected to mention. On the other hand, if we have all the correct information now, we'd better make sure we have.

George is going to go back to Aprio, since he apparently has a responsible contact in J-M, and find out who in their company we can contact for the information we want + need.

Tom

ARCH 18223



“The whole Marinite situation has been and apparently is trying to continue being, a masterpiece of misinformation.”

1964 - Breeding a Frankenstein Monster

August 21, 1964

Dr. K. W. Smith
Johns-Manville Corp.
Twenty-two E. Fortieth Street
New York 16, New York

Dear Dr. Smith:

As you doubtlessly are aware, there exists in Alcoa a continuously expanding group with interests in the industrial hygiene aspects of Johns-Manville's product, Marinite. For a considerable period we have been confused by conflicting stories about the composition of this material. Recent correspondence has deepened our confusion and stimulated our already-aroused curiosity. We would certainly appreciate any clarification that you are able to provide.

Our problem is with Marinite dust associated with sawing and machining operations. The usual complaint is upper respiratory irritation. Several men have complained to their supervisors that they "experience some discomfort on account of cold and difficulty in breathing". One indicated it first on his arms and face. Another, at the start of his Marinite, indicated some respiratory discomfort and dry and red. Unfortunately we had no opportunity for evaluation on any of the affected men.

Because of our workers' complaints we rechecked with and were advised that an epoxy resin was present. Because the effects were compatible with epoxies a control measure accordingly. Recently and internally we have been told that there is no epoxy present. The case, it leaves some of our questions still unanswered. It is not for the fact that this has become something case among our people, we would perhaps be willing (unanswered).

We are presently aware of the presence of asbestos earth and an inorganic binder (perhaps a silicate). Having this knowledge, we now wonder if our report is a "ride" or if our knowledge of the composition is what we would like to know is if we should be handled differently than we would asbestos alone. Need we be concerned with factors other than pneumoconiosis? Are there (or were there) present materials that are likely to present other respiratory complications or dermatological problems? What precautionary measures does Johns-Manville observe when handling this material?

ARD 043002

FOX 042882

Dr. K. W. Smith
Page 2
August 21, 1964

I'm sorry if our interest may appear disproportionate to the problem. However, through a series of unfortunate events we have bred and nurtured a Frankenstein monster. With understandable bias, I would prefer that the monster be eliminated. Can you help us out with this problem?

Sincerely,

T. B. Bonney
Asst. Chief Industrial Hygienist

TSB:DB

cc: Mr. M. J. Caprio

G H F

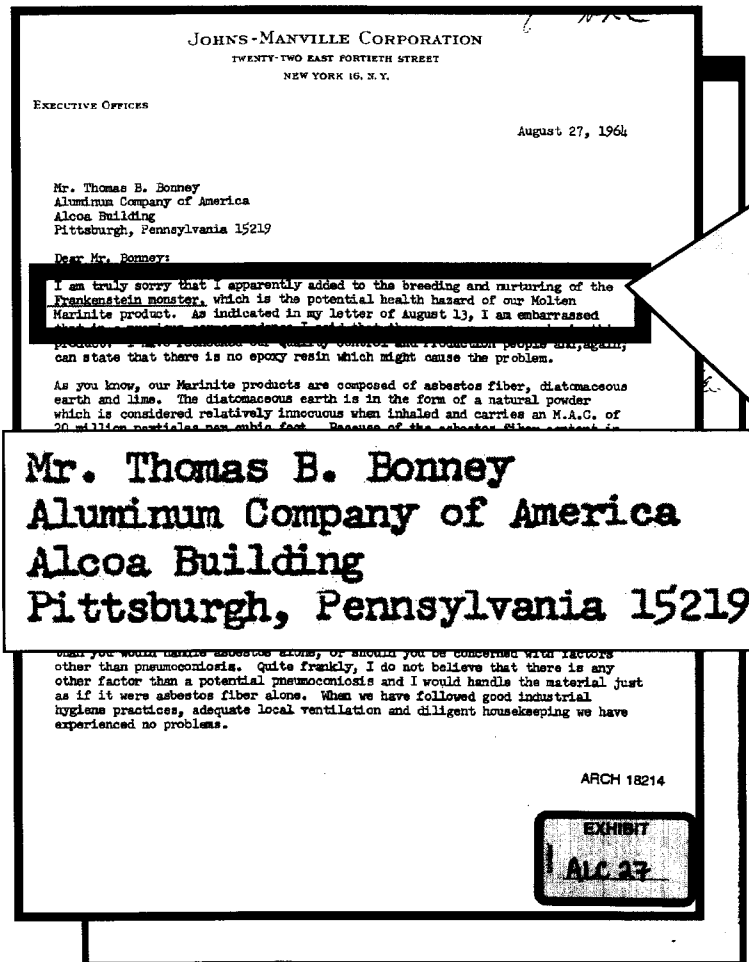
“...through a series of unfortunate events we have bred and nurtured a Frankenstein monster. With understandable bias, I would prefer that the monster be eliminated.”

ARD 043003

FOX 042883

8/21/64

1964 Frankenstein Monster



“I am truly sorry that I apparently added to the breeding and nurturing of the Frankenstein monster, which is the potential health hazard of our Molten Marinite product.”

1964 Handling More Marinite

November 4, 1964

INTERNAL CORRESPONDENCE

FROM R. L. PARSONS

TO INDUSTRIAL HYGIENE COMMITTEE

WARRICK WORKS

WARRICK WORKS

C. CONFIDENTIAL

INDUSTRIAL HYGIENE COMMITTEE MEETING MINUTES - October 30, 1964 - 9:00 A.M.

Present: J. E. Hatch, M. Rountree, J. A. Thompson, H. M. Walker,
and R. L. Parsons

Absent: J. E. Burns, T. C. Burger, and T. L. Kick

OLD BUSINESS

1. Mosquito Control - The mosquito problem as discussed in last months minutes, has disappeared with the onset of cold weather. Some of the drainage problems considered at that time are being looked at by Mr. Searles and Mr. Parsons.
2. Noise Problem at the Cold Mill - While the immediate problem of noise at the Cold Mill has been remedied by supplying earmuffs to people working near the exit end of the mill, Mr. Burns and I will make an elaborate survey and mark off an area where protection is definitely needed. From the standpoint of permanent control, this problem has been assigned to Mr. A. A. Ferrier.

NEW BUSINESS

Several potential problems were discussed.

Handling of Marinite - The shop people will be handling Marinite more and more as we get into HDC work. We had previously said there was no problem because the Marinite we used contained no epoxy resin binder. There is more recent information on this subject from Mr. Bonney and it will be reviewed by me so that we are in a perfectly safe position.

2. Now that cold weather is approaching, I will be talking with Mr. Bustin concerning whether he wants us to again institute a carbon monoxide sampling program in the tunnel kilns.



“Handling of Marinite
- the shop people will
be handling Marinite
more and more...”

OF 1964
PRINTED IN U.S.A.

ARD 042644

1972 Wenatchee keeps Marinite work in house to save money

J. Z. NELSON
MECHANICAL ENGINEERING DIVISION
PITTSBURGH OFFICE

MEMORANDUM *By J.A.*

January 31, 1972

CONFIDENTIAL

RE: K. A. KEITH JOHNSON - WENATCHEE

Phone Call 1-28-72

- (1) Their masons have grieved on handling asbestos-lumnite trough basin & filter linings, both:
 - (a) Mixing and installing new linings, and
 - (b) Tearing out old linings
- (2) Keith is working on R/A estimate for a "clean room" to do this work, including exhaust and bag collection, special vacuum cleaning, sealed room, and pressurized masks for workers.
- (3) Essentially all their Marinite work is farmed out -- they are okay until their suppliers get in trouble.
- (4) I said this was the first call on this subject, so could Wenatchee be doing something wrong? He is going to wire me exactly what they buy. After listening to him call it "powdered feathers-pure asbestos", I guess they are buying the cheapest material they can find, which is probably the most hazardous and hardest to mix material. Furthermore, the linings produced may be short-lived, thus increasing the problem of working with new and old asbestos materials.

They probably should be buying a long-fiber asbestos cement. I suspect, incidentally, we have led some people astray by using the term, "asbestos shorts", a that this needs to be corrected.
- (5) Regardless, if they continue to use asbestos fiber they will likely end up with a special room to work in. *Mps*
- (6) Main purpose of call was to ask about materials other than asbestos-lumnite:
 - (a) I asked if they had considered going to everything lined with precut (outside) Marinite. They have, but feel would be expensive and troublesome.

ALSO, MARINITE IS AN ASBESTOS PRODUCT AND DOES NOT ELIMINATE THE PROBLEM.

"I asked if they had considered going to everything lined with precut (outside) Marinite. They have, but feel would be expensive and troublesome."

1989 - Don't do piecemeal job of eliminating asbestos

FROM RONALD R. HOFFMAN
PITTSBURGH OFFICE - 29

TO MR. F. A. APPEL - LEBANON
MR. G. E. BERGERON - RICHMOND
MR. D. M. FALLS - PGH. 28
MR. R. A. GLAH - PGH. 27
MR. T. J. TAYLOR - PGH. 28

1989 JANUARY 11

RE: ASBESTOS

There's a growing concern inside our environmental group here that we need to deal more aggressively with eliminating asbestos. Will you please advise me promptly of the following:

- (1) I need to know if your plants are completely aware of their asbestos situation.
- (2) Are we in violation of any regulation anywhere?
- (3) Are we doing the right thing? The year 1989 is a good one to get problems behind us, and we should not be dealing with the asbestos situation on an "ability to fund" long-term program.
- (4) Please indicate, based on the three previous questions, whether or not you are satisfied with your position.

Please give me your feedback promptly. Thanks.

RONALD R. HOFFMAN
RRH/ab



WENS 014113

SP-2000 (REV 11-88)

“...we should not be dealing with the asbestos situation on an “ability to fund” long-term program.”

FOX 041036

1992 Wenatchee Chooses to do piecemeal job on asbestos

Ask Denny Zundel

Check physical the rich portion.

FROM H. F. HILLEGASS
WENATCHEE WORKS

TO J. A. THOMPSON
WENATCHEE WORKS
1992 FEBRUARY 28

RE: ASBESTOS CONCERNS

K. L. STRATTON, A. L. WILLMS, AND THE WRITER CONDUCTED A WALK THROUGH INSPECTION OF THE CONDITION OF PIPE LAGGING IN THE CENTER PASSAGE AND SOUTH PASSAGE OF THE POTROOMS WHILE INVESTIGATING WHAT NEEDED TO BE DONE TO REPAIR THE DAMAGE CAUSED TO THE PIPE LAGGING BY THE LADDER ADDED TO THE CRANE IN ROOM 6.

THE FOLLOWING IS A LIST OF DETERIORATED OR DAMAGED PIPE LAGGING:

S. E. CORNER OF RODDING ROOM -LOOSE AND HANGING DOWN
CENTER PASSAGEWAY GOING TO 33
CENTER S. W. COLUMN RM-4
CENTER CEILING RM-8 AT THE PIPE HANGER
CENTER RM-10 AT PIPE HANGER
CENTER RM-12 NICKS CAUSED BY TOP OF CRANE LADDER
CENTER RM-14 LOOSE AT THE JOINT
CENTER RM-16
CENTER RM-18 JOINTS
CENTER RM-18 1/2" PIPE WEST SIDE NEEDS ATTENTION
NORTH SIDE CENTER PASSAGE -OUT SIDE- IN 19 COURT YARD,
DAMAGE TO METAL COVERING IS ALLOWING RAIN TO DAMAGE INSULATION
PIPE IN CONTROL AREA (CENTER 19)
SEVERAL SPOTS ON SOUTH PASSAGE SOUTH WALL
SEVERAL OF THE CONNECTING PIPES FROM THE SOUTH WALL TO THE
SOUTH BATHROOMS ARE IN NEED OF REPAIR.

*Bill - These projects are too large to be done
by local folks - regulation doesn't allow.
We need to continue to do a little every
year to get rid of all asbestos.*

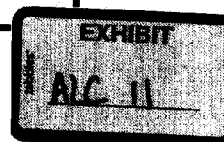
“Re: Asbestos concerns”

“These projects are too large to be done by local folks - regulation doesn't allow. We need to continue to do a little every year to get rid of all asbestos.”

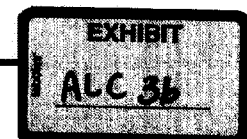
[REDACTED]

[REDACTED]

“Some time ago we equipped one of our Pattern Shop band saws with exhaust system for the purpose of sawing “Maranite.” After a number of experiments, we finally decided to discontinue this practice and have sent our work to outside shops. The attached data sheets indicate the reason for our decision.”



“Marinite sawing - carpenter shop... A recent hygiene survey indicated an unsatisfactory high dust count.”



1963 NSC Don't Poison Families

DATA SHEET 531

DUSTS, FUMES, AND MISTS IN INDUSTRY

Published by National Safety Council
425 North Michigan Avenue, Chicago 11

Introduction

1. Industrial dusts, mists, and fumes, their hazards and their control, are discussed in this data sheet.* The general principles presented can be applied to evaluate most industrial situations involving these air contaminants and to determine the need for controls. This data sheet is intended to guide employers, plant safety engineers, personnel managers, and supervisors.

2. A plant manager who believes that he has a toxic or irritating dust problem should consult a competent industrial hygienist. Such help may be obtained from his own company, insurance carrier, private consultants, or state health or labor agency.

3. To protect the health of employees who work where a dust, fume, or mist created by a manufacturing process is released into the atmosphere, a control program may be required. In such a case, three steps must be taken:

a. The properties of the specific dust, fume, or mist and its possible physiological effects on employees must be ascertained.

*This data sheet covers toxic and irritating air contaminants encountered in industry. It does not include a discussion of the explosive properties of such airborne particulate matter.

This data sheet is one of a series published by the National Safety Council, reflecting experience from many sources. Not every acceptable safety procedure in this field is necessarily included. This data sheet should not be confused with American Safety Standards.

4. Except for the skin diseases, most occupational diseases acquired by inhalation of Lung tissue is by far the most serious. The body absorbing materials has a surface area of 55 square feet.

dusts, the importance of personal hygiene should not be overlooked. The periodic medical examinations provide a good opportunity for instruction of employees in various personal hygiene measures.

157. Good washing facilities, clean lunchrooms, and clean work clothes can help prevent additional, even though minor, exposure to toxic materials. Also, contaminated work clothes should not be taken home where a toxic dust could contaminate the home or expose other members of the family. These recommendations become mandatory where materials as beryllium and



Figure 7. In this foundry, local exhaust hoods are installed over each station having a shell-molding machine and glue press. Adequate make-up air is supplied from ventilating duct situated between molding machines and presses. (Courtesy American Foundrymen's Society)

Public Health Service, Washington 25, D. C. 1938.

Drinker, Philip, and Hatch, T. F., *Industrial Dust*, 2nd Edition, McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, 1954.

Elkins, H. B., *Chemistry of Industrial Toxicology*, 2nd Edition, John Wiley and Sons, Inc., 440 4th Ave., New York 21, 1959.

Hunter, Donald, *The Diseases of Occupations*, 2nd Edition, Little Brown and Company, 34 Beacon St., Boston, 1957.

Hygienic Guide Series, American Industrial Hygiene Association, 14125

Public Health Service, Washington 25, D. C. 1938.

Drinker, Philip, and Hatch, T. F., *Industrial Dust*, 2nd Edition, McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, 1954.

Elkins, H. B., *Chemistry of Industrial Toxicology*, 2nd Edition, John Wiley and Sons, Inc., 440 4th Ave., New York 21, 1959.

Hunter, Donald, *The Diseases of Occupations*, 2nd Edition, Little Brown and Company, 34 Beacon St., Boston, 1957.

Hygienic Guide Series, American Industrial Hygiene Association, 14125

2nd Edition, 1958, and Volume II, 2nd edition (in preparation). Interscience Publishers, 250 Fifth Ave., New York 3.

"Report (Joint) of the Committee on Pneumoconiosis and the Committee on Standard Practices in Compensation of Occupational Diseases," *Year Book*, American Public Health Association, 1790 Broadway, New York 19, 1933.

Review of Literature on Dust, U. S. Department of the Interior, Bureau of Mines, Bulletin 478, U. S. Government Printing Office, Washington 25, D. C., 1950.

"Also, contaminated work clothes should not be taken home where a toxic dust could contaminate the home or expose other members of the family."

© NATIONAL SAFETY

© NATIONAL SAFETY COUNCIL 1963

WEN009 0385

FOX 041316

FOX 041330

1971 Alcoa Knowledge Education Training

Environmental Sciences
Laboratory

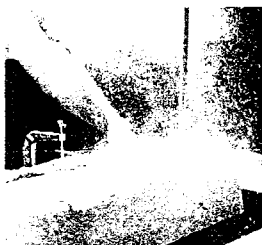


of The City University
of New York

INSULATION HYGIENE PROGRESS REPORTS

FROM THE INSULATION INDUSTRY HYGIENE RESEARCH PROGRAM

Irving J. Selikoff, M.D., Program Director
Vol. 3, No. 4 Winter 1971



Dust produced by use of an unventilated hand saw. Without the back lighting used here, much of the dust would not be visible.



Cutting pipe with hand saw with high-velocity, low-volume system. Compare absence of dust with that shown in uncontrolled cutting (picture left).

Shipyard Procedures Guide Helps All Insulation Men

The Winter 1970 issue of *Insulation Hygiene Progress Reports* announced a joint effort by the Insulation Industry Hygiene Research Program, the U.S. Navy, the Department of Labor, and insulation manufacturers and contractors to shipyard asbestos dust exposures.

As part of that effort, Duncan A. Holaday and William B. Reitze of the I.I.H.R.P. prepared a procedures guide for asbestos insulation application and removal. Because of its relevance to all insulation work, portions of it are given in this *Insulation Hygiene Progress Reports*.

A complete report was presented by the authors at the national Symposium on Safety and Health in Shipbuilding and Ship Repairing, at Helsinki, Finland, on August 30, 1970.

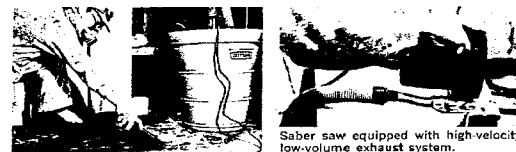
by Duncan A. Holaday
and William B. Reitze

The general goal in all insulation work should be to maintain a clean environment.

Measurements of concentrations of asbestos fibers ("dust counts") in the atmosphere can be used to identify sources of contamination and to point out deficiencies in control methods. Primary reliance for control of exposures, however, must be placed on faithful observance of operating rules.

Control of Asbestos-Containing Materials by Use of Substitute Materials

Substitution of materials with reduced proportions of, or no asbestos at all, is more common in shipbuilding. Before a material is substituted for asbestos, however, two factors must be carefully considered: a. Has the substitute material been tested? If not, it may be of the same or greater hazard than the material of asbestos. This sort of thing



Saber saw equipped with high-velocity, low-volume exhaust system.

Education and Training

No dust control program can be effective unless workmen and supervisors understand the hazards associated with the jobs, the sources of the hazards and the reasons for following recommended procedures carefully. Understanding is only obtained by education of personnel and training in correct operating procedures. For an education and training program to be successful, both management and labor must be concerned and participate. As with all safety programs, it is essential that first-line supervisors be interested in and cooperate in the work.

pirator-fitting, training of workmen and maintenance, detailed in Z88-3-1971 should be followed.

a) *Reusable particulate-filtering respirators*
A variety of reusable particulate-filtering respirators are available. To insure proper fitting, several different makes should be available from which the workman can select one. *No one model respirator facepiece will fit all faces.* Routine maintenance is absolutely necessary to replace clogged filters and leaking inhalation or exhalation valves. *Unmaintained respirators produce a false sense of security.*

Maintenance Troublesome

b) *Disposable particulate-filtering respirators*
Operation of an adequate respirator maintenance program can be troublesome and, if only a few men are involved, impractical. Disposable respirators are available which are designed to be worn for no longer than one shift and then discarded.

Education and Training

No dust control program can be effective unless workmen and supervisors understand the hazards associated with the jobs, the sources of the hazards and the reasons for following recommended procedures carefully. Understanding is only obtained by education of personnel and training in correct operating procedures. For an education and training program to be successful, both management and labor must be concerned and participate. As with all safety programs, it is essential that first-line supervisors be interested in and cooperate in the work.

connected supply limit ation can powered re- e such limited to the man must require care-

Respirators

pes of par- ators. Those eplece are ble for use hose ap- against as- S. Bureau used. These ded for use the atmos- of asbestos low levels. ons for res-

Education in hazards associated with use of insulating materials and instruction in correct work practices should be included in apprentice training programs.

PHOTO CREDITS: Pg. 1, I.I.H.R.P.; pg. 2, Ryder Industries and Puget Sound Naval Shipyards (P.S.N.S.); pg. 3, P.S.N.S.; pg. 4, I.I.H.R.P. and P.S.N.S.

WEN009 0370

1972 - Should we comply with OSHA?

To: Mario Caprio Date: 10/2/72 Hour: _____
From: Keith B. Jackson - Wenscheder Works
Subject: Through letter during 1972 audit findings
We are presently using asbestos/lumnite mix or
marinite board in above applications and are thus
flying in the face of OSHA.
Have any other plants discovered any materials
that they are actually using in these applications as of
now? Considering any progress along this line
in your opinion is there any point in delaying
installation of OSHA dust control equipment in this
area?
SP-2256
AVOID VERBAL ORDERS Keith

“We are presently using asbestos lumnite mix or marinite board in above applications and are thus flying in the face of OSHA...”

Considering any progress along this line in your opinion is there any point in delaying installation of OSHA dust control equipment in this area?”

WEN200252

FOX 042589

10/2/72

1972 - Do not comply with OSHA

Keith -

10/5/72

In answer, off the record, to your question on whether I still believe that we should delay installation of OSHA dust control for asbestos-lumnite systems - I say yes!

Today the OSHA requirement on asbestos fibers is 5 fibers per cu in - in 1975 it is to be reduced to 2 fibers per cu in.

Johns-Manville told me that their present dust control system can meet the present 5 fibers per cu in. but they fear that the 2 fibers per cu in may be difficult to achieve or meet in 1975 - if OSHA is serious about this. So - your present plans for fiber control may be adequate today but will it be obsolete in a few years?

Glanrock is being used successfully at Tenn., Baden, & Vinnon in some critical applications. Other materials being tried haven't been used in service long enough to draw any conclusions. -

I would try Glanrock, Selfres, Carbowood's Para-Form B, and even Fibreflex paper

MJ Caprio

WEN200251

FOX 042588

In answer, off the record, to your question on whether I still believe that we should delay installation of OSHA dust control for asbestos-lumnite systems - I say yes!

1972 Marinite exposure continues

THOMAS B. BONNEY
PITTSBURGH OFFICE

MR. P. F. WOODWARD
VANCOUVER OPERATIONS

July 6, 1972

RE: MARINITE DUST CONTROL

In your May report of Air and Water Pollution Control, I noted the results of efficiency tests of Rotoclone-W scrubbers in controlling Marinite dusts. If your Rotoclones discharge into the working area, it is important that the asbestos fiber content of the discharge air be below the present standard of five fibers per cc. By 1976, the concentration will have to be something less than 2 fibers per cc.

The above are the usual limitations of contaminants not being returned to the room in concentrations considered as harmful. The Threshold Limit Value is the concentration used by hygienists in determining if a concentration is "harmful." You should be aware that some jurisdictions do not allow recirculation unless specifically approved. If you don't already know, it would be wise to determine if the state of Washington has such restrictions.

I must admit to having some misgivings about returning this air to the working area. This is based on the toxicity of asbestos dust, the horrible publicity it has gotten and the usual lack of attention given to Rotoclone maintenance. To minimize concern and to assure compliance, frequent monitoring of discharge return air is essential.

If you already exhaust the Rotoclones to the outside, or are forced to do so in the future, EPA may require that asbestos-contaminated air be captured by specific methods prior to exhausting it to the atmosphere. The proposed emission standard for asbestos is quite specific on this. Although it doesn't appear wise to take any action on changing air cleaning devices at this time, you should keep in mind that this is a distinct possibility and keep an eye out for the final standard which should be published soon in the Federal Register.

THOMAS B. BONNEY
TBB:lel

EXHIBIT

ALC 61

"In your May report...I noted the results of efficiency tests...in controlling Marinite dusts."

"I must admit to having some misgivings about returning this air to the working area. This is based on the toxicity of asbestos dust, the horrible publicity it has gotten and the usual lack of attention given to Rotoclone maintenance."

7/6/72

EXHIBIT

ALC 61

1973 Money over safety and health

FROM THOMAS B. BONNEY
PITTSBURGH OFFICE

TO INDUSTRIAL HYGIENISTS

March 28, 1973

RE: OSHA CITATIONS

An OSHA industrial hygienist surveyed our Warrick Operations during the month of January. As a result, eight citations were issued for violations of existing standards. We thought that all of you would be interested in the items cited which, except for items #5 and #8, concerned themselves with exposures to noise and asbestos.

We are alerting you to this action to show where some of the interest of OSHA presently lies and to point out that many of us also are vulnerable in these

The penalties imposed are of small concern when compared to the cost of correcting the conditions for which they were cited. It is of special interest to note that Warrick was cited, not only for failing to require ear protection in the noisy areas, but also for their failure to institute engineering controls to document the ineffectiveness of such controls.

Thomas B. Bonney

TBB:mh

Attachments

cc: R. H. Watson, Pittsburgh - 7
S. I. Roth, Pittsburgh - 7
J. M. Plunkett, Alcoa Tech Center

Info copies to: F. C. Irving, Jr., Pittsburgh - 29
R.S. Adams/R. Kohler, Alcoa Cutlery Corp
F.D. Koran/E.A. Moats, Tifton Aluminum Co., Inc.
E.G. Dudley/J.A. Elliott, H C Products Company
J.L. McKinley/R.B. Kempton/M.L. Bookout, Rea Magnet Wire Co., Inc.
R.F. Butler/D. Trudel, Cleveland Works
J.W. Anderson, AEP, Inc.
A.C. Sheldon/W.J. Koopman, ACPG
J.W. Warnock, Marshall Works
J.S. Hamilton/J.J. Thimons/Wear-Ever Aluminum, Inc.
R.C. Wilson, Alcoa Sport Products
W.A. Thomas/W. Kochanski, Lincoln Manufacturing Co., Inc.
K.K. Reid, Frigidome Division
J.C. Bates, Pittsburgh - 22

WEN009 0353

FOX 040045

“The penalties imposed are of small concern when compared to the cost of correcting the conditions for which they were cited.”

3/28/73

1973 removal of pot insulation

Asbestos Dust Samples

5/10/73

Sampled during removal of steel sheet above insulation and removal of insulation from pot 239 in room 204.

Sample # 14 - Asbestos sample taken by man in pot as steel sheeting was removed in pieces.

Sample time - Start 11:10 AM. Stop 11:28 AM

Sample # 15 - Asbestos sample taken during sheeting up and loading in to Room Hygar by man in pot.

Sample time - Start 11:29 AM Stop 11:45 AM

Sampling about rate of 2 liters/minute. Removing insulation containing asbestos fibers - (TM)

Results

Sample No
As. fiber count
Formula
Fibers/cc

$\frac{14}{3} \times \frac{13890}{2000 \times 15}$

11.6

$\frac{15}{8} \times \frac{13890}{2000 \times 15}$

37.1

11.6 f/cc

37.1 f/cc



BDN 016234

1973 - high exposures, trouble with dust counting

FROM ROBERT P. CARTER
PITTSBURGH OFFICE

TO WORKS INDUSTRIAL HYGIENISTS



February 13, 1973

RE: NIOSH TRAINING COURSES --- SAMPLING AND EVALUATING AIRBORNE
ASBESTOS DUST

We recently became aware that the National Institute for Occupational Safety and Health (NIOSH) has scheduled in 1973 a number of additional presentations of their training course on the sampling and evaluating airborne asbestos dust such as the one which was presented at Cincinnati, October 31 - November 2, 1972. A copy of the significant pages of the brochure for this October 31 - November 2, 1972 course is attached for your examination.

As you may know, some of our operating locations have encountered difficulties in making asbestos fiber count determinations as required under the provisions of the worker exposure standard for asbestos issued by OSHA in June, 1972. Since we have significant asbestos fiber exposures at a number of our operating locations, it is important that each affected location be able to make accurate asbestos counts to assure compliance with the very restrictive OSHA standard.

We have just learned from NIOSH that there will be two regional sessions of this same training course conducted in April of this year on April 10, 11 & 12 in Salt Lake City, and April 16, 17 & 18 at a location in Missouri not yet established (probably in Warrensburg in central Missouri). These two offerings of the training course are aimed primarily to serve the general areas in which they are being held, with the Salt Lake City session being related to OSHA regions 8, 9 and 10 and that in Missouri to OSHA region 6. However, these geographical boundaries will probably not be rigidly held to for attendees for the two sessions. There are still a small number of vacancies in each of the two sessions. In addition to these two regional meetings, there is also one scheduled at the NIOSH facility in Cincinnati, Ohio on May 15, 16 and 17 which presently is full and has a small waiting list. However, NIOSH has indicated that there is at least a possibility of additional registrants being admitted in the event of cancellations. Even if a late applicant is denied entry, he will be notified when the next class will be held.

If you and your management decide it is to your advantage to send one of your people to either of these regional meetings, we would recommend that you fill out very promptly the registration form portion of the attached copy of the NIOSH brochure, marking out the original 1972 course date and location, and typing in the date and location of the training course in which you are interested (using merely "Missouri" as the location of that conference). For the Salt Lake City and Missouri courses, these should be mailed promptly to Mr. James S. Ferguson changing the title the Deputy



BDN 033312

“Since we have significant asbestos fiber exposure at a number of our operating locations, it is important that each affected location be able to make accurate asbestos counts...”

1974 OSHA Violation Asbestos & Molasses

THOMAS B. BONNEY
PITTSBURGH OFFICE - 7

DR. M. O. COLWELL
PITTSBURGH OFFICE - 29

December 9, 1974

RE: POINT COMFORT - VIOLATIONS OF ASBESTOS STANDARD

The citations Point Comfort received for alleged violations of the asbestos standard involved the mixing of asbestos and molasses. The mixture is used to pack the space between the collector bar and the hole provided for it in the pot shell.

The operation was a surprise to all except those in the department where the work was being done. Most of the concerned people at Point Comfort were of the opinion that their use of asbestos was well controlled if not eliminated. The use of asbestos for this operation has been discontinued since November 22, 1974.

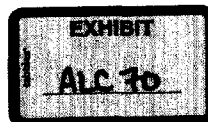
The OSHA industrial hygienist did not cite us for exposing our employee to concentrations of asbestos in excess of those permissible. Undoubtedly, this was because he took no air samples but relied only on visual observation. Some of the sections of the standard for which they were cited presumed that excessive concentrations existed or could have existed. Technically, we would be on pretty solid ground in contesting these, since the presence of excessive airborne concentrations were not firmly established. However, other violations for which we were cited required only that asbestos be involved in the operation. Therefore, contesting the citations could, at best, result in reducing their number rather than eliminating them entirely. Furthermore, the operation as described to me was one we would not be too proud of.

Point Comfort does not intend to contest the citations and I concur with this. We would have little to gain and much to lose by contesting. For much time and expense, we might reduce the imposed \$600 fine at the expense of aggravating the OSHA personnel who still have not finished with Point Comfort.

THOMAS B. BONNEY

TBB:gk

cc: Dr. B. D. Dinman - Pittsburgh Office - 7



"The citations...for alleged violations of the asbestos standard involved the mixing of asbestos and molasses. The mixture is used to pack the space between the collector bar and the hole provided for it in the pot shell....

...the operation as described to me was one we would not be too proud of."

12/9/74

1974 Wenatchee helper's exposure

“...a Marinite sawing operation”

A. B. PIECKA

MEMORANDUM

WENATCHEE WORKS

WENATCHEE WORKS

September 24, 1974

RE: MARINITE SAWING IN BUILDING 47

Testing for airborne asbestos fibers was conducted in Bldg. 47 during a marinite sawing operation on September 23, 1974. These tests confirm the results of earlier tests that respirators must be worn during the sawing operation.

The saw operator was wearing a face mask during the test; however, at one point, two other workers were helping hold the material that was being cut [approximately 4' x 8' marinite sheet]. During this period, the other two were not wearing face masks. We were, at the time, conducting a test on one of these men and the result showed his exposure exceeded that of the allowable limits.

It again should be stressed that everyone sawing, helping, or in the area during prolonged sawing periods should wear protective face masks.

A. B. PIECKA

AHP:cb

cc: J.E. Watters
Industrial Hygiene Committee/J.A. Thompson
B.B. Wilson
R.O. Louendahl

.... at one point, two other workers were helping hold the material that was being cut (approximately 4' x 8' marinite sheet.) During this period the other two were not wearing face masks. We were, at the time, conducting a test on one of these men and the result showed his exposure exceeded that of the allowable limits.

COPY



WENS 000468

FOX 040928

1974 Marinite cutting, high counts

Asbestos Dust Sample

1/7/74
1:50 PM

Sampling at construction department while cutting starting grooves on FDC heading using the bench saw. This saw had been modified by enclosing the pan section around the motor mount. However on this particular job the grooves are cut by cutting part way through the marinite in two 90° opposed directions & remove a small section of the marinite around the edge of the header. In making this cut the upper dust pit-ops cannot work properly because the blade does not cut through the marinite and saw blade throws the dust out under the piece being sawed.

Sample # 28 - personal sample of operator of the bench saw.

Sample rate	start	stop	Total time
3 1/20/min	1:23 PM	1:40 PM	17 minutes

Sample No.	Asbestos	Asbestos count	Personal	69 f/cc
28	Asbestos	Asbestos count	Personal	69

25 x 13 x 10
25 x 25



BDN 016227

69 f/cc

1975 Sawing Marinite - Dangerous Levels

Asbestos Dust Sample

9/4/75

Sampling at construction department while sawing 2" thick marinite. Used sub-

saw dust noted at this time. Then sawed these halves into 16 pieces 17 1/2" x 40" each. Used the bench saw for this and dust emission was considerable on personal observation.

Sample # 32 - personal sample on saw operator.

Sample rate	start	stop	total time
2.2 lites/min	10:50 AM	11:12 AM	22 min

Sample No-	Rev/ls	A. Fiber count	type sample	Fiber/cc
32		40	personal	114

$$\frac{40 \times 138980}{2200 \times 22} =$$

"Sampling at construction department while sawing 2" thick marinite."

Fiber/cc
114



BDN 010223

1985 Wenatchee Osha Violation

DIVISION OF INDUSTRIAL SAFETY AND HEALTH P.O. BOX 207, OLYMPIA, WASH. 98504										CITATION & NOTICE																												
REPORT NO.	ACTIVITY	REASON	REGION	COUNTY	IND. INSURANCE NO.	NOTICE SENT TO EMPLOYER	SIC	REPORT NO.																														
S2081	HEALTH	COMPLAINT	4	04	700002 009	05/09/85	33345	256617																														
WENATCHEE			WENATCHEE		DATE OF ACTIVITY		04/23/85																															
HARVEY HILLEGASS EMPLOYER / ADDRESS / CITY			IND. HYGIENIST		HARVEY HILLEGASS EMPLOYEE / ADDRESS / CITY		IND. HYGIENIST		ARMY WILLMS EMPLOYEE RE																													
ALUMINUM COMPANY OF AMERICA WENATCHEE WORKS P.O. BOX 221 WENATCHEE			WA 98001																																			
A copy of this Citation must be prominently posted immediately upon receipt at or near each place a violation referred to in the Citation occurred (RCW 49.17.120). It must remain posted until all violations cited there are corrected, or for three (3) working days, whichever period is longer. EMPLOYER: SEE REVERSE SIDE OF THIS FORM FOR NOTICE OF RIGHTS AND DUTIES REGARDING THIS CITATION NATURE OF ALLEGED VIOLATIONS OBSERVED DURING INSPECTION - UNLESS OTHERWISE NOTED ALL CITATIONS ARE TO TITLE 2 <table border="1"> <thead> <tr> <th>NO.</th> <th>TYPE*</th> <th>CHAP.</th> <th>SEC.</th> <th>SUB-SEC.</th> <th>SUB-ITEM</th> <th>DESCRIPTION OF ALLEGED VIOLATION / LOCATION</th> <th>ABATEMENT DATE</th> <th>PENALTY ASSESSED</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G</td> <td>24</td> <td>040</td> <td>1</td> <td></td> <td>TRAINING AND INSTRUCTION FOR THE SAFE USE OF ASBESTOS CONTAINING MATERIAL WILL NEED TO BE PROVIDED TO THE SHOP PERSONNEL.</td> <td>07/10/85</td> <td></td> </tr> <tr> <td>2</td> <td>G</td> <td>62</td> <td>107517</td> <td>3</td> <td>B 12</td> <td>ASBESTOS CONTAINING MATERIALS REMOVED FROM THE CONTAINERS IN WHICH THEY ARE SHIPPED (LOCATED IN BUILDING #44) MUST BE EITHER WETTED, ENCLOSED, OR VENTILATED TO EFFECTIVELY PREVENT ASBESTOS FIBER RELEASE IN EXCESS OF THE LIMITS.</td> <td>05/10/85</td> <td></td> </tr> </tbody> </table> WEN 1074 CONTINUED ON NEXT PAGE PAGE 1 *TYPE CODES - D - De minimus G - General S - Serious I - Imminent Danger N - Noncompliance R - Repeated W - Willful *SUB DIV - Appears As A Lower Case (Small) Alpha Character In The Washington Administrative Code *ITEM - Appears As A Lower Case (Small) Roman Numeral In The Washington Administrative Code RIGHTS OF EMPLOYEES OR REPRESENTATIVES OF EMPLOYEES: The Washington Industrial Safety and Health Chapter 49.17 RCW, provides that an employee or representative of employees may appeal any time period set for abatement of conditions cited as violations in this notice. Such Notice of Appeal must refer to this CITATION & NOTICE and include the name of the employer and the date of the inspection and specify the violation and the abatement appealed. The Notice of Appeal must be received by the Assistant Director for Industrial Safety and Health, Department of Labor and Industries, P.O. Box 207, Olympia, Washington 98504, within 15 working days of "communication notice." No person shall discharge or discriminate against any employee because such employee has exercised guaranteed him by the Act. ORIGINAL - EMPLOYER												NO.	TYPE*	CHAP.	SEC.	SUB-SEC.	SUB-ITEM	DESCRIPTION OF ALLEGED VIOLATION / LOCATION	ABATEMENT DATE	PENALTY ASSESSED	1	G	24	040	1		TRAINING AND INSTRUCTION FOR THE SAFE USE OF ASBESTOS CONTAINING MATERIAL WILL NEED TO BE PROVIDED TO THE SHOP PERSONNEL.	07/10/85		2	G	62	107517	3	B 12	ASBESTOS CONTAINING MATERIALS REMOVED FROM THE CONTAINERS IN WHICH THEY ARE SHIPPED (LOCATED IN BUILDING #44) MUST BE EITHER WETTED, ENCLOSED, OR VENTILATED TO EFFECTIVELY PREVENT ASBESTOS FIBER RELEASE IN EXCESS OF THE LIMITS.	05/10/85	
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“Training and instruction for the safe use of asbestos containing material will need to be provided to the shop personnel.”

“Asbestos containing materials removed from the containers in which they are shipped...must be either wetted, enclosed, or ventilated to effectively prevent asbestos fiber release in excess of the limits.”

FOX 040352

532/76 RSB/sbs

This is an item that everyone should be aware of. The Reg. as indicated means "no matter how small the amount." Do we really want to comply with this to the letter? Our present system as RJB and I have agreed to is that we do (as always) give medicals (to everyone over 40) once a year. We have flagged those working in the Brickmason Shop who are under 40 and are giving them medical exams annually. ^{Included}

I feel our present system is sufficient ^{included} to protect the employees - however it does not meet the Reg.

I would recommend we continue our present policy

* and sit & wait to see what happens. Again, everyone should be aware that we are not meeting the Reg.

ABP

8/6

* OK but suggested you & RJB discuss with Board - not only to see what Vancouver plans to do but to give him opportunity as NW Medical Director to advise Reg. We can't afford to rule unilaterally on something that could cause the entire Company a problem. We should have a Company policy statement on this. - RJ

Bull is on the file 1974

ABP

FOX 041004

"This is an item that everyone should be aware of. The reg as indicated means "no matter how small the amount." Do we really want to comply with this to the letter?...I feel our present system is sufficient to protect the employees - however it does not meet the reg. I would recommend we continue our present policy and sit and wait to see what happens. Again, everyone should be aware that we are not meeting the reg."

1977 OSHA Asbestos respirator Violation

OSHA Closing Conference 1977-11-21
10:00 a.m. - Monday - Rockdale Works

Attachment II

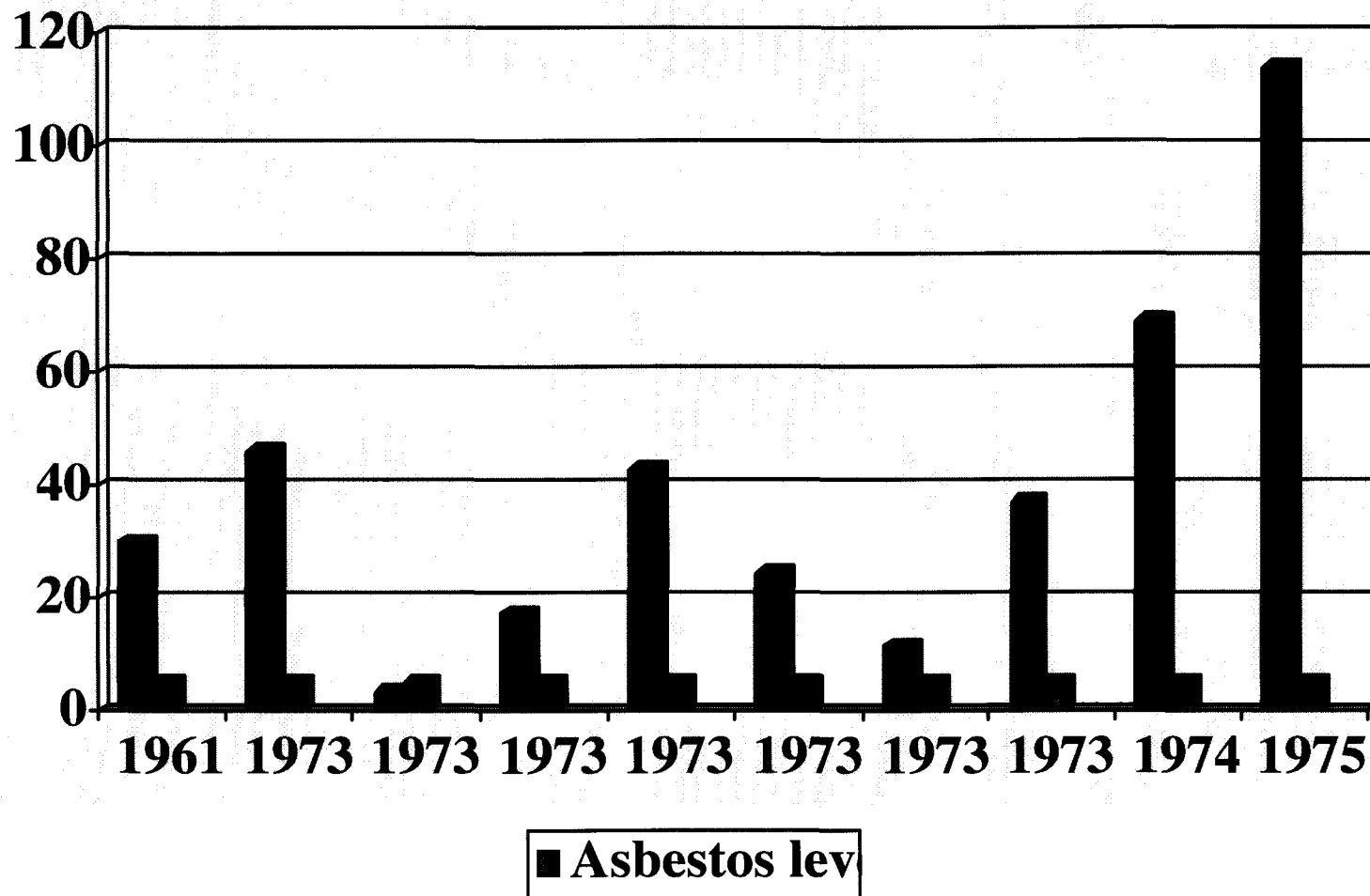
Item & Brief Description	Area of Plant	Action to be taken and Length of Abatement Period
1.* Chlorine respirators not available for emergency escape from area.	Properzi	Provide respirators
2.* Opening to the top of mixer not guarded	Potlining - Building 127	Guarded and abated
3.* Carbon Monoxide alarm not installed for plant air compressors that are used sometimes for breathing air.	Total Plant	Install alarm - 30 da
4.* No attempt to reduce air flow from plant air system (100 psi +15 psi) - being used to blow off pots and superstructures.	Potrooms	
5.* Pot Tenders eating their lunch in Potrooms (exposure to fluorides through ingestion)	Potrooms	Discontinue eating lunch or working in potrooms- 30 days.
6.* Not wearing approved asbestos respirator while handling asbestos and in addition question whether the provided 3M 8710 asbestos respirator is adequate protection.	Potlining (Cradle insulation)	Provide proper respirator. (15 days)

“Not wearing approved respirator while handling asbestos and in addition question whether the provided 3M 8710 asbestos respirator is adequate protection.”



11/21/77

1961-1975 Dangerous exposure levels



Rules require special clothing for all levels above 10.

1977 and 1979 Alcoa Asbestos Dangerous & Illegal exposures

CLASSIFICATION 17/062
CONSTRUCTION-CARPENTER

WORKS BADIN



INDUSTRIAL HYGIENE SAMPLING DATA BY JOB CLASSIFICATION

DATE	SAMPLE NO.	NAME	SOC. SEC. #	NOISE (dBA)	TOTAL PARTS (mg/m ³)	ESP. PARTS (mg/m ³)	ASBESTOS (fibre/cc)	TASK PERFORMED	COMMENTS
77JUL01	(23SAMPLE)	WHITLEY, LUTHER	---	---	---	---	?	DRILL SAND	TWA?
77JUL01	---	HINSON, JOE	---	---	---	---	4	MARINITE DAMS SAND OUTLET TROUGH	TWA?
77SEP15	(23SAMPLE)	ALMOND, BOBBY	---	---	---	---	?	POUNCE W/ HAND FILE CUT MARINITE WITH 810 SAND (SKILL SAND	---
77SEP15	(23SAMPLE)	GARRIS, TED	---	---	---	---	?	"	---
77SEP16	---	ALMOND, BOBBY	---	---	---	---	47.5	CUFFING MARINITE WITH SAND (DAMERS SAND) SAND OUTLET TROUGH	TWA?
77SEP16	---	GARRIS, TED	---	---	---	---	64	ALL DATA LISTED IS AN 8 HOUR	TWA?
79JAN21	791-1	MARTIN, B.	---	---	---	---	17	TIME WEIGHTED AVERAGE (8 HR. TWA)	TWA?
79JAN30	791-2	MARTIN, B.	---	---	---	---	63	UNLESS NOTED OTHERWISE	TWA?
79JAN30	791-3	MAULDIN, DILLON	---	---	---	---	51	"	TWA?
79FEB01	791-4	ALMOND, BOBBY	---	---	---	---	5	"	TWA?
79AUG29	798-1	HINSON, JOE	---	---	---	---	20.4	"	TWA?
79AUG28	798-2	MARTIN, B.	---	---	---	---	20	"	TWA?
79AUG29	798-3,6	GARRIS, TED	---	---	---	---	?	"	---
79AUG29	798-4,5	ALMOND, BOBBY	---	---	---	---	?	"	---
79SEP17	799-14,16	MARTIN, B.	---	---	---	---	?	"	---
79SEP19	799-15,17	ALMOND, B.	---	---	---	---	?	"	---
79SEP18	799-18	MARTIN, B.	---	---	---	---	17	"	---

PEL = 90. 15.0 0.2

4

47.5

60

63

51

5

20.4

20

17

“All data listed is an 8 hour time weighted average (8 hr. TWA) unless otherwise noted.”

Alcoa Dangerous & Illegal exposures

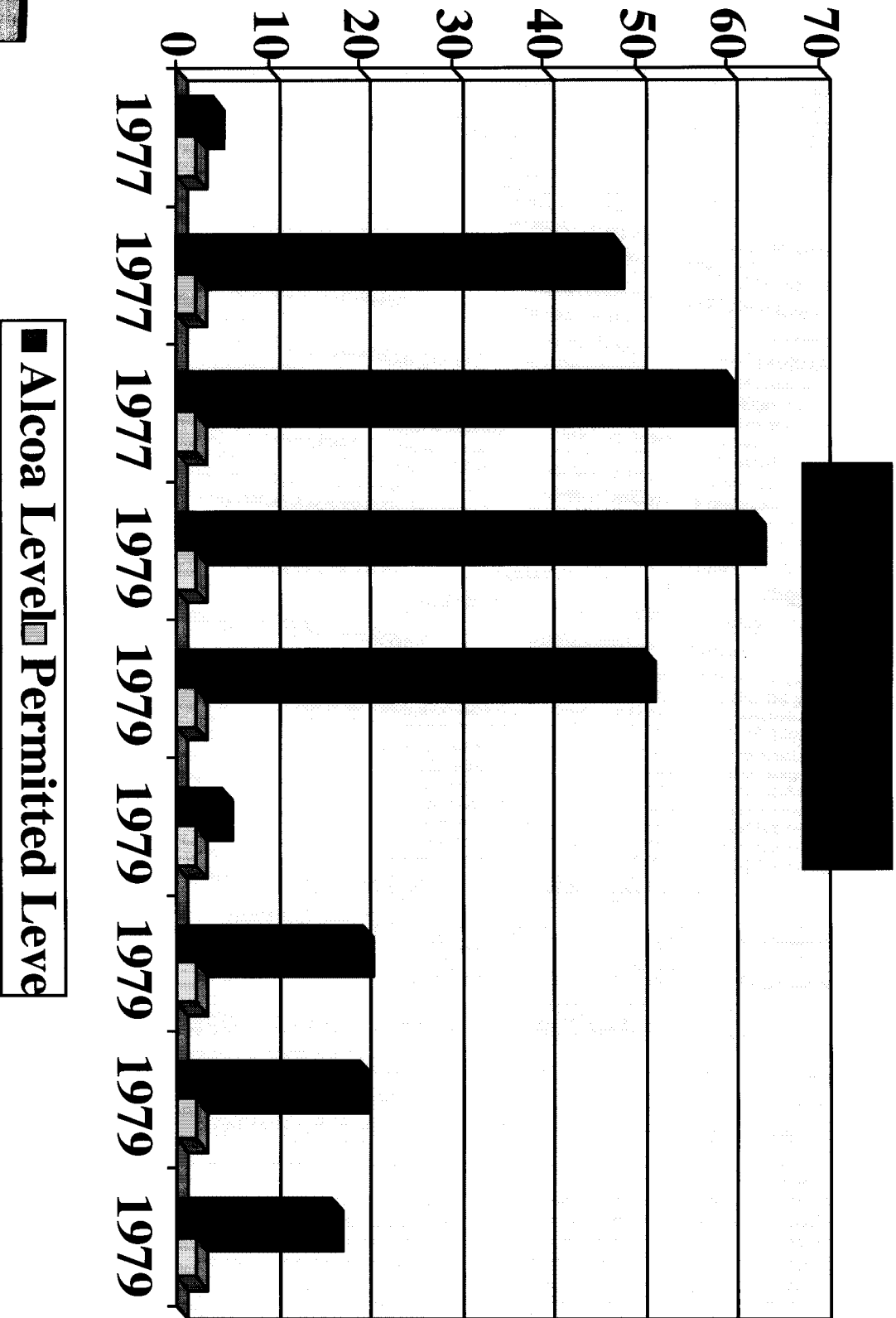


EXHIBIT
MC 278

1977 - all counts are TWA

INDUSTRIAL HYGIENE SAMPLING DATA BY JOB CLASSIFICATION

CAV DATA LISTED IS AN 8 HOUR	7
TIME WEIGHTED AVERAGE 8 HR. TWA	7
UNLESS NOTED OTHERWISE	7
EXCEPT WHERE SHOWN OTHERWISE	7
FED SHEET INCLOR HDRS.	7



1977 First Alcoa Corp Safety Prog

Remarks by
C. F. Fetterolf
President and Chief Operating Officer
Alcoa
before the
Aluminum Association
Workshop
Tampa, Florida
December 7, 1987



12/7/87

Management Accountability and Responsibility

Basic industries in the United States have been gravely wounded in the past decade. All of you know in particular that aluminum producers have been adjusting to an extremely competitive global economy. We've had to make major changes in order to survive and grow. For many in our industry, that has involved restructuring, rationalization and diversification.

In the process, it's possible we've neglected some important issues that aren't directly related to production or profits but are absolutely related to the health of our companies. The most important among these are programs devoted to employee health and safety. Our own view is that a business that can't be safe is a business we don't want to be in -- regardless of how profitable it may be.

For that reason, I am especially pleased to be here this morning because developing and maintaining effective health and safety programs must be a priority commitment for all of us. This workshop is addressing topics that every conscientious company must address -- and readdress. There can be no compromise when it comes to providing and maintaining safe and healthy conditions in our operations. By now, I'm sure all of us know that it's not only the right thing to do, but it's also an effective business decision. We've made some of

- 2 -

In all companies, senior management has the ultimate responsibility for health and safety programs. The tone and commitment must be set, and the expectations clearly identified, at that level.

Managers and supervisors at the locations must be accountable for seeing that the procedures are working. They put the bite into the commitment.

But the programs won't succeed without the cooperation of employees. They must participate fully in providing for their own protection -- as well as that of their fellow workers.

We've had a fairly good safety program at Alcoa for the past decade. Our record has been steadily improving. But we won't settle for good. It's got to be excellent. Our goal is to achieve an injury free workplace. We believe we can be as good as DuPont.

Ten years ago, we established a formal corporate safety program

active to. We set a goal at that time to cut our accident rate in half in five years. We succeeded.

Then we set a goal which was to reduce accidents by 37 percent over the next five years. The second five years are just about to meet our goal in terms of serious injuries. It comes to lost work days. The record is managers know it.

From now on, we want to push to get for injuries! We want injury free. We have a new push to get every employee's involved as part

"Ten years ago, we established a formal corporate safety program."

Safe. That is a corporate mission. It's not an option for individual business unit, or operating location, or department. Neither is it a personal option -- for anyone!

It's our intention that no employee will ever go home from work harmed in any way because he or she came to work for Alcoa that day. And we're promoting a safety culture that extends beyond the workplace into the home as well.

752474 0209

FOX 041937

on our established programs. Every Alcoa business unit is now in the process of examining its safety programs, reviewing the strengths and weaknesses of the efforts. In effect, we're giving the entire company a performance review on safety.

Safety requires constant monitoring. Just as all of our companies work constantly to keep production up, to maintain product quality and to keep costs down, we all have to apply ourselves constantly to making safety work. And we must also be certain that our manufacturing processes are the safest we know how to develop. If a process isn't safe, we shouldn't be using it.

752474 0210

FOX 041938

1978 Asbestos Product Use Continues

FROM THOMAS B. BONNEY
PITTSBURGH OFFICE

TO

1978 July 28

RE: ELIMINATION OF UNNECESSARY USE OF ASBESTOS-CONTAINING MATERIALS

Over the past six years, primarily by means of Industrial Hygiene Newsletters, we have attempted to discourage the use of asbestos at all of our operating locations. We have taken this position for two reasons. First, excessive exposure to asbestos represents a real hazard. Second, compliance with the applicable OSHA standard costs us money which we would not have to spend if substitute materials were used (e.g., for air sampling, medical surveillance, disposal procedures, etc.). Although our plants have made impressive headway, it appears that our goal of eliminating unnecessary asbestos usage is not yet at hand.

As we visit our plants, we still see asbestos products being used. We suspect that for many of them there are asbestos-free, functionally acceptable alternates. Because continued use of asbestos products may result in unnecessary health hazards and concerns to our employees as well as additional costs to Alcoa, we believe that Alcoa's best interest is to eliminate the use of asbestos products when possible. To accomplish this objective requires that first we know for specific applications it is presently being used. Therefore, we request that you survey your location to provide us with information about your plant's use of asbestos. The attached form indicates the data that is required and can be used for submitting your survey results. We ask that you submit the results of your survey by 1978 September 01.

Upon receipt we will compile a listing of current usage throughout Alcoa. With the assistance of appropriate plant and Pittsburgh personnel, we will place each usage into one of four categories:

- (1) No foreseeable employee exposures; substitutes available.
- (2) No foreseeable employee exposures; no viable substitutes available.
- (3) Potential employee exposures; substitutes available.
- (4) Potential employee exposures; no viable substitutes available.

Following classification, with the aid of appropriate Pittsburgh and plant personnel, we will work toward a prompt and orderly replacement of all items in category "3". Jointly, we will further consider if there is merit to taking the same action for any or all of those materials in category "1".

"As we visit our plants, we still see asbestos products being used. We suspect that for many of them there are asbestos-free, functionally acceptable alternates."



57-4503 (REV. 11-60)

7/28/78

Not sent to Wenatchee

1978 OSHA Asbestos Violations

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

CITATION and NOTIFICATION OF PENALTY

Indianapolis Area Office
46 East Ohio Street, Room 422
Indianapolis, Indiana 46204
Telephone Number 317-269-7290

TYPE OF VIOLATION: REPEATED

INSPECTION DATE: 7/27/78
OSHA NUMBER: S3255 031
AREA: 2210 PAGE: 1 of 2

INSPECTION DATE: 5/23-6/1/78
INSPECTION SITE: Highway 66, Newburgh, IN

THE LAW REQUIRES that a copy of this citation be posted immediately in a prominent place at or near the location of the violation cited below. The citation must remain posted until the violations cited below have been corrected, or for 3 working days (excluding weekends and Federal holidays) whichever is longer.

Mr. Bob Parsons, Env. Control Manager
ALCOA-Warner Operations
Highway 66, P. O. Box 10
Newburgh, IN 47630

This citation describes violations of the Occupational Safety and Health Act of 1970. The penalty(ies) listed below are based on these violations. You must correct the violations referred to in this citation by the dates listed below and pay the penalty(ies) proposed, unless within 15 working days (excluding weekends and Federal holidays) from your receipt of this citation and notify you mail a notice of contest to the U.S. Department of Labor Area Office at the address shown above. (See the enclosed booklet which outlines your responsibilities and courses of action and should be read in conjunction with this form.)

ITEM NUMBER	STANDARD, REGULATION OR SECTION OF THE ACT VIOLATED; DESCRIPTION	DATE BY WHICH VIOLATION MUST BE CORRECTED	PENALTY
1	29 CFR 1910.1001(g)(2)(i): Caution labels were not affixed to all raw materials, mixtures, scrap, waste, debris, or other products containing asbestos fibers, or to their containers, which during any reasonably foreseeable use, handling, storage, disposal, processing or transportation could release airborne concentrations of asbestos fibers exceeding prescribed exposure limits: (a) On the south side of the Ingot Plant Building #134 in the scrap marinite dust and debris from a rasping operation is not labeled as a potential airborne asbestos hazard. (b) On the south side of the Ingot Plant Building #134 in the Marinite Keying area, near column A46, a wooden scrap "coffin" containing marinite debris and dust is not labeled as a potential airborne asbestos hazard. These conditions are repeated violations of a standard cited on a previous inspection.	8/1/78	
2	29 CFR 1910.1001(h)(2): Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce airborne levels of asbestos fibers in excess of prescribed limits was not collected and disposed of in sealed impermeable bags or other closed, impermeable containers: (a) On the south side of the Ingot Plant Building #134 in the Marinite Keying Area, near column A46, scrap marinite was improperly handled and disposed of in that waste marinite dust and debris was stored in an open metal can.	8/1/78	

AREA DIRECTOR: J. F. Ruppel

NOTICE TO EMPLOYEES - The law gives an employee or his representative the opportunity to object to any abatement date set for a violation if he believes the date to be unreasonable. The contest must be mailed to the U.S. Department of Labor Area Office at the address shown above within 15 working days (excluding weekends and Federal holidays) of the receipt by the employer of this citation and penalty.

EMPLOYER DISCRIMINATION UNLAWFUL - The law prohibits discrimination by an employer against an employee for filing a complaint or for exercising any rights under this Act. An employer who believes that he has been discriminated against may file a complaint no later than 30 days after the discrimination with the U.S. Department of Labor Area Office at the address shown above.

EMPLOYER RESPONSIBILITIES AND COURSES OF ACTION - The enclosed booklet outlines employer responsibilities and courses of action and should be read in conjunction with this notification.

CITATION AND NOTIFICATION OF PENALTY

OSHA 201 (Rev. 5/78)

ARD 042538

"Caution labels were not affixed to all ... products containing asbestos fibers, or to their containers..."

"Asbestos...consigned for disposal...was not collected and disposed of in sealed impermeable bags..."

7/27/78

FOX000

1978 OSHA Repeat Offender

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

CITATION and NOTIFICATION OF PENALTY

Indianapolis Area Office
40 East Ohio Street, Room 422
Indianapolis, Indiana 46204
Telephone Number 317-269-7290

TYPE OF VIOLATION: REPEATED 1

ISSUANCE DATE: 7/27/78 OSHA NUMBER: S3255 O31
REGION: 5 AREA: 2210 PAGE: 1 of 2

INSPECTION DATE: 5/23-26/78
INSPECTION SITE: Highway 66, Newburgh, IN

TO: Mr. Bob Parsons, Env. Control Manager
ALCOA-Warrior Operations
Highway 66, P. O. Box 10
Newburgh, IN 47630

THE LAW REQUIRES that a copy of this Citation be posted immediately in a prominent place at or near the location of the violation(s) cited below. The Citation must remain posted until the violations cited below have been corrected, or for 3 working days (excluding weekends and Federal holidays) whichever is longer.

This citation describes violations of the Occupational Safety and Health Act of 1970. The penalty(ies) listed below are based on these violations. You must correct the violation(s) referred to in this citation by the dates listed below and pay the penalty(ies) proposed, unless within 15 working days (excluding weekends and Federal holidays) from your receipt of this citation and penalty you mail a notice of contest to the U.S. Department of Labor Area Office at the address shown above. (See the enclosed booklet which outlines your responsibilities and courses of action and should be read in conjunction with this form.)

ITEM NUMBER	STANDARD, REGULATION OR SECTION OF THE ACT VIOLATED: DESCRIPTION	DATE BY WHICH VIOLATION MUST BE CORRECTED	PENALTY
1	29 CFR 1910.1001(g)(2)(i): Caution labels were not affixed to all raw materials, mixtures, scrap, waste, debris, or other products containing asbestos fibers, or to their containers, which during any reasonably foreseeable use, handling, storage, disposal, processing or transportation could release airborne concentrations of asbestos fibers exceeding prescribed exposure limits: (a) On the south side of the Ingot Plant Building #134 in the scrap marinite dust and debris from a rasping operation is not labeled as a potential airborne asbestos hazard. (b) On the south side of the Ingot Plant Building #134 in the Marinite Keying area, near column A46, a wooden scrap "coffin" containing marinite debris and dust is not labeled as a potential airborne asbestos hazard. These conditions are repeated violations of a standard cited on a previous inspection.	8/1/78	\$410.
2	29 CFR 1910.1001(h)(2): Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce airborne levels of asbestos fibers in excess of prescribed limits was not collected and disposed of in sealed impermeable bags or other closed, impermeable containers: (a) On the south side of the Ingot Plant Building #134 in the Marinite Keying Area, near column A46, scrap marinite dust and debris was stored in an open metal can.	8/1/78	\$820.

AREA DIRECTOR: J. F. Rappaport

NOTICE TO EMPLOYEES - The law gives an employee the right to a representative of the opportunity to object to any abatement date set for a violation if he believes the date to be unreasonable. The contest must be mailed to the U.S. Department of Labor Area Office at the address shown above within 15 working days (excluding weekends and Federal holidays) of the receipt by the employer of this citation and penalty.

EMPLOYER DISCRIMINATION UNLAWFUL - The law prohibits discrimination by an employer against an employee for filing a complaint or for exercising any rights under this Act. An employer who believes that he has been discriminated against may file a complaint no later than 30 days after the discrimination with the U.S. Department of Labor Area Office at the address shown above.

EMPLOYER RESPONSIBILITIES AND COURSES OF ACTION - The enclosed booklet outlines employer responsibilities and courses of action and should be read in conjunction with this notification.

CITATION AND NOTIFICATION OF PENALTY OSHA 201b-7-78 ARD 042538

FOX000

"Caution labels were not affixed to all raw materials..., scrap, waste, debris, or other products containing asbestos fibers, or to their container..."

"These conditions are repeated violations of a standard cited on a previous inspection."

7/27/78

1978 OSHA Repeat Offender

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
CITATION AND NOTIFICATION OF PENALTY

Indianapolis Area Office
46 East Ohio Street, Room 422
Indianapolis, Indiana 46204
Telephone Number 317-269-7290

REPEATED VIOLATIONS: REPEATED 1

TO: Mr. Bob Parsons, Env. Control Manager
ALCOA-Warrick Operations
Highway 66, P. O. Box 10
Newburgh, IN 47630

ISSUANCE DATE: 7/27/78
OSHA NUMBER: S32551 031
REGION: 5 AREA: 2210 PAGE: 2 OF 2

INSPECTION DATE: 5/23-6/1/78
INSPECTION SITE: Highway 66
Newburgh, IN

THE LAW REQUIRES that a copy of this Citation be posted immediately in a prominent place at or near the location of the violation(s) cited below. The Citation must remain posted until the violations cited below have been corrected, or for 3 working days (excluding weekends and Federal holidays) whichever is longer.

THIS SECTION MUST BE DETACHED BEFORE POSTING

Penalties are due within 15 days of receipt of this notification, unless contested (See enclosed booklet)

This citation describes violations of the Occupational Safety and Health Act of 1970. The penalty(ies) listed below are based on these violations. You must correct the violations referred to in this citation by the dates listed below and pay the penalties proposed, unless within 15 working days (excluding weekends and Federal holidays) from your receipt of this citation and penalty you mail a notice of contest to the U.S. Department of Labor Area Office at the address shown above. (See the enclosed booklet which outlines your responsibilities and courses of action and should be read in conjunction with this form.)

ITEM NUMBER	STANDARD, REGULATION OR SECTION OF THE ACT VIOLATED	DESCRIPTION	DATE BY WHICH VIOLATION MUST BE CORRECTED	PENALTY
(b)	On the south side of the Machine Shop Building #344 in the Marinite Routing Room, asbestos-containing waste was stored in an open container.			
(c)	On the south side of the Ingot Plant Building #134 in the Marinite Keying Area, near column A46, a wooden scrap "coffin" containing marinite debris and dust was not adequately sealed when not in use.			

These conditions are repeated violations of a standard cited on two previous inspections.

NOTICE TO EMPLOYEES - The law gives an employee or his representative the opportunity to object to any abatement date set for a violation if he believes the date to be unreasonable. The contest must be mailed to the U.S. Department of Labor Area Office at the address shown above within 15 working days (excluding weekends and Federal holidays) of the receipt by the employer of this citation and penalty.

EMPLOYER RESPONSIBILITIES AND COURSES OF ACTION - The enclosed booklet outlines employer responsibilities and courses of action and should be read in conjunction with this notification.

CITATION AND NOTIFICATION OF PENALTY

OSHA 211 V. 1-78

FOX000754

"...Marinite routing room, asbestos-containing waste was stored in an open container."

"...in the Marinite Keying area...a wooden scrap "coffin" containing marinite debris and dust was not adequately sealed when not in use."

"These conditions are repeated violations of a standard cited on two previous inspections."

1979 - 6" of Dust

FROM M. J. VAUDREUIL
PITTSBURGH OFFICE

TO MR. G. D. HICKS
MASSENA OPERATIONS

1979 August 13

H & S
Industrial Hygiene

BDD
TBB
RMJ
HGS
PHS
MJV

AUG 14 1979

MLF
JD
OCD
DB
LMN
EDS

RE: INDUSTRIAL HYGIENE SURVEY OF MASSENA OPERATIONS

I. Summary and Discussion

The following is a summation of the walkthrough survey conducted in conjunction with the OSHA industrial hygiene inspection of 1979 July 10-13 and 24-26. Recommendations are included for your information and for the consideration of production management.

Observations made during the two week-long visit indicate that we have potentially serious health hazards at Massena. These conditions clearly deserve attention and remedial action. The problems which I will review should be given top priority. Management support of corrective efforts is essential.

Many of the conditions observed can be expected to result in OSHA citations. While the OSHA inspector's judgement and techniques may be open to criticism; nevertheless, the fact remains that we do have health hazards that should be controlled. A number of these problems have been recognized before, but corrective action is not apparent. Again, attention by Massena management is fundamental to resolving these situations.

The problems noted can be grouped into several major categories, each with plant-wide implications. Specific recommendations are listed in Section II. The major areas for concern are:

A. Maintenance *PM*

There does not appear to be an aggressive, on-going maintenance program at Massena; particularly with respect to exhaust ventilation and housekeeping.

Lack of maintenance and effectiveness of exhaust systems was evident throughout the smelting plant. Areas worthy of particular note were: (pitch unloading, butt stripping and bath crushing.)

Housekeeping of the workplace and lunchrooms was poor, resulting in excessive dust levels on floors, eating surfaces, and in the plant atmosphere. Many sections of the potrooms and associated areas have as much as six inches of accumulated dust on the floors. Vehicles passing through these areas were observed creating clouds of airborne dust. Similarly, several floor sweeping machines put a greater amount of dust into the air than in their collection boxes.

EXHIBIT
ALC 89

ARCH 18577

Housekeeping of the workplace and lunchrooms was poor, resulting in excessive dust levels on floors, eating surfaces, and in the plant atmosphere. Many sections of the potrooms and associated areas have as much as six inches of accumulated dust on the floors. Vehicles passing through these areas were observed creating clouds of airborne dust. Similarly, several floor sweeping machines put a greater amount of dust into the air than in their collection boxes.

8/13/79

FROM: D. C. WAGNER

TO: R. D. KIELMEYER

AUGUST 31, 1987

RE: ASBESTOS TRAINING VIDEO

I received the video you requested today and reviewed it with Harvey Hillebrand, Jim Thompson, and Bob Bell.

We feel the text of the film is quite accurate. However, the "flavor" of the film could cause unnecessary concern if shown to a wide audience or is not fully explained. Therefore, we feel it should be used only for training those folks who are directly exposed to an asbestos hazard.

We also feel that it should be introduced by carefully defining the difference between the average "asbestos worker" and the type of activity typically performed here at Wenatchee Works. Typical exposure for one of our mechanics, for example, is a lot different than for the construction trades.

We also noticed that the video does not differentiate between those circumstances which require sealing-off the work area and, therefore require contamination procedures to be followed, versus encapsulating pipe insulation for removal without sealing-off the work area. This distinction must be made clear during discussion periods.

If you have any specific questions, please contact any one of the attendees directly.

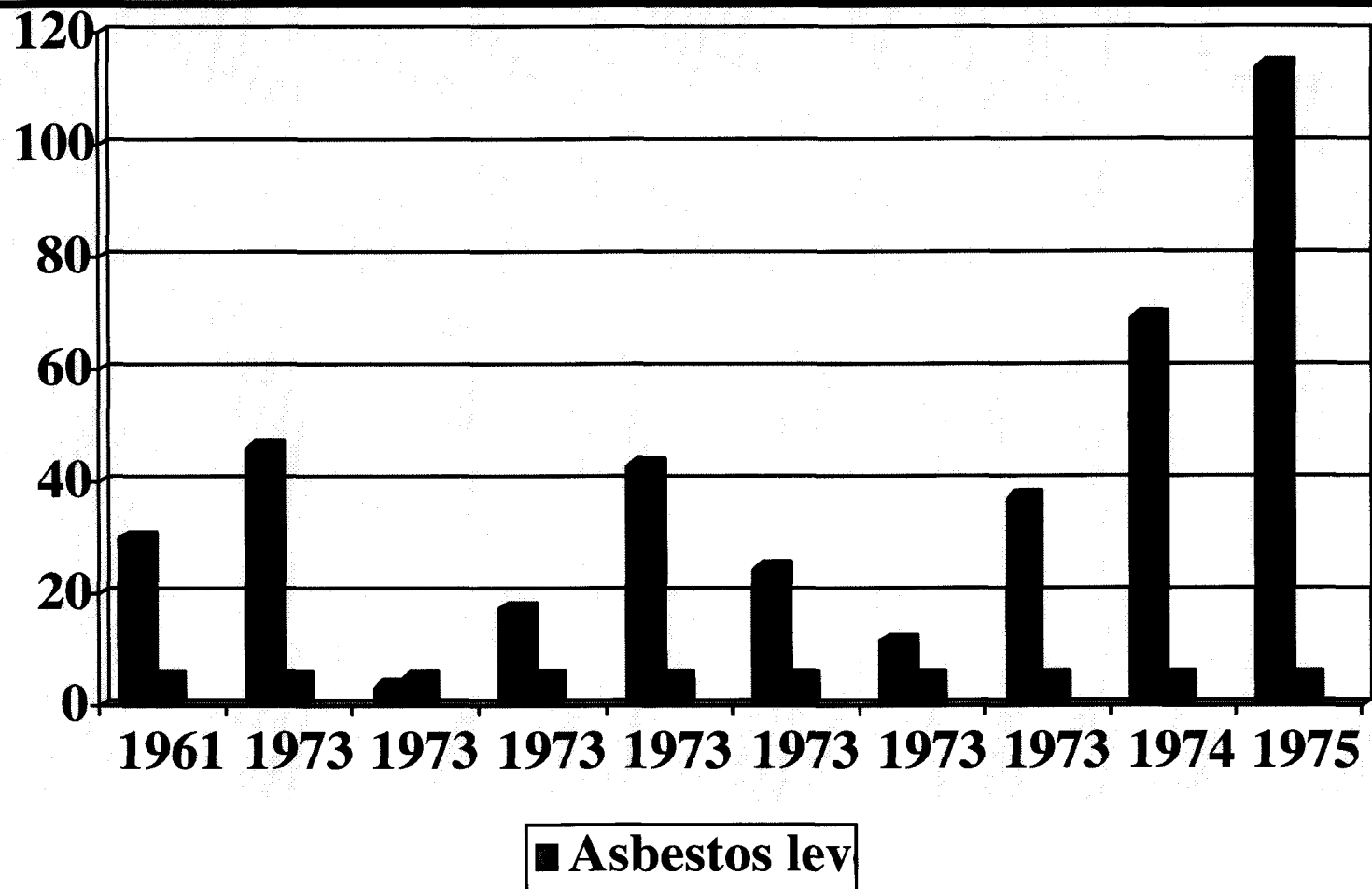
Dave

cc:
JAT
HFH
RBB
BBW - INFO

FOX 040071

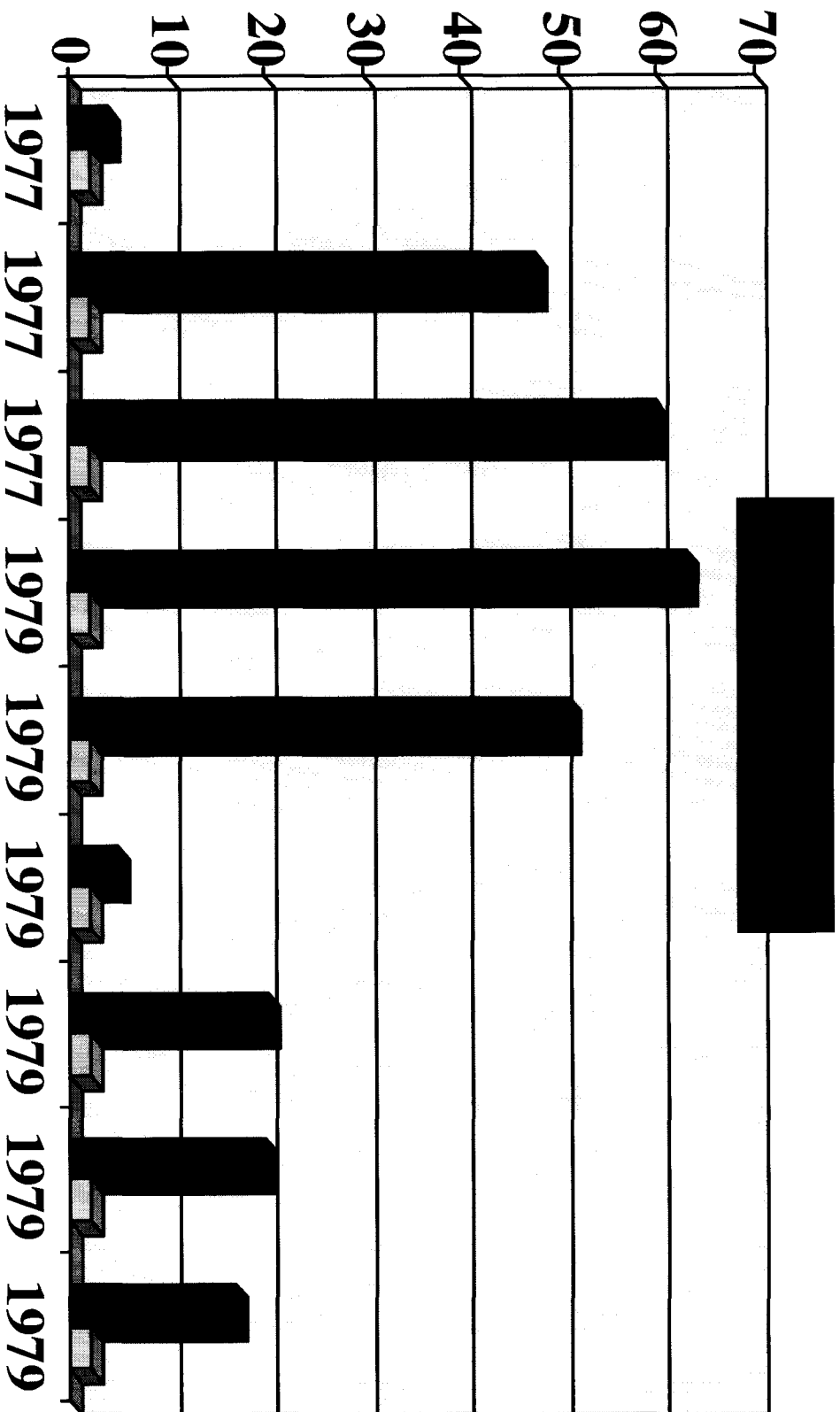
We feel that the text of the film is quite accurate. However, the "flavor" of the film could cause unnecessary concern if shown to a wide audience or is not fully explained.

Alcoa Dust Levels Dangerous



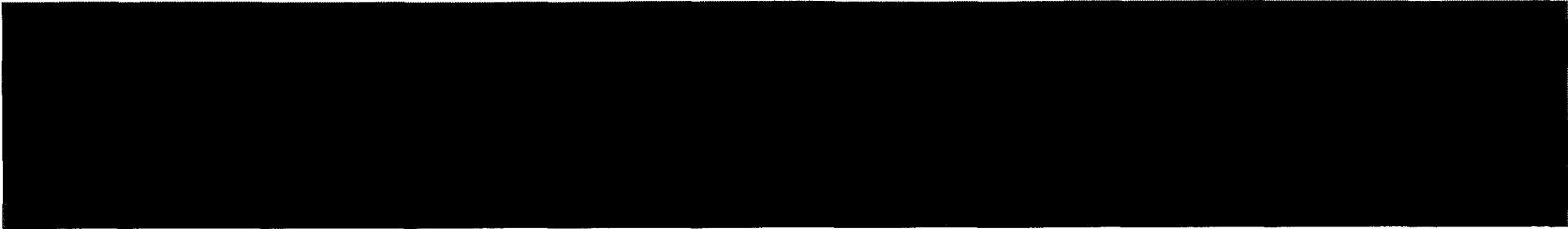
Rules require special clothing for all levels above 10.

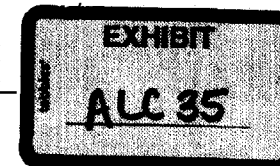
Alcoa Dangerous and Illegal Exposures



■ Alcoa Level □ Permitted Level



- 
1. Mesothelioma is caused by asbestos.
 2. Mesothelioma is incurable and 100% fatal.
 3. No safe exposure level known for mesothelioma.
 4. People get mesothelioma from living in the same house as someone who is exposed to asbestos on the job.
 5. People get mesothelioma from washing the clothes of someone who is exposed to asbestos on the job.
 6. People get mesothelioma from short duration exposure: mesothelioma from one month putting insulation on home plumbing.
 7. People get mesothelioma from living in the same neighborhood as a factory using asbestos.



1983 Clothing? Hankies and Diapers

FROM E. BROOKS PARKER
ROCKDALE WORKS

TO MEMORANDUM

MEMORANDUM
1983 June 15
Page Two

The following day, June 08, Mr. Edwards returned for a more in-depth look at several operations in the plant. He was accompanied by Messrs. Henson, Parker and Damiano. The areas which were inspected were:

- Potlining, Bldg. 27
- Pot digging - Pot 1, Room 6
- Bath crusher, Courtyard 19
- Potroom ore bucket filling stations, Rooms 134 and 128.

Events which occurred in each area are discussed below:

Potlining - Bldg. 27

Interviewed Mr. J. D. Hawkins, Potlining employee. Mr. Hawkins described several problems found in the Potlining Department.

- Skin irritation and chemical burns associated with removing remnants of old potlining from pots in preparation for their repair. Mr. Hawkins reported that the material is removed with chipping hammers and small pieces which break loose can come to rest on the employees' skin and cause irritation and/or burns. The cleaning operation was conducted only momentarily during the inspection. Mr. Edwards asked about the nature of the material and it was explained that during the smelting process, the potlining absorbs NaF which, when the pot is watered to facilitate digging, can react to form a caustic material. Mr. Edwards obtained a sample of the material for analysis. We split this sample with him

Mr. Edwards observed the "make-shift" protective clothing (handkerchiefs, diapers, taped glove cuffs) and suggested that more adequate articles are probably available (coveralls, hoods, etc.).

- Potential exposure to asbestos associated with deterioration of transite pipe used in the potroom fume duct. Mr. Hawkins reported that old pieces of pipe when they are dropped, tend to break and crumble and generate asbestos dust. We did not see an example of such an occurrence, but Mr. Edwards suggested that if this did happen, employees should leave the material alone and immediately notify their supervisor and obtain appropriate protective and clean-up equipment so that the material could be safely and properly disposed of.

"Mr. Edwards observed the "make-shift" protective clothing (handkerchiefs, diapers, taped glove cuffs) and suggested that more adequate articles are probably available (coveralls, hoods, etc.)"

Clothing Rules & Reality

1982 - Rules

Alcoa asbestos clothing

- Disposable coveralls
- hair covering (under the hard hats)
- respirators approved for asbestos should be worn at all times when work is in progress.

1983 - Reality

Alcoa asbestos clothing

- “Make-shift” protective clothing
- Handkerchiefs
- Diapers

List of toxics at Alcoa

ELECTRICAL	POTROOMS	POTLINING	UTILITY
- Abrasives - Acetylene - Adhesives - Aerosol - Alcoa Joint No. 2 - Alcohol (Den.) - Antifreeze - Asbestos Gasket Cl. - Askarels - Bakelite - Battery Acid - Brake Fluid - Caulking Compounds - Contact Re-Nu - Copper and Cu Dust - 1,2 Dichloroethane - Dye - Elect. Insul. Mat. - Epoxy - Epoxy Cements - Floor Sweeping Comp. - Hydrochloric acid - Insul. Paint & Varn. - Lead - Liquid Wrench Penetrating Oil - Micarta - Naphtha, VM&P - Nitrogen - Oakite - Pipe Joint Comp. - Potassium Hydroxide - Sealing Compound - Silicone Grease - Silver Brazing Alloys - Sodium Carbonate - Solder - Soldering flux - Transformer oil - Varnish Solvents - White lead - ✓ Crater Comp #3	- Alumina - Aluminum Fluoride - Bath - Cryolite - Fluorspar - Pot Gases - Potroom Particulate - Sodium Carbonate - Regenerated Alumina from A-446	- Acetylene - Alcoa Joint No. 2 - Alumina - Alum. Fluoride - Asbestos - Asbest. Millboard - Bath - Butts - Castiron - Coal - Concrete - Copper and Cu dust - Oug Potlining - Fullers Earth-Oil Abs. - Methyl Naphthalene - Molasses - Oxygen - 50 Pitch - Potlining Mix - Reclaimed Al. Insul. - Refractory Cement, Ref. - Solvents (Varsol) - Transit Pipe - Pot	- Acetylene - Adhesives - Alumina - Aluminum Fluoride - Bath - Calcium Fluoride - Cryolite - Fluorspar - Oxygen - Lubricants - Penetrating Oil - Sodium Carbonate - Sodium Hydroxide
CONTROL	ANODE	SHIPPING	ATOMIZER
- Alumina - Aluminum Fluoride - Cryolite - Fluorspar - Sodium Carbonate	- Abrasives - Aerosol - Brick - Butts - Coke - Dust from Baked Carbon Scrap - Dust from Carbon Butts - Dust from Green Carbon Scrap - Fumes from Melted 110 Pitch - Gas, Methanol - Gas, Propd. Lubr. - 110 Pitch - Refractory Cement, Ref. - Ring Furnace Exhaust Gases	- ✓ Abrasives - ✓ Adhesives - ✓ Aerosol - ✓ Beryllium - ✓ Chromium - ✓ Copper - ✓ Ether - ✓ Inks - ✓ Titanium - ✓ Zinc	- Abrasives - Adhesives - Aerosol - Aluminum, Molten - Aluminum Powder - Beryllium/Copper - Boron Nitride - Calcium Carbonate - Cement, RTV Silicone rubber - Compressed Air - Copper, Scrap - Furnace Gases - Gas, Natural - anode - Hydrogen Gas - Inert Gas - Inks - Insulating Materials - Laundry Additive - Lubricating oil - Marinite - Mercury - Nitrogen - Oxygen - Pre - Paints and Enamels - Skim, Furnace



Asbestos
 Dye
 Hydrochloric acid
 Lead
 PCBs (transformer oil)
 White lead
 Silica
 Beryllium
 Penetrating oil
 Mercury
 Chlorine

1956 Cralley Bros hide ball

July 27, 1956

Dr. E. M. Cralley, Head
Department of Plant Pathology
University of Arkansas
Fayetteville, Arkansas

Dear Dr. Cralley:

On June 26, 1956, I wrote you suggesting that you might defer your report on our problem until you had the analysis of the dust. I have just talked with your brother, who has now returned from his vacation, and he suggests that your report might appear to the general public to possibly be biased if you knew the analysis of the material. He suggests, and I concur, that you do not include the analysis in your report, but we will attach the analysis here to the report as an addendum.

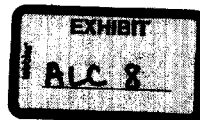
Very truly yours,

ALUMINUM COMPANY OF AMERICA

Carl R. Stout, Works Manager

CBS:ep

cc - Dr. Lester V. Cralley, Pittsburgh Office



U.S. 101-4248-0-46 Printed in U.S.A.

ARD 041331

“I have just talked with your brother...and he suggests that your report might appear to the general public to possibly be biased if you knew the analysis of the material. He suggests, and I concur, that you do not include the analysis in your report, but we will attach the analysis here to the report as an addendum.”

Carl Stout to L. M. Cralley, 7/27/56

1978 First Asbestos Standard

K.M. 84
8-17-84

Meeting with E. R. Ruckelshaus, Joe
ALC. Plant Report. ASBESTOS CASE

1969 Dr. JABER - DOCTOR AT PT. COMFORT

- CONCERNED ABOUT USE OF ASBESTOS IN PLANTS

UP till 1968 - NO ASBESTOS RECORDS - CATHARTIC

SEVERAL ASBESTOS CASES REPORTED

1970 - DUST COLLECTION EQUIPMENT

1972 - ASBESTOS CASE - DUST COLLECTION SYSTEM

* Sent copy of 1968 memo to Steve Scott (now
- standards set for sampling - as of 1970)

Safety Standards at Pt. Comfort

1978 - earliest std we could find

- says with wear exposure and
proper clothing

Plant recalls 1973-75 - exposure was wrong
work in dealing w/ asbestos

Heavy Exposure at Pt. Comfort:

- Potlining (asbestos layer in potlining)

- Carpenters

- Mechanics

- Millwrights

1978 First Asbestos Standard

"Heavy Exposure at Pt. Comfort

- Potlining (asbestos layer in potlining.)
- Carpenters
- Mechanic
- Millwrights"

83-3875-09000-023

Category 4000

EXHIBIT
ALC 40

1974 - Not too much info to workers

THOMAS B. BONNEY
PITTSBURGH OFFICE

MR. C. R. KING
ARKANSAS OPERATIONS

CONFIDENTIAL

February 20, 1974

RE: EMPLOYEE EXPOSURE TO ASBESTOS

Referring to our phone conversation of yesterday, it is essential for you to have an evaluation of your employees' exposure to asbestos dust. It is only by knowing the concentrations in the working area that you can determine what portions of the asbestos standard will apply. The concentrations will determine, for example, which type of respiratory protection is appropriate and whether or not special clothing is required.

Enclosed are copies that may be useful background material on asbestos for you and your employees. It is important that the employees have enough knowledge about asbestos so that they will treat it with respect but without the unwarranted fear that make them afraid to even be near it.

Thomas B. Bonney

TBB:mh

Enclosure

cc: Mr. J. L. Laudenberg, Arkansas Operations

“Re: Employee Exposure to Asbestos

...

It is important that the employees have enough knowledge about asbestos so that they will treat it with respect but without the unwarranted fear that makes them afraid to even be near it.”



1974 - Do not tell employees about high exposures

This copy for Messrs. T. B. Bonney and R. P. Carter

TO: RAY OWEN, JR.

TO: MEMORANDUM

ARKANSAS OPERATIONS

CONFIDENTIAL

March 28, 1974

RE: REPORTING OF ASBESTOS CONCENTRATIONS TO EXPOSED EMPLOYEES

Mr. R. P. Carter of Pittsburgh Industrial Hygiene advised me today that we are not obligated to report asbestos concentrations of less than 50 fibers per milliliter to exposed employees provided employees exposed in the range of 5 to 50 fibers/ml are fitted with appropriate respiratory protection. (Note: The 3M No. 8710 respirator is appropriate respiratory protection for the 5-50 fibers/ml range.)

Ray Owen/fw
RAY OWEN, JR.

RO:fw

cc: J. L. Laudenberg, T. J. Forbes, C. T. Nienaber, L. N. Hynes
Dale Mize, R. W. McConnell, Roy Turner
Dr. V. H. Barbour
C. R. King
T. B. Bonney and R. P. Carter, Pittsburgh



“...we are not obligated to report asbestos concentrations of less than 50 fibers per milliliter to exposed employees provided [they]...are fitted with appropriate respiratory protection.”

3/28/74

1979 - Workers not informed about asbestos

MR. G. D. HICKS
Page 2
1979 August 13

EXHIBIT
ALC 83

B. Work Practices

Many practices were observed which unnecessarily increase employee exposure to dust, noise, asbestos and coal tar pitch volatiles.

The use of inappropriate tools, equipment and procedures is commonplace; and in several cases, standard operating procedure. For example, transporting ore and bath in payloaders causes much dust to become airborne. Routing siphon tubes without local exhaust ventilation has much the same effect.)

C. Training

- ➔ In general, employees have not been adequately informed about the health hazards of their respective jobs, nor about the precautions needed to be taken. This is at least partially responsible for improper work practices, as well as both inadequate and incorrect usage of personal protective equipment.
- ➔ For example, workers have not received formal instruction in the use and care of respirators.

Massena's industrial hygiene staff is small. However, the effectiveness of the industrial hygiene program is dependent upon the support and commitment of Massena management at all levels. Conditions at Massena suggest that we must reaffirm this commitment if we expect to make progress in controlling health hazards. The Pittsburgh Industrial Hygiene staff is ready to supply any needed assistance.

II. Recommendations

Recommendations are divided into two categories. The first concerns complex problems with plant-wide application. They generally call for organized efforts or programs, rather than for correction of specific conditions. The second category is devoted to the latter.

Category I: Plant-Wide

1. A written, comprehensive respiratory protection program should be established and administered. As a minimum, the program should include sections 1910.134(b)(1) through 1910.134(b)(14) of the OSHA standards as detailed in Alcoa's respiratory protection standard. *DUST - CTPV - SO₂ CO A. Part of*

2. A written program for the routine evaluation of all exhaust ventilation systems should be devised and implemented. The assistance of the Engineering Department may be necessary. The program should include measurements of face velocity and static pressure, as well as comprehensive visual inspections. *MAINT & ENG A*

“In general, employees have not been adequately informed about the health hazards of their respective jobs, nor about the precautions needed to be taken. This is at least partially responsible for improper work practices, as well as both inadequate and incorrect usage of personal protective equipment. For example, workers have not received formal instruction in the use and care of respirators.”

8/13/79

1975 - Educate workers about fiberglass

FROM W. J. BOVARD, M. D.
VANCOUVER OPERATIONS

RECEIVED

1975

PATRICK R. ATKINS

TO MEMBERS OF ENVIRONMENTAL
HEALTH COMMITTEE
VANCOUVER OPERATIONS

November 26, 1975

RE: ENVIRONMENTAL HEALTH COMMITTEE MEETING 11-25-75 - ASBESTOS FOLLOWUP

The new proposed standards for asbestos were reviewed. It was generally agreed that the more stringent standards will be nearly impossible to achieve. The proposal calls for a level of 0.5 fibers per cubic millimeter.

John Blessinger commented briefly on replies from Pat Minturn of Electrode and Mike Scherbak of Ingot.

John Pierce will ask Bill Miner to poll other Alcoa locations regarding their use or substitute for thermocouple wire insulated with asbestos.

Bovard and Werner will ask for corporate recommendations for substitutes and/or experience in "like-usage" of asbestos products at other locations.

Bovard will request Don Wooden, Purchasing, to continue supplier information quest for substitutes. Wooden will attend the next meeting in January.

R. J. Hosfeld will expedite transition from asbestos paper plugs to foil in siphons used in tapping.

Ed Skowrya agrees the new TLV will not be attainable in transite and marineite shaping operations.

Transite use in pot ducts and water lines was discussed briefly.

Bill Moore has acquired a fiberglass substitute which will be recyclable in interleaving on age oven use with T-52 stock. It may be acceptable but imposes handling precautions to avoid skin irritation. Education and instruction will be in order for employees expected to handle the substitute.

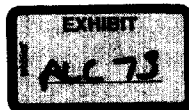
Bill assures us of increased effort to comply with handling and disposal of residual asbestos paper expected in use while evaluating the substitute. Asbestos monitoring in that site has failed to show airborne contaminant but the standard implies prohibitive protection, monitoring and surveillance routines which make a substitute seem economically and practically the only alternative.

Another meeting is to be scheduled in mid-January.

W. J. BOVARD

WJB:fn

Copies to: G. H. Walter, G. P. Nelson, B. W. Moore, M. D. Wooden, E. R. Skowrya,
P. R. Atkins - Pch.



07-2000 (Rev. 11-65)

ARCH 004230

"...a fiberglass substitute...It may be acceptable but imposes handling precautions to avoid skin irritation. Education and instruction will be in order for employees expected to handle the substitute."

[moral: if there is an immediate adverse effect from handling a product (such a fiberglass), then give education and instruction to the workers. If the danger is delayed, as with asbestos, then say nothing. Educate for products with onion properties; remain silent if there are no onion properties]

1975 Alcoa Knows Danger of No Onion Properties

T. B. BONNEY
PITTSBURGH - 7

DR. W. J. BOVARD
VANCOUVER OPERATIONS
August 28, 1975

CONFIDENTIAL

RE: ASBESTOS

Regarding our recent phone conversation, I believe there are convincing reasons for us to find substitutes for asbestos. You are certainly aware of the poor publicity this material has gotten in recent months. Organized labor is not only aware of this, but they have contributed to it. Furthermore, the fact of asbestos being a carcinogen places it in a separate category complete with emotional overtones.

Alcoa has had a long-standing industrial hygiene policy of permitting the use of any material so long as adequate control measures are taken to keep employee exposures within safe limits. However, experience has shown us that with long-term use of a hazardous material, the users often become careless. Maintenance of preventive measures can only be accomplished by continuous surveillance.

Deterioration of environmental control measures are not too much of a problem with materials such as hydrogen chloride and caustic soda whose presence in excessive concentrations in the working environment are apparent and whose harmful effects are immediate. Rather, the most serious potential problems lie with those materials whose harmful effects are long-delayed and whose presence is not apparent. Asbestos is in this latter category. We believe that it is in the interest of our employee's health to eliminate the use of such materials whenever possible.

In the case of asbestos we have additional legal and economic incentives to look for substitute materials. The OSHA asbestos standard is a demanding one. No action level has been defined; the mere presence of fibers (regardless of concentration) in the working environment makes the standard applicable. Where airborne fibers are present we must at least do air sampling and analysis and provide special medical examinations - none of which come without cost. Furthermore, all violation of asbestos exposure limits are classified as "serious violations".

As we look at the overall situation, we find strong incentives to find suitable substitutes for asbestos - as many of our plants already have. In doing so, we will assure ourselves of a healthy working environment, eliminate the very real possibility of violating an OSHA standard (whose consequence can be costly engineering control) and eliminate the costs of special medical examinations and industrial hygiene evaluations.

T. B. BONNEY

TBB:mm

cc: L. L. Haisch - Vancouver

EXHIBIT

ALC 32

 ALCOA

“...the fact of asbestos being a carcinogen places it in a separate category complete with emotional overtones. ...the most serious potential problems lie with those materials whose harmful effects are long-delayed and whose presence is not apparent. Asbestos is in this latter category.”

8/28/75

1975 - TLV cannot be met with marinite & transite

FROM

W. J. BOVARD, M. D.
VANCOUVER OPERATIONS

RECEIVED

1975

PATRICK R. ATKINS

TO

MEMBERS OF ENVIRONMENTAL
HEALTH COMMITTEE
VANCOUVER OPERATIONS

November 26, 1975

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Copies to: G. H. Walter, C. P. Nelson, B. W. Moore, M. D. Wooden, E. R. Skowrya,
P. R. Atkins - Pch



"...the new TLV will not be attainable in transite and marinite shaping operations."



11/26/75

SP-1000 (REV 11-68)

1976 Pot shell linings dangerous

THIS COPY FOR R. H. WATSON (PITTSBURGH)
FROM H. N. MUELLER
SAFETY AND HEALTH ADMINISTRATOR
ROCKDALE WORKS

TO MR. D. D. MCGREGOR
WORKS MANAGER
ROCKDALE WORKS

April 15, 1976

RE: SAFETY AND HEALTH COMMITTEE MEETING

The Safety and Health Committee met on Thursday, April 8, 1976, at 3:00 p.m. in Room 21-B, Building 80. Those in attendance were Messrs. R. R. Sugg, Jr., E. J. Gaas, Finis Black, Thomas Williams, Ike Korenek, T. L. Stuller, L. G. Parsons, W. B. Howell, E. R. Goltra, M. D., E. B. Parker, E. C. Remaley, Ferro Pagliai (Vera Cruz, Mexico), and the writer.

The following items of old business were discussed:

1. Mr. L. G. Parsons explained how the cool hat with a vortex tube cools the head and shoulders. It was explained that this system has proven very effective for the spike pullers at Point Comfort Operations. Plans are to try the cool hat with vortex tube April 9, 1976 in one of the Line 7 cranes.
2. Mr. R. R. Sugg, Jr. reported on progress being made on the new lunch rooms in Buildings 32 and 56. It was also reported that the next new lunch room scheduled is in Line 5.
3. Rest room and shower facilities for ladies were discussed. Tentative plans for alterations to provide such facilities were discussed.
4. The Safety Audit of the Services Department is complete and J. L. Roddy will be auditing an area of the Potrooms in the next week.

The following items of new business were brought to the attention of the committee:

1. The hazardous nature of the asbestos mill board spacer strip used between pot shells and cradles was discussed. It was pointed out that new, unused material poses no problem since the asbestos fibers are bonded together to prevent them from becoming airborne. However, after prolonged service at high temperatures, the bonding material breaks down and the mill board becomes brittle and crumbly. For this reason, special precautions must be taken when removing potshells from their stalls.

A substitute material has been located and asbestos mill board will be phased out. We will continue to look for substitutes for all special asbestos products used.

2. The general feeling toward the plant-wide Safety Rule Book is one of acceptance. The only exception to this is the feeling that the section marked "Rules of Good Conduct" should not be in the Safety Rule Book. It was pointed out, however, that it is quite difficult to separate "Rules of Good Conduct" and "Safety Rules".

"The hazardous nature of the asbestos mill board spacer strip used between pot shells and cradles was discussed...after prolonged service at high temperatures, the bonding material breaks down and the mill board becomes brittle and crumbly. For this reason, special precautions must be taken when removing potshells from their stalls."



ARD 001884

4/15/76

1979 cancer is a "tolerable" risk to Alcoa

-2-

EVERY PERSON HAS THE RIGHT TO A SAFE AND HEALTHFUL PLACE OF EMPLOYMENT.

THE OBJECTIVE IS TO CONTROL THE ENVIRONMENTAL CONDITIONS IN THE WORKPLACE -- TO ELIMINATE OR REDUCE TO A TOLERABLE LEVEL, THE HAZARDS TO WHICH WORKERS MIGHT BE EXPOSED. THIS IS ACCOMPLISHED BY ANTICIPATING THE HAZARDS, IN DEVELOPING A NEW PROCESS LIKE THE ALCOA SMELTING PROCESS, WE MAY OFTEN BE CREATING NEW HAZARDS. RECOGNIZING EXISTING HAZARDS IS AN INTEGRAL AND ONGOING PART OF I.H. THIS IS ACCOMPLISHED BY CONSTANT SURVEILLANCE OF THE WORKPLACE. AND, FINALLY, EVALUATING THE HAZARD TO DETERMINE THE DEGREE OR SERIOUSNESS OF EXPOSURES THAT MAY EXIST. THIS IS THE HIGHLY TECHNICAL SIDE OF THE BUSINESS. IT INVOLVES SOPHISTICATED SAMPLING OF THE CONDITIONS AND SCIENTIFIC ANALYSIS, BOTH QUALITATIVE AND QUANTITATIVE, OF WHAT IS PRESENT. ALL OF THIS IS IN AN EFFORT TO DETERMINE THE NEED AND TYPE OF CONTROL MEASURES THAT ARE APPROPRIATE.

TO ACCOMPLISH THESE THINGS, THE INDUSTRIAL HYGIENIST MUST BE A "JACK-OF-ALL-TRADES". HE/SHE MUST HAVE KNOWLEDGE OR TRAINING IN DIVERSE FIELDS, SUCH AS -- CHEMISTRY, ENGINEERING, PHYSICS, MEDICINE, TOXICOLOGY, AND THE BIOLOGICAL SCIENCES. HE/SHE MUST ALSO HAVE A FAIR MEASURE OF OTHER BUSINESS AND COMMUNICATIONS DISCIPLINES. CONVINCING PEOPLE TO DO THINGS THEY HAVE NOT DONE BEFORE REQUIRES A HIGH DEGREE OF PSYCHOLOGY, HUMAN UNDERSTANDING, AND SALESMANSHIP. LABOR RELATIONS IS A FUNDAMENTAL PART OF ALL OF THIS.

THESE ARE ONLY SOME OF THE HAZARDOUS MATERIALS OR CONDITIONS THAT REPRESENT OUR CONCERN IN ALCOA PLANTS.

"The objective is to control the environmental conditions in the workplace - to eliminate or reduce to a tolerable level the hazards to which workers might be exposed."

Response to knowledge:

4/23/79

DISCIPLINE WHOSE OBJECTIVE IS TO PROTECT THE HEALTH AND WELL-BEING OF PEOPLE AT WORK.

(MHSF)

ARCH 19444

1979 Wenatchee - No Report

MOLTEN METAL MARINITE USES IN ALCOA PLANTS - INGOT CASTING

PLANT	SPECIFIC APPLICATION AS REPORTED FROM PLANTS
<u>ATC</u>	-Ingot casting items - Manufacturing Section
<u>Davenport</u>	-Variable head distributor float #2 DC pit -Float - 18X50 and 18X60 DC molds -Float - 12X48, 16X50, 16X43 DC molds -Float - Flow control DC casting unit -Float - 24X72 ingots #9 DC pit -Trough Plug - pouring troughs -Support - DC pits -Trough dam - pouring troughs -Trough dam - 503 and 528 filter boxes -Skim stick - DC pits -Float - DC pits -Float support - DC pits -Blinder - DC pits -(Marinite board) Doorframe insulation on melting and holding furnaces
<u>Lafayette</u>	-Casting tools
<u>Massena</u>	-Insulator - part for chip melter, side bay -Headers (sanding of Marinite headers in mold shop) -Float used for HDC sheet ingot tooling, 30 complex, level flow control, cast units -Miscellaneous Marinite: Spare parts for 30 complex; insulators; inserts; bearing housings; couplings; covers; etc.
<u>Pt. Comfort</u>	-Basins for HDC casting
<u>Rockdale</u>	-Pre-cut Marinite for molten metal casting
<u>Tennessee</u>	-HDC headers - South Plant
<u>Tifton</u>	-DC casting floats and spouts
<u>Vancouver</u>	-Headers (Note: ceramic molds replace 2/3 of Marinite heads at present time.)

411084 1350

FOX 041258

Page 2

PLANT	SPECIFIC APPLICATION AS REPORTED FROM PLANTS
<u>Vernon</u>	-Marinite board (Non-asbestos Marinite now being substituted on trial basis) -Also use asbestos rope for door seals (being replaced with ceramic) -Also use asbestos-containing block or brick
<u>Warrick</u>	-Trough liners; headers (partial substitution of plastic trough lining continues)
<u>Wenatchee</u>	NO REPORT

HAIG G. SAKOIAN
1979 May 04/eds 411084 1351

1992 Wenatchee Abatement Too Much \$

FROM: M. H. WIDMER
WENATCHEE WORKS

TO: MR. J. A. THOMPSON

1992 June 22

RE: ASBESTOS ABATEMENT- RFA # LOC 1016

The referenced RFA for \$425,000 includes \$120,000 of expense to demolish the Homogenizing furnaces for the purpose of removing the asbestos. These furnaces were scrapped in place five years ago and the value has been written off. There is no financial advantage today for taking this action. This action was proposed in an RFA a couple of years ago, and it was my understanding that our strategy was to leave the furnaces in place until the floor space was required and that the asbestos, being contained in the furnace, posed no hazard. The main concern was that we would forget to remember that it contained asbestos and that future Wenatchee Alcoans may get into it unexpectedly.

Your written comment "We have to eventually do it, why not now? It's a headache to have in the ingot plant" makes me think that \$120,000 is an expensive "aspirin" when this cost will go to the CAP, it was not budgeted in our 1992 CAP forecast, and the company is struggling to make a profit and is undertaking cost cutting measures at other locations.

Jim, I am willing to support you in this project but I need better reasons. Would you please provide me with the following:

1. Any regulatory statues which prohibit the asbestos to remain in the homogenizing furnaces.
2. Please quantify the "headache" of keeping the homogenizing furnaces.
3. The projected costs consequences of delaying the removal 1, 3 and 5 years. How may current or future regulations impact the cost of this project?

I will hold the RFA awaiting your response.

M. H. Widmer

cc:

S. A. Quazi
W. B. Malliett
R. D. Huber

informational copy: D. J. Carney

WEN108466

"...an expensive aspirin..."

"...I need better reasons..."

"...strongly recommend we do it now."

1985 Training inadequate

FROM J. DAMIANO
PITTSBURGH OFFICE - 6

TO J. R. ARCHIBALD
PITTSBURGH OFFICE - 6

1986 January 07

RE: INDUSTRIAL HYGIENE AUDIT FOLLOW-UP

A coordinated effort was made to investigate the development of industrial hygiene programs in the twelve plants audited December, 1982 through March, 1985. Progress reports have been completed and are enclosed in chronological order. The recommendations in each progress report were extracted from the text of the full audit report; the status comments were composed by the responsible Pittsburgh liaison in consultation with the plant industrial hygienist. The plant contacts have been given copies of their progress reports.

The following observations are noteworthy:

- o Environmental surveillance remains the weakest element in most plant programs.

Inadequate environmental surveillance was reported in every audit. This broad deficiency was recognized in 1983 and attributed in part to the absence of standards for adequate surveillance. A sampling guideline was developed with input from our plant contacts and issued in January, 1985. The Alcoa Sampling Guideline is a tool for effectively managing environmental surveillance. Most notably, it provides the industrial hygienist with a method for quantifying sampling needs; such information can be used to solicit support for increased staffing.

Sampling efforts have increased in Rockdale, Warrick, Vernon, Corona, Cleveland, and Badin; however, none of these locations have used the guideline to plan their sampling programs. Point Comfort has just recently used the guideline to assess baseline needs and the plant's sampling efforts have expanded in accordance with the identified needs. Regrettably, Davenport, Lafayette, Arkansas, and Logans Ferry have not used the guideline and what little sampling is conducted in these locations is performed on a fire-fighting basis.

Without using the sampling guideline, the plants are really unable to assess the adequacy of their exposure data. More importantly, without establishing minimum baselines, the plants frequently do not have enough data to differentiate between acceptable and unacceptable exposures.

- o Increased industrial hygiene staffing was recommended for Cleveland, Arkansas, and Lafayette. Since the audits, staffing has increased in Cleveland and decreased in Arkansas and Lafayette. A decrease in staffing was also reported for Logans Ferry Works.



474763 1137

01-4583 (REV. 11-85)

FOX 040358

J. R. Archibald
1986 January 07
Page 2

- o Inadequate instrument calibration practices remain a common deficiency. There is a continued need to issue a calibration guideline to the field locations.
- o Steve Roth has noted progress in noise reduction in Davenport, Lafayette, Suralco, Vernon, Corona, Badin and Point Comfort.
- o The enforcement of hearing protection rules remains a problem in Cleveland, while Arkansas and Logans Ferry have attained increased usage of hearing protection.
- o Inadequate respirator fit testing remains a common deficiency. A major exception to this is Rockdale where each employee required to use a respirator has been fit tested.
- o Inadequate follow-up on significant threshold shifts revealed through audiometric testing remains a common deficiency. The investigation of significant threshold shifts is fundamental to the prevention of repeated shifts and permanent hearing loss.
- o Each location has upgraded its health hazard training activities, most commonly in the areas of new employee orientation and hearing conservation. (Inadequate training had been reported in every audit.) There is a continued need to improve the management of health hazard training efforts (e.g., identification of training needs, planning refresher training, recordkeeping, etc.). Only one location, Arkansas, has stepped up to the task of evaluating the effectiveness of health hazard training; this is done as part of their internal CORE audits. More training is needed on health hazards specific to the location (e.g., solvents, beryllium, etc.). Training sessions on silica and welding fumes remain a common need.
- o Most plants have made significant improvements in the various administrative aspects of their industrial hygiene programs, such as the quality of written programs, the development of materials inventories, acquisition of material safety data sheets, and the organization of exposure records.

The following suggestions are offered:

- o Corporate Safety and Industrial Hygiene should reinforce plant accountability for adequate environmental surveillance. A structured approach could be considered with target dates for completion and reporting of baseline data for selected job classes and exposures. We will need to support efforts to increase plant staffing where more manpower is necessary to attain sampling objectives.
- o Follow-up and reporting of plant progress in meeting recommendations made in audits should continue on a periodic basis. Each Corporate staff liaison should strive to focus plant attention on the significant and persistent deficiencies in their Safety and IH programs (e.g.,

1986 No Action on IH Audit

WENATCHEE WORKS

Page 1 of 2

Staff Liaison: Joe Damiano
Auditors: Bob James, Joan Karas
Audit Date: 1985 October 22-23
Report Issued: 1986 January 31

RECOMMENDATIONS

STATUS 87/02

1. Establish plant industrial hygiene objectives.
2. Increase staffing to meet Wenatchee's industrial hygiene needs.
3. Determine plantwide sampling needs to meet Alcoa's guidelines for adequate baseline data; develop and implement a sampling schedule.
4. Provide feedback to employees on results of industrial hygiene evaluations.
5. Improve instrument calibration practices and records.
6. Improve lab practices for gravimetric determinations.
7. Establish a quality control program for asbestos determinations.
8. Establish a written Hearing Conservation Program listing jobs and tasks requiring hearing protection.
9. Assure that employees incurring confirmed significant threshold shifts and their supervisors are promptly informed; investigate each STS and require hearing protection if > 85 dBA.
10. Update the Respiratory Protection Program.
11. Fit test each employee required to use a respirator.
12. Develop a comprehensive health hazard training program:
 - Establish new employee orientation on I.H.
 - Establish a schedule for basic and refresher training.
 - Maintain records of training sessions, their content, and employee attendance.

Nothing done
in a year.

FOX 040399

116

1974 Marinite sanding high dust

#4 **CONFIDENTIAL** ALUMINUM COMPANY OF AMERICA
WENATCHEE WORKS

ATMOSPHERIC TESTS

Bldg. 44 Date 12/9/74

Sample No. 1 Analysis For Substance in Marinite

Operation Sandpapering Ingot molds Location Shop

SAMPLING DATA

Position J. C. Bradley

Time of Sampling 0857 to 0902

Method of Sampling Millipore

Absorbing Medium _____ Volume _____ ml

Suction Apparatus M.S.7

Rate 2.2 l/m ~~4.4 l/m~~ Duration 5 min. Air Volume 10.2 ~~19.8~~

Temperature _____ °C Pressure _____ mmHg Collected by FWC

Remarks:

WEATHER CONDITIONS

Temp. Outside _____ °F Wind _____ Humidity _____ % Sky _____

Percentage of Windows Open _____

Remarks: 20 fields = 8 fibers

*** ANALYTICAL DATA and CALCULATIONS**

CONFIDENTIAL

$$\text{No of fibers/mL} = \frac{0.41 \times 375,806}{10,000 \text{ mL}} = 11.0 \text{ fibers/mL}$$

RESULTS _____ Chemist J.B. Puckett

*** REMARKS** Exhaust fan not on. Using sandpaper in shop.
Did have face mask on.

FOX 040811

CONFIDENTIAL

11 fibers/cc
27.6 fibers/cc

Blows Asbestos Fibers all over The Building.

1990-34,000 feet of asbestos pipe insulation

ASBESTOS STATUS WENACTHEE WORKS - ALCOA

LOCATION & DESCRIPTIONS	QTY	STATUS
1. POTROOMS NORTH PASSAGEWAY- Remove asbestos insulation from steam/condensate lines between 5 restrooms and mains. Remove asbestos from wet scrubber water risers outside the passageway.	1620 l.f.	Completed 1991, 1993
2. BOILER HOUSE - BLDG. 66 Removed insulation from utility pipe at East end and re-insulated.	200 l.f.	Completed 1991/92
3. INGOT PLANT - 2 HOMOGENIZING FURNACES		Completed 1992
4. POTROOMS CENTER PASSAGEWAY- Removed asbestos insulation from water, steam/condensate lines and re-insulated.	2451 l.f.	Completed 1992
5. POTROOMS SOUTH PASSAGEWAY- Removed asbestos insulation from water, steam/condensate lines and re-insulated.	2676 l.f.	Completed 1992
6. SHOWER HOUSE - BLDG. 49 Removed asbestos insulation from water, steam, condensate lines and re-insulated	4200 l.f.	Completed 1992
7. RODDING ROOM - BLDG. 32 Removed all asbestos insulation along East wall and re-insulated steam and condensate lines.	2000 l.f.	Completed 1992
Remove asbestos from the steam and condensate lines running in East-West direction in Bldg. 32 and re-insulate.	1000 l.f.	
8. POTLINING - BLDG. 59 Removed all asbestos insulation along East wall and re-insulated steam and condensate lines	750 l.f.	Completed 1995
Remove asbestos from the steam and condensate lines running in North-South direction in Bldg. 59 and re-insulate.	2000 l.f.	

NOTE: ALL QUANTITIES INDICATED ARE APPROXIMATE OF SUSPECTED AREAS.

FILE:HOME\QAZ\PROJECTS\ASBESTOS\PLAN

WEN108763

FOX 040145

ASBESTOS STATUS WENACTHEE WORKS - ALCOA

LOCATION & DESCRIPTIONS	QTY	STATUS
9. LIQUID TAR TANKS - WEST OF BLDG. 59	800 sq. Ft.	Completed 1994/95
10. CAFETERIA - BLDG. 81 Remove asbestos pipe insulation from utility piping and re-insulate.	500 l.f.	
11. STORES - BLDG. 45 Remove asbestos pipe insulation from utility piping and re-insulate.	500 l.f.	
12. MAINTENANCE SHOP BUILDING - BLDG. 44 Remove asbestos pipe insulation from utility piping and re-insulate.	3500 l.f.	
13. ORE-UNLOADING - BLDG. 43 Remove asbestos pipe insulation from utility piping and re-insulate.	100 l.f.	
14. ADMINISTRATIVE BLDG. - BLDG. 80 Remove asbestos pipe insulation from utility piping and re-insulate.	2000 l.f.	
15. INGOT PLANT - BLDG. 34, 34C, 36 Remove asbestos pipe insulation from utility piping and re-insulate.	1000 l.f.	
16. GREEN MILL - BLDG. 54, 54A, 54C Remove asbestos pipe insulation from utility piping and re-insulate.	1000 l.f.	
17. POTROOMS - ROOM 4, 6, 10, 12, 16, & 18 Remove asbestos pipe insulation from water piping running in NS direction and re-insulate.	7000 l.f.	
18. BAKES - BLDG. 58, 60, 62 Remove asbestos pipe insulation from utility piping and re-insulate.	3000 l.f.	

NOTE: ALL QUANTITIES INDICATED ARE APPROXIMATE OF SUSPECTED AREAS.

FILE:HOME\QAZ\PROJECTS\ASBESTOS\PLAN

WEN108764

FOX 040146 118

1985 High Dust Count

FROM: R.W. Salnick
Industrial Hygiene

TO: W.C. Stimmel
Environmental
RECEIVED

JUN 10 1985

06/05/85 Industrial Hygiene

RE: Recent Industrial Hygiene Measurements

Please find attached a listing of the industrial hygiene data collected in your department during the month of May, 1985. Please note that the report format has been changed to eliminate the cryptic computer codes for the job/task; these have been replaced with English descriptions. This was done to make interpretation of the data easier for those who receive it.

A single respirable dust exposure measurement made during work in BLDG 201B showed severe over-exposure. If this kind of exposure is not just an unusually high reading (and past data so far indicates that this is the case) then negative pressure respirators will have to be replaced with positive pressure units. This is true whenever the exposure levels are greater than 10 times the allowable.

Also attached is a single asbestos exposure measurement made in the Environmental Shop late last year. The reading was comfortably low.

R.W. SALNICK

NORTHWEST ALLOYS HEALTH INFORMATION SYSTEM

DATA LISTING FOR THE ENVIRONMENTAL DEPARTMENT FOR 5/01/85 THROUGH 5/31/85

NAME	SSN	DATE	DEPT: JOB OR TASK	CONTAMINENT	LEVEL	% OF ALLOWABLE
TERRY, DEE	534-58-8394	5/21/85	6: BLDG 201B	RESP DUST	94.4 MG/M3	* 1888%

1 ITEMS IN CATEGORY

1981 Marinite Dangers

VIRGINIA L. HAMMERSMITH
CHEMICALS AND CERAMICS DIVISION
ALCOA TECHNICAL CENTER - B

COPIES TO:
MR. ELWIN L. ROOY, JR. HINICLE

BETTY - SOUNDS LIKE SHE
WANTS YOUR JOB

RE: ASBESTOS REPLACEMENT - MOLTEN

Alcoa's ongoing policy for several years has been to replace any asbestos containing materials. We are all aware, the largest usage of asbestos has still been with asbestos containing materials manufactured by John's Manville at their plant. For the past few years, replacement has been no more than 5% of their total type, header grade molten metal mar. It is in both John's Manville's and from their product line and, more so, materials with an asbestos-free type.

Comparable performance of their new fiberglass reinforced refractory board metal marinite is certainly welcomed. However, it has been brought to my attention that we are exceedingly slow to recognize and implement the new material across the plant.

OSHA maximum limitations presently averaged over an eight hour period. The OSHA action level, maximum of 100 fibers per cubic foot, is to monitor the persons exposed for asbestosis and disease. In the case of a short term limit is a maximum of 500 fibers per cubic foot for a 15 minute period. Most countries have a limit of 100 fibers per cubic foot. As we, as a corporation, can attest, this is questionable.

Many people feel that OSHA is overly concerned and, hence, they have turned their ears and eyes away from citing violations such as the continuing use of asbestos materials...and to assume that "small" infractions (drilling, sanding, etc.) should go unnoticed...Even transporting a small item of asbestos marinite can release surface fibers, especially in the lengths most often associated with future lung disease. Certainly, I and other workers do not appreciate the fact that we are all exposed unknowingly due to these practices.

“...many people feel that OSHA, Alcoa Safety, and Alcoa Research are overly concerned and hence, they have turned their ears and eyes away from citing violations such as the continuing use of asbestos materials...and to assume that “small” infractions (drilling, sanding, air hammer removal, etc.) should go unnoticed...Even transporting a small item of asbestos marinite can release surface fibers, especially in the lengths most often associated with future lung disease.” [emphasis supplied].



410022 0001

FOX 041255

1981 No longer only a moral issue

VIRGINIA L. HAMMERSMITH
CHEMICALS AND CERAMICS DIVISION
ALCOA TECHNICAL CENTER - B

BETTY - SOUNDS LIKE SHE
WANTS YOUR JOB

MR. ELWIN L. ROOY, H&S
PITTSBURGH - Industrial Hygiene

1981 JUNE 15

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RE: ASBESTOS REPLACEMENT - MOLTEN METAL MARINITE

Alcoa's ongoing policy for several years now has been "to actively replace any asbestos containing material wherever possible". As we are all aware, the largest usage of such materials by Alcoa has still been with asbestos containing molten metal marinite manufactured by John's Manville at their Billerica, Massachusetts, plant. For the past few years, regular grade asbestos marinite has been no more than 5% of their total business, with the prime type, header grade molten metal marinite, no more than 2%. Certainly, it is in both John's Manville's and Alcoa's interest to remove these from their product line and, more specifically, to replace the materials with an asbestos-free type prior to any government edict.

Comparable performance of their new Marinite C (a calcium silicate, fiberglass reinforced refractory board) to the regular grade molten metal marinite is certainly welcomed by some of our ingot operations. However, it has been brought to my attention that some locations are exceedingly slow to recognize a need to change quickly and to implement the new material across the board.

OSHA maximum averaged over... The OSHA act monitor the... and disease... short term l... period. Most... we, as a corp... is questionable

Many people... overly concern... away from cit... materials whe... "small" infra... should go un... as we, as a c... the asbestos... hazard. Even... release surfa... associated wi... do not apprec

Mr. Elwin L. Rooy
1981 June 15
Page 2

to these practices. Hence, I do not feel personally that removal and proper disposal of the asbestos containing marinite, which can be replaced with a more safe material in our operations, is any longer "only a moral issue" and to be taken lightly.

Items of premium grade asbestos marinite which should temporarily be exempt due to the availability of the asbestos-free grade are really limited to only a few and necessarily must be handled very cautiously:

1. Sheet (Tennessee South and Warrick)
2. Hunter (Badin)
3. Small (Badin)
4. Tool (Vernon)

The pursuit of our ev... T-12 takes on increas... items from the list d... Marinite H and Pyrotek... removal of those few

However, your assistance can more swiftly attainable asbestos-free materials at all... Certainly, the serious effective September 1... operations and needs... to

"Hence I do not feel personally that removal and proper disposal of the asbestos containing marinite, which can be replaced with a more safe material in our operations, is any longer 'only a moral issue' and to be taken lightly."



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STOP

1933 NSC Invisible Dust



The Mechanical Control of Occupational Diseases

By DAVID S. BEYER*

THE mechanical control of industrial disease cannot be covered adequately in a single article; all we can hope to do is to touch upon a few of the important points encountered by the plant managers who are struggling with this problem today.

There are some forty different diseases included in the compensation acts of various American states; in Massachusetts, Connecticut and several other states there is no definite list of diseases that are compensated, but these diseases are considered as "personal injuries" under the law and compensation is paid without any specific schedule of diseases.

Many of these diseases are of frequent occurrence. Probably most of us outside the medical profession have never even heard of "Guntonia Kamassi" (African boxwood) or "miner's nystagmus," which appear on some of the state lists. A half dozen of the more important diseases, however, will probably cover ninety percent of the total payments being made throughout industry for all industrial diseases today.

An analysis of approximately \$300,000 in losses of one insurance company doing a general workmen's compensation and liability business, for recent industrial disease claims, showed 54 per cent for cases involving pneumoconiosis (including silicosis, asbestosis, etc.) 26 per cent for lead poisoning, 9 per cent for various forms of dermatitis, 5 per cent for benzol, and the remaining 6 per cent for scattering cases such as carbon monoxide, carbon tetrachloride, chrome and chlorine.

We will accordingly look at the subject from the standpoint of these few important causes, bearing in mind that the most important of all is covered by the general heading of pneumoconiosis, or diseases caused by dust. Of these diseases the most serious come from inhaling the silica found in sand, granite dust, abrasive powders, etc.

*Vice-President and Chief Engineer, Liberty Mutual Insurance Company, Boston, Mass. His paper was read at the Twelfth Annual Safety Conference of the Massachusetts Safety Council.

- Both the engineer and the physician are needed in protecting the health of the worker and the pocket book of the employer. In this article Mr. Beyer presents the engineering side of the problem. In the June issue Dr. W. Irving Clark discussed it from the point of view of the physician.

When the subject of dust is mentioned most of us probably think of visible particles. In fact, much of the dust removal work, even by companies specializing along this line in the past, has been directed at this form of dust.

Medical research has shown us, however, that the dust that is most dangerous, through its deep inhalation into the lungs, is so small that the individual particles are invisible and can only be seen by the naked eye if they are gathered in a dense cloud, which may have the appearance of a gray fog.

We are told that the amount of dust found in the lungs of miners who have died of silicosis is about 13 grams, or approximately half an ounce - about enough to fill a ten-cent soda-mint bottle.

Microscopic Menaces

Some idea of the problem of collecting such infinitesimal particles may be had when we further learn that these 13 grams contain some 20 million million particles; many of them are about the size of the tiny globules of fatty substance that make up cigarette smoke, that is, about a hundred thousandth of an inch in diameter. If they were equipped with legs they could march fifty abreast through the hollow center of a human hair!

So little has the seriousness of this hazard been appreciated in the past that it is not uncommon to go into a plant and find four or five tons of this fine dust which has floated in the air and settled on the roof trusses and overhead structures of the building. Here it may be dislodged by gusts of air or vibrations from moving cranes, etc. If one

*See Dust Respirators, H. S. Bushaw of Mines Technical Paper 246, C. I.

stops to figure how many 13-gram bottles are contained in a ton of this dust its potentialities are appalling. The first need is to get rid of these unsavory accumulations, and to prevent their recurrence.

Many a man has to spend the rest of his life getting rid of the dust than to prevent its case with many industrial concerns today.

In one section where there is a so-called "dusty" trade employing only about 2000 men on an annual basis there have been 92 occupational disease claims during the past available five year period (68 of them permanent total disability) with combined losses of nearly \$300,000.

In some industries the cost of industrial disease is now four times that of all other industrial accidents combined. Many concern serious occupational diseases tending over a period of years themselves virtually untraceable to the heavy liability that has been built up as past exposure.

A Matter of Self-Preservation
It follows, therefore, that of self-preservation plant managers must start inner comprehensive program of improvement will at least check the disease in new cases.

In general, the most correct a dust hazard is to

Medical research has shown us...that the dust that is most dangerous, through its deep inhalation into the lungs, is so small that the individual particles are invisible and can only be seen by the naked eye if they are gathered in a dense cloud, which may have the appearance of a gray fog.

...it is better to spend the money and effort in getting rid of the dust than to be overwhelmed by occupational disease claims, as is the case with many industrial concerns today.

1935 NSC Invisible Dust

No Half Way Measures in Dust Control

By ARTHUR S. JOHNSON

(Assistant to the Manager, Engineering Department, American Mutual Liability Insurance Company)

TO CONTROL its dust hazard to the extent of making the occurrence of pneumoconiosis impracticable, industry must do much more than buy mechanical dust removal equipment and set it going. With it there must be set up a routine of check and double check, perhaps while new operating practices and a sharp definition of responsibilities. This all boils down to day-to-day attention to a program designed upon a long range health conservation policy. Half-way measures unrelated to each other won't work. Nor is this a "done once, done forever" affair. Dust control is not an event; it is a program that never finishes.

Experts seem to be in rather general agreement about four grades of pneumoconiosis hazard. First, quartz causing real silicosis, a serious solidification of the mass of the lungs by fibrosis or growth of scar tissue. It takes years to get started, but once started is progressive, a condition which will not stop and cannot be cured. After exposure of 15, 20 or 25 years, men in certain trades accumulate this fibrosis of the lungs which lessens their capacity for physical labor. It makes them short of breath and causes certain well-defined clinical symptoms. X-rays of their chests show characteristic shadows. A few of these men die as a direct result of this condition.

Although few of them have their physical capacity to work lessened even in 15 or 20 years, there may be actual lung impairment which predisposes them to tuberculosis. The cause of this silicosis is silica as free quartz, not combined with other elements in the form of silicates, but the quartz is found free in granite, and in the purest natural form as flint and canister. The studies made of many cases of silicosis and the exposures which caused them in the rock industries, sand grinding industries, firebrick making, etc., have shown that the hazard is silica and that it is proportion-

al to the amount of silica in the air breathed. A new ray of hope lies in some fairly good evidence that there may be mixed dusts in which such dust as limestone, gypsum, coal, hematite, clay or cement dilute the silica hazard and produce less physiological reaction than the silica content operating as pure quartz alone.

A second group of dusts produces somewhat the same clinical picture as silicosis in its early stages, yet the x-ray of the chest shows the shadows pretty much confined to the lymph ducts. The damage appears not to be so serious as silicosis in many ways, particularly in that it is not progressive nor does it predispose to tuberculosis. The dusts producing it certainly should be classified as absorptive and therefore harmful although not in the same category as quartz. There is no question but that lessened lung capacity results from them after long enough exposure but it certainly takes more dust and more time to lower capacity for work. Asbestosis falls in this group and apparently similar conditions develop from exposure to excesses of many mineral dusts relatively low in free silica content.

Inert Dusts

A third group of mineral dusts may be harmless in reasonable quantities. The result of work by some investigators which has been published recently indicates that clay, talc, emery and carborundum dusts to be inert. In some animal experiments these dusts did not produce fibrosis. Contrarily, there have been claims for disability from workers who alleged that the exposure to these same dusts caused their ailments. Experts state that these dusts generally do

not produce disabling lung pathology, yet we are faced with the facts of claims prosecuted successfully. Quantity of dust, rather than quality, was doubtless responsible for any ill health. Some state regulations require dust exhaust machinery on some operations. We must, therefore, include for control some dusts which by nature may not be harmful.

Our fourth grade of hazard is tuberculosis. Tuberculosis is a disease caused by a germ, and probably more useful work has been done to control this disease than almost any other. From time immemorial the dusty trades which we now speak of as having a silicosis hazard were always among the danger spots for tuberculosis. What we now know is this: that silicosis makes a first class place for tuberculosis to thrive in and kill the patient off much earlier than would silicosis alone. Opinion seems to be that perhaps simple silicosis uncomplicated by tuberculosis may seldom be fatal, but shortens the working life of the victim just as angina, arteriosclerosis, and such degenerative diseases do.

(On the other hand, we may expect from tuberculosis one of two things: first, a man brings tuberculosis no matter how dormant it may be, into a dusty trade, he may reactivate the tuberculosis and have his case diagnosed as "aggravated by" the dust; or second, by getting simple silicosis or perhaps other pneumoconiosis, and then contracting tuberculosis from tubercular associates either at work or elsewhere, die of tuberculosis superimposed on silicosis. Tuberculosis associated with silicosis does not respond well to treatment. Regardless of the fact that tuberculosis is an infective disease not necessarily occupational,

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al, we must face this fact, that tuberculosis is so often the disabling result of dust exposure, that dust control must include tuberculosis control at the same time.

Measuring the Hazard

Summarizing, we have three dust hazards: (1) quartz, which produces true silicosis—a progressive, lung-disabling disease; (2) some dusts which produce a pathology which usually is not serious and is not progressive after exposure stops, yet a pneumoconiosis none the less, and (3) some dusts which paradoxically are probably relatively harmless, yet have been the claimed basis for tuberculosis and other disabilities. In the absence of adequate diagnoses, occupational histories and a more satisfactory method of adjudicating claims than prosecution at common law, we must conclude that it is necessary to find a practical method for controlling all mineral dusts. Let us now see whether it is necessary to give them all the same degree of control.

We have learned that the silicosis hazard is measured by the amount of silica in the air breathed. This means that with but few exceptions it is directly proportional to the amount of dust in the air and the percentage of silica that is in the dust. The studies which have established the safe limit, or tolerance, or threshold limit for continuous exposure without deleterious effect, have arrived at 5 million particles of quartz dust per cubic foot of air, none of which dust is larger than 10 micra in size. I think we need to digress for a moment to visualize what is meant by 5 million particles of dust of such tiny size. We know it is invisible to the naked eye because it takes 15 to 20 times to produce a haze, and even then it is visible as particles of materials. The particles, therefore, are so small as to thwart imagination.

As one looks across a dusty room and sees great gobs of dirt floating in the air, settling out rather rapidly, or being blown around by draft currents, he is told that that is not the dust we are talking about. The danger lies in such tiny particles that they could be run between the hearing and the shaft of a very fine machine and not touch, for a micron is roughly 1/10000 of an inch. Five particles of sand, each piece so small as to be only .02 of an inch in diameter, pulverized down to 5 micra, makes just that 5 million particles for

loading a cubic foot. This means that if it is found necessary to exhaust the dust at its point of origin so that that which gets into the breathing zone of the workers will be 5 or fewer million invisible motes in each foot of space, we

things by arbitrary standards.

Dusts which are known to be largely quartz, 30 to 100 per cent, which represent the sands, and sand stones which are used in grinding operations, sand blasting operations, abrasive pulverizing, gasket brick mixing and other such operations, can well be grouped together

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control machinery you want to find out what the hazard is and how much. The first thought would be to take dust

(Please turn to page 48)

NATIONAL SAFETY NEWS

1936 National Safety Council Knowledge re: invisible dust

Occupational Diseases

FRIDAY MORNING SESSION

October 9, 1936

The session was called to order by the Chairman, Dr. Hart E. Fisher, Vice-President for Health, National Safety Council, and Chief Surgeon, Chicago Rapid Transit Co., Chicago, who presided, introducing the speakers.

The Lesser Known Facts About Common Occupational Diseases

By DR. ROBERT B. HUNT

Medical Advisor, American Mutual Liability Insurance Co., Boston

Probably the leader in the parade of industrial diseases is an acute or chronic inflammation of the skin which we call dermatitis. This disease may present itself in any type of shop, factory or foundry. Any paste, powder, gas or liquid which comes in contact with the employee's skin, even the water supplied by the town in which he lives or works, may be the potential cause of such a skin disturbance.

The wide diversity of causes together with the varying susceptibility of different individuals makes the problem of control difficult.

Much investigation is under way to determine why one person may be susceptible to a certain substance while another is not. It has been proved many times that a poisonous substance formed within the body has been able to prolong the action started by some external influence. A printer developed a marked dermatitis from ink which persisted for two years. Finally food tests were made and showed that he was susceptible to ketchup, which, when removed from his diet cleared the skin. He returned to his usual occupation without a return of symptoms.

The poisoning of allergic substances is usually an accumulative process. It takes time to produce a manifestation of disease, but let any other substance cause the disease, and the irritating food may be of sufficient strength to magnify its action.

All cases of dermatitis cannot be cured by eliminating offending foods, but further investigation along these lines may

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others who continually come in contact with metallic lead. Lead in any form, introduced through the mouth, acts rather slowly when compared with the inhalation of lead dust or fumes. However, no matter what the portal of entry may be, lead is acted upon by the body fluids and so converted that it may eventually be deposited within the bones. Those bony safe deposit vaults may retain their lead contents for days or years, and if the exposure is removed, may also free the employee of all signs

of lead poisoning. But imagine the surprise of that supposedly cured person when years later, perhaps following some type of infectious disease or the excessive use of alcoholic beverages, he awakes to find that he suffers the aches and pains and paralyses of an acute lead poisoning. As the body fluids alter lead that it may be deposited, so may those fluids attempt to de-lead the body, and too rapid absorption may produce the original disease with all its discomforts.

One can readily see, then, that in some cases investigation of previous occupations is quite necessary to determine the original contact with lead.

Heating of molten lead causes a black scum of lead suboxide to form on its surface, and the heat from the metal discharges the fine powder into the air. Hence in the process of smelting ores

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Twenty-fifth National Safety Congress

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nose and mouth. The smaller the dust (the size of smoke particles for example) the greater the speed of absorption by the blood. Fumes from hot metals carry not only poisons but numerous minute dust particles. This explains the incapacities occurring among those engaged in acetylene and electric cutting and welding. When men are so employed over a prolonged period of time, the constant inhalation of fumes and dust might produce symptoms of the metal upon which they work. In the shipbuilding trade, particularly in the construction of metal ships, we find occasional cases of metal-fume fever. "Brass chills" and "spelter shakes" from zinc are names applied by the lay people to such diseases. The terrific heat applied to some of our common metals and alloys by acetylene torches produces sufficient fumes to cause a temporary inca-

...asbestos work...and many other occupations offer opportunities for employees to inhale microscopic dust particles and create a foundation for future incapacity

Chromium

Chromium is a metal widely used as a foundation for colors, and dusts from its various salts may produce lesions of the skin and mucous membranes of the nose. Chromium plating by electrolysis may cause fumes which are similarly irritating. Although chromium poisoning does not usually cause death, the number of days of absence from work on account of incapacity which it causes is gradually increasing.

Other Metals

The most efficient portals of entry of foreign substances into the body are the

We are interested particularly in those men who work with sandstone, quartz, flint, granite, and sand, because they expose themselves to silica, and the chemical changes between that dust and the body fluids, in the presence of tuberculosis, may and usually do lead to a fatal ending.

It is safe to say, in light of our present knowledge, that the action of other inorganic dusts is much less virulent and incapacitating. That, however, does not allow us to lower the vigilant methods to improve dust control and protect employees, because all dusty occupations are potential trouble makers.

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The most efficient portals of entry of foreign substances into the body are the

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