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FROM A. J. SARTSCHEV
PITTSBURGH, O.P. - 7

R. P. CARTER
PITTSBURGH OFFICE - 7

TO WORKS ENGINEERING MANAGERS
CHIEF MECHANICAL ENGINEERS

WORKS INDUSTRIAL HYGIENISTS

February 5, 1973

PLAINTIFF'S EXHIBIT
AL-1443

RE: REPLACEMENT OF ASBESTOS-CONTAINING INSULATION BLOCK
Ref: Attached List

A permanent standard was adopted effective July 7, 1972, by the Occupational Safety and Health Administration regarding worker exposure to asbestos fiber. According to this standard the maximum time-weighted average exposure is limited to five asbestos fibers, having a length longer than five micrometers, per millimeter of air. This limit would drop to two fibers per millimeter maxiumum effective July 1, 1976. The standard requires the use of engineering controls to meet these limiting exposures where such controls are technically feasible. The use of respirators is permitted only during development of engineering controls, or where engineering controls are not feasible, or in emergencies.

Asbestos-free insulating block has now become available for furnace and smelting pot applications in the form of Johns Manville Superex AF Grades. The use of this material is one method to eliminate exposure to asbestos-containing materials and consequently eliminate the need for engineering controls. These materials will be used for repair and replacement of furnace and pot linings and for new construction as soon as an adequate supply is available. Until all existing furnaces and pot linings have been converted to asbestos-free materials, we will have a problem making sure that our workers are not exposed to this hazard accidentally. This means that some form of record keeping will be necessary to indicate what material is in each furnace, pot, etc. These records would be a ready reference for maintenance and construction crews to determine when engineering controls and/or respirators are necessary to prevent asbestos exposure.

After reviewing the attachments, please inform us of your plans to accomplish the objectives for complying with the asbestos standards during the material transition period.

PRIVILEGED AND CONFIDENTIAL

A. J. SARTSCHEV
ROBERT P. CARTER

/map
Attachments

Distribution Attached

APC 003793

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cc: Messrs. J. F. Clark, Pittsburgh
C. C. Cook, Pittsburgh
R. W. Wrenn/J. A. Dunbar, Pittsburgh
J. E. Hatch, Pittsburgh
F. E. Mueller, Pittsburgh
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C. F. Hartley/R. J. Logan/J. C. Fisher/C. J. Cox/ R. E. Albreht/D. R. Barch, Pittsburgh
K. J. Brondyke/R. E. Spear/C. R. Howle/G. K. Turnbull, ARL, ATC
S. C. Huddleston/R. J. Ormesher, ARL, ATC
M. J. Caprio, Pittsburgh
G. H. Farrah/J. M. Plunkett, EHL, ATC
W. B. Garyotis, Pittsburgh

info cc: E. Sousa, Veracruz, Mexico
C. L. Patterson, Alcominas, Brazil
W. W. Browne, Point Henry Works, Aust.
O. A. Grytting, Lista, Norway
Arne Engesland, Mosjoen, Norway
R. E. Freeman, Paranam
R. E. Grossheim, Port of Spain, Trinidad
B. W. Graham, Pt. Henry

LIST OF ATTACHMENTS

Attachment #1

R. P. Carter's memorandum dated 12/23/71 to all Industrial Hygienists

RE: EMERGENCY STANDARD FOR EXPOSURE TO ASBESTOS DUST

Attachment #2

George H. Farrah's memorandum dated 4/17/72 to the Chairmen, Environmental Health Steering Committees

RE: INDUSTRIAL HYGIENE NEWSLETTER - ASBESTOS DUST EXPOSURES

Attachment #3

Thomas B. Bonney's memorandum dated 7/1/72 to all Industrial Hygienists, Plant Physicians, Safety Directors

RE: OSHA STANDARD FOR EXPOSURE TO ASBESTOS DUST

Attachment #4

Thomas B. Bonney's memorandum dated 7/20/72 to all Industrial Hygienists, Safety Directors

RE: APPROVED ASBESTOS RESPIRATORY PROTECTION

Attachment #5

Robert P. Carter's memorandum dated 8/21/72 to all Industrial Hygienists

RE: ASBESTOS-CONTAINING REFRACTORY AND INSULATING MATERIALS USED IN FURNACE AND CASTING EQUIPMENT CONSTRUCTION

Attachment #6

Pittsburgh Purchasing (Industrial Group) memorandum dated 10/4/72

RE: NATIONAL PURCHASE AGREEMENT P-615951
JOHNS-MANVILLE SUPEREX INSULATION BLOCK

FROM ROBERT P. CARTER

PITTSBURGH OFFICE

TO

Mr. Thomas B. Bonney
Pittsburgh Office 3

December 23, 1971

RE: EMERGENCY STANDARD FOR EXPOSURE TO ASBESTOS DUST

In the Federal Register of Tuesday, December 7, 1971, the Occupational Safety and Health Administration, Department of Labor, published a notice of the issuance, effective immediately, of an emergency standard for exposure to asbestos dust. A copy is enclosed for those who have not yet seen it. This emergency standard, which will be effective until further notice, establishes lower permissible employee exposure levels than those which had been made effective with the notification in the Federal Register of Friday, August 13, 1971. We are, therefore, notifying all of our operating locations of this emergency standard so that they may take appropriate cognizance of this with respect to any of their operations involving the handling, cutting, fabricating or other work involving the use of asbestos or asbestos-containing products such as the Marinite which is used extensively in our ingot casting operations. Where there is any question about the present levels of worker exposure meeting these emergency standards, the use of appropriate respirators should be instituted.

Shown on the attachment are all the respirators which have been approved as of February 1, 1971, by the U.S. Bureau of Mines under their Schedule 21B which is the required type protection as defined in Part 1910.93a, paragraph (c) (2) and (3). A list of approved equipment under Bureau of Mines Schedule 19B as specified in paragraph (4) is also attached.

Your attention is also called to paragraph (c) subparagraphs (5) and (6) which require the establishment of a respirator maintenance program and the proper inspection, cleaning, repairing and storing of respirators. It should also be noted that under paragraph (d) cutting or machining operations such as those which are used at many works for the cutting of Marinite or other asbestos products must be provided with local exhaust ventilation and dust collectors in accordance with American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2 - 1971, and also that employees whose exposure results from the spraying of asbestos or the demolition of pipes, structures or equipment covered or insulated with asbestos shall be provided with respirators of the type C positive pressure supplied-air category approved under Bureau of Mines Schedule 19B. Paragraphs (e), (f) and (g) deal with the mixing of asbestos mortar, grout and plaster, the disposal of asbestos waste, and the cleanup of asbestos dust.

For your further information, we are attaching a copy of Volume 3, No. 4, Winter, 1971, of the leaflet "Insulations Hygiene Progress Reports" which contain some very helpful recommendations for minimizing and preventing asbestos dust from becoming airborne in various types of industrial operations. Additional copies of this leaflet may be obtained by contacting directly the source of this publication.

ALCOA

If you have any questions concerning this important matter, please do not hesitate to contact us.

ROBERT P. CARTER

RPC:lel

TO: INDUSTRIAL HYGIENISTS

cc: T. M. Brown, Pittsburgh - 2
E. C. Collins, Pittsburgh - 21
J. W. DeWalt, Pittsburgh - 2
W. B. Garyotis, Pittsburgh - 2
H. J. Goodyear, Pittsburgh - 7 O.P.
R. D. Pulver, Pittsburgh - 21
V. W. Rieke, Pittsburgh - 2
H. F. Robey, Jr., Pittsburgh - 21
H. C. Sperry, Pittsburgh - 21
G. H. Farrah, EHL, ATC

cc (letter only):
Safety Directors (d)

FROM GEORGE H. FARRAH
ENVIRONMENTAL HEALTH LABORATORY
ALCOA TECHNICAL CENTER

TO INDUSTRIAL HYGIENISTS

April 17, 1972

RE: INDUSTRIAL HYGIENE NEWSLETTER - ASBESTOS DUST EXPOSURES

Mr. R. P. Carter's Newsletter dated December 23, 1971, concerning the OSHA emergency standard for asbestos has led to many requests for advice in determining compliance with the new Federal standards. This letter attempts to point out the more likely areas of exposure to asbestos dust, general reduction of worker exposures and includes sampling and analytical methods to determine if you are in compliance with any promulgated OSHA standard referring to asbestos.

The principal asbestos-containing materials of concern (apart from building insulation and pipe covering) are Molten Metal Marinite (Johns-Manville), asbestos shorts and insulating block used in smelting cells and furnaces of all types. Marinite constitutes a problem from the point of delivery of sheet stock, through storage and handling, all machining operations, removal of used material, to disposal of wastes. Asbestos shorts, as currently used, may present dust problems during transfer and mixing of the dry material in preparation of mortar, and in removal of old linings. According to Mr. H.M. Short, practically all the insulating (back-up) block used in smelting cells and in all types of furnaces contains 8% asbestos. This means that the operations of removing old lining from furnaces and cells, and even the relining, can create asbestos dust exposures. Asbestos is also used in other forms, such as paper and rope, and in a variety of applications - but principally as high temperature gasket. Wherever asbestos is routinely used, and in whatever form, we must take a careful look at exposures, not only of those handling the material, but of other workers in the vicinity. As mentioned in the December 23 Newsletter, this concern applies as well to the demolition of asbestos-covered structures, pipes, etc.

In starting an asbestos dust control program, the first step should be the listing of all forms and applications of asbestos-containing materials. This information should be readily available from the Process Materials List which all plants should have prepared and which they should maintain as current information. Next, all operations involving asbestos should be critically inspected. In many cases, it will not be necessary to collect samples and count fibers to recognize that concentrations are too high. If inspection of the operation shows a visible dust cloud, or if there is a layer of asbestos dust on surrounding surfaces, control measures must be instituted at once. Many of these measures are specified in the Federal Register of Tuesday, December 7, 1971; there are also some useful suggestions in the copies of Insulation Hygiene Progress Reports which were attached to the December 23, 1971, letter.

Most shops in which Marinite is processed have exhaust ducts attached to lathes, table and bandsaws, routing machines, etc. Power hand tools are similarly equipped and connected to the exhaust system. Some of these do a fairly good job of capturing dust, others are of little value. To be effective, enclosures must be virtually complete, with

high capacity exhaust systems. Furthermore, exhaust systems must be connected to collection systems which meet the performance standards set forth in the Federal Register, December 7, 1971, page 23208, Section 1910.93a and pages 23242-23243, Sections 61.23 and 61.24. There should be no visible emissions from discharge of the collection system. This discharge should be to the outside and directed away from any windows that may be opened, to avoid any possibility of dust being blown back into the workroom. Where the collector discharge is directed against the side of a building and has resulted in a readily visible brown deposit, collection efficiency may well be questioned. Assistance with your control problems can be obtained from the Pittsburgh Environmental Engineering Division.

The handling of dry asbestos shorts may be avoided by purchase of this material in plastic bags equipped with hose connections which permit wetting of the contents before the bag is opened. Wet-digging of old trough and furnace linings, where this is permissible, will reduce the generation of dust. If wet removal and replacement of lining is done in the open, provision should be made for adequate clean-up, including flushing away of fines, so that dust will not blow about as the work area dries. In all cases, clean-up must be done by means of vacuum cleaners and not by dry sweeping. Asbestos wastes should be collected and disposed of in sealed bags as required by the existing standard.

In removing old furnace and cell linings, wetting the exposed surfaces to minimize dust should be employed wherever practical. Again, the Pittsburgh Environmental Engineering Division should be consulted on the practicality of exhaust from the working area, especially during lining removal.

After installation of all appropriate control measures, even though there is no visible dust, an air sampling program will be necessary to determine whether respiratory protection may be discontinued. If levels of dust are above the standard permitted, the actual levels will establish the type of respiratory protection required. The emergency standard for asbestos dust published in the Federal Register of December 7, 1971, established the approved method for counting the fibers in a sample. When this level was proposed as a permanent standard in the Federal Register of January 12, 1972, (Attachment #1) some of the details of sampling were also spelled out, along with requirements for warning signs, environmental sampling, and medical examinations. Early in February, NIOSH published a criteria document on asbestos dust recommending a still lower fiber count as the standard. The detailed method for sampling, counting and calculating the fiber concentrations which was contained in this document is given in Attachment #2. Attachment #3 is a copy of OSHA Sampling Data Sheet #2 which contains additional helpful information. Regardless of the concentration which is established as the final standard, these sampling and analytical procedures will apply.

Sampling to determine worker exposures will be the responsibility of each plant and suitable equipment must be purchased, if it is not already available. The decision to evaluate samples in-house or to send them to a commercial laboratory will depend upon availability of personnel and equipment, and the volume of work anticipated. While our Environmental Health Laboratory will be equipped to make these evaluations for the Technical Center, the anticipated demand would be too great if we were to offer our services, company-wide.

Collection of samples is most conveniently done with pre-loaded filters and a small, battery powered pump of about 2 liters per minute capacity, such as the following:

Pre-loaded Filters

Millipore Field Monitors, Cat. No. MAWP 037 AO
Price per carton of 50 $30.00
(available from Millipore Corp., Bedford, Mass. 01730)

Battery Powered Pump

1. MSA Portable Pump Assembly, Model G,
Cat. No. 456058 $160.00
(Requires MSA Battery Charger Assembly,
Model G Pump, Cat. No. 456059) $ 40.00

Mine Safety Appliances Co.
201 North Braddock Avenue
Pittsburgh, Pa. 15208

or

2. NEI Micronair Personal Air Sampler,
Cat. No. 3900-10, complete with Nicad
battery and charger $195.00

National Environmental Instruments, Inc.
1865 Post Road
Warwick, R.I. 02888

Counting the fibers collected on the filters requires the use of a microscope equipped for phase contrast illumination, and a good quality microscope lamp, preferably one capable of providing Köhler illumination. To adape a given microscope for this work, the manufacturer should be consulted because the optical parts of different manufacturers may not be interchangeable. A Bausch and Lomb CTA-10 conventional microscope would require these accessories: special condenser, telescope, filters, phase annulus, and objective totaling $344.00. A suitable microscope lamp may cost about $100.00. If a microscope is to be purchased especially for this work, consideration should be given to the American Optical N51MP Series 50 Phase Teaching Microscope with 4X scanning objective, 10X phase and 45X phase objectives, and built-in

illuminator. It appears to be a satisfactory instrument and sells for $448.00, without carrying case.

Examination of Molten Metal Marinite dust by phase contrast and by bright field illumination showed little difference since the fibers are stained brown - probably by iron oxide - due to heat treatment which Marinite receives to convert it to the Molten Metal type. This was confirmed by discussion with the Product Manager for Marinite, Johns-Manville Corporation, who stated that the only type of asbestos used in Molten Metal Marinite is the brownish amosite. At this time, it appears that exposures to Molten Metal Marinite fibers can be evaluated by bright field counting with a conventional microscope. Therefore, this can be used to get preliminary data on Marinite dust concentrations, until equipment for the standard method required by OSHA is obtained. This is not the case for other forms of asbestos, which will require phase contrast microscopy at the outset.

Sending samples to commercial laboratories for counting may be advantageous in some cases, but may also present difficulties in locating laboratories qualified to perform this service. Walter C. McCrone Associates, Inc., Chicago, Ill., is probably the best known organization in the field of consultative microscopy and is preparing to offer this service at a charge of $25.00 to $30.00 per sample.

Mr. Robert P. Carter has supplied a corrected list for the respirators approved by the Bureau of Mines to replace that attached to his December 23, 1971, letter re "Emergency Standard for Exposure to Asbestos Dust." A copy of this corrected list is Attachment #4.

If after reviewing this letter and all attached materials you have questions or special problems concerning methods of sampling and counting, please contact me.

GEORGE H. FARRAH

GHF:mh

Attachments

cc, no att: Chairmen, Environmental Health
Steering Committees
V. W. Rieke, Pgh. - 2
L. V. Cralley/T. B. Bonney, Pgh. - 7
W. B. Garyotis, Pgh. - 2
R. H. Watson, Pgh. - 7
R. B. Kempton, Rea Magnet

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Rockdale	A.G. Clayton	G.W. Hutton
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Tifton		H.E. Chandler
Vancouver	L.L. Haisch	P.F. Woodward
Vernon	H.L. Chandler	J. R. Jones
Warrick	R.L. Parsons	R.J. Knox
Wenatchee	J.A. Thompson	J.A. Thompson

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regulated by this order than from other order plants during the month.

Proposal No. 9. Amend § 1036.42(b)(2) to read "Other source milk in bulk fluid form exclusive of that specified in § 1036.41(c)(6)".

Proposal No. 10. Amend § 1036.43 *Interplant movements.*

Add in § 1036.43(c)(3) (i), (ii), and (iii), the words "of bottling grade milk" after the phrase "constitute regular sources of supply".

Proposed by Borden, Inc.:

Proposal No. 11. Add to § 1036.45 a provision to read as follows:

Subtract from the remaining pounds of skim milk in Class II, the pounds of skim milk in other source milk (except that received in the form of a fluid milk product) that is added to, or used to produce, any product specified in § 1036.41 (b).

Proposed by Town and Country Dairy, Garvins Dairy, Sweet Home Dairy, and Halms Modern Dairy:

Proposal No. 12. Amend order No. 36 to provide that the following counties in the State of Ohio: Belmont, Jefferson, Harrison, Monroe, and part of Guernsey now in the marketing area; plus the West Virginia counties of Hancock, Brooke, Ohio, and Marshall be included in Zone 1 as defined by the proposal of Milk, Inc. (Proposal No. 1); or alternatively that the above dairies are to be put in the present Cleveland-Erie District rather than the Pittsburgh District.

Proposed by the Dairy Division, Consumer and Marketing Service:

Proposal No. 13. Revise § 1036.11(a)(1) to read as follows:

§ 1036.11 Pool plant.

• • • • •

(a) A distributing plant that has:

(1) Route disposition except filled milk, during the month of not less than 50 percent (40 percent for each month of April through August) of the total receipts of fluid milk products, except filled milk, that are approved by a duly constituted health authority for fluid consumption and that are physically received at such plant or diverted as producer milk pursuant to § 1036.16 to a supply plant qualified under paragraph (b) or (c) of this section or a nonpool plant; and

• • • • •

Proposal No. 14. Review the provisions of § 1036.11(c) to determine whether they should apply only to plants primarily engaged in the transfer of milk to distributing plants qualified under paragraph (a) of this section.

Proposal No. 15. Revise § 1036.30(a)(2) to read as follows:

§ 1036.30 Report of receipts and utilization.

• • • • •

(a) • • •

(2) Inventories at the beginning and end of the month of the following products:

(i) Fluid milk products; and

(ii) Products listed in § 1036.41(b)(1), except those received in packaged form from another plant, showing separately such inventories in bulk form and in packaged form;

• • • • •

Proposal No. 16. Revise § 1036.41(c)(6)(vii) to read as follows:

§ 1036.41 *Classes of utilization.*

• • • • •

(c) • • •

(6) • • •

(vii) Less 1.5 percent of the quantity of bulk fluid milk products and bulk cream transferred to other plants which does not exceed such quantity to which percentages are applied in subdivisions (i), (ii), (iv), (v) and (vi) of this subparagraph;

• • • • •

Proposal No. 17. Make whatever changes are necessary in the order to eliminate the possibility of a handler being charged under the order at the Class I price for milk that already has been classified and priced as Class I milk under a Federal order.

Proposal No. 18. Reposition, for clarification of the order, the provisions which establish that the Class I price for other source milk when adjusted for location of the shipping plant, shall not be less than the Class III price.

Proposal No. 19. Make whatever changes are necessary in the order to provide for a uniform "equivalent price" section to read as follows:

§ 1036.54 Equivalent price.

If for any reason a price or pricing component required for this part for computing class prices or for other purposes is not available in the manner described in this part, the market administrator shall use a price or pricing component determined by the Secretary to be equivalent to the price or pricing component that is required.

Proposal No. 20. Make such changes as may be necessary to make the entire marketing agreement and the order conform with any amendments thereto that may result from this hearing.

Copies of this notice of hearing and the order may be procured from the Market Administrator, 7503 Brookpark Road, Cleveland, OH 44129 or from the Hearing Clerk, Room 112-A, Administration Building, U.S. Department of Agriculture, Washington, D.C. 20250 or may be there inspected.

Signed at Washington, D.C., on January 7, 1972.

JOHN C. BLUM,
Deputy Administrator,
Regulatory Programs.

[FR Doc. 72-468 Filed 1-11-72;8:49 am]

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[29 CFR Part 1910]

STANDARD FOR EXPOSURE TO ASBESTOS DUST

Notice of Proposed Rule Making

Section 6(c) of the Williams-Steiger Occupational Safety and Health Act of 1970 (84 Stat. 1596; 29 U.S.C. 655) provides that upon the publication of an emergency temporary standard in the FEDERAL REGISTER the Secretary of Labor shall commence a rule making proceeding in accordance with section 6(b) of the Act, and that the emergency standard as published shall also serve as a proposed rule for the proceeding. An emergency temporary standard concerning exposure to asbestos dust was published in the FEDERAL REGISTER on December 7, 1971 (36 F.R. 23207). Accordingly, pursuant to section 6 (b) and (c) of the Williams-Steiger Occupational Safety and Health Act of 1970 (84 Stat. 1593, 1596; 29 U.S.C. 655), 29 CFR 1910.4, and Secretary of Labor's Order No. 12-71 (36 F.R. 8754), it is hereby proposed to amend 29 CFR Part 1910 as set forth below. The proposals include the emergency temporary standard and additional proposed rules on subsidiary issues.

Interested persons are invited to submit, both orally and in writing, data, views, and arguments concerning these proposals.

Written data, views, and arguments may be mailed to the Office of Safety and Health Standards, Room 305, 400 First Street NW., Washington, DC 20210, within 30 days after the publication of this notice in the FEDERAL REGISTER. The data, views, and arguments will be available for public inspection and copying at the Office of Safety and Health Standards, except as to matters the disclosure of which is prohibited by law.

Oral data, views, and arguments will be received by Hearing Examiner Arthur Goldberg, at a hearing beginning at 10 a.m. on March 14, 1972, in Conference Room B, Departmental Auditorium, 14th Street and Constitution Avenue NW., Washington, DC. Persons desiring to appear at the hearing must file with the Office of Safety and Health Standards a notice of intention to appear, no later than March 3, 1972. The notice must state the name and address of the person to appear, the capacity in which he will appear, and the approximate amount of time required for his presentation. The notice must also include, or be accompanied by, a statement of the position to be taken with regard to the proposed rules.

The oral proceedings shall be reported verbatim, and transcripts shall be available for inspection to any interested person on such conditions as the presiding

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hearing examiner may prescribe. The hearing examiner shall regulate the course of the oral proceedings, dispose of procedural requests, objections, and similar matters, regulate the conduct of those present at the hearing by appropriate means, and shall exclude to the extent practicable irrelevant, immaterial, and unduly repetitious data or arguments. The hearing examiner shall have discretion to keep the record of the hearing open for a reasonable, stated time to receive written recommendations, and additional data, views, and arguments from any person who has participated in the oral proceeding. Upon completion of the oral proceedings, the transcript thereof, together with written submissions on the proposed rules, exhibits filed during the hearing, and any posthearing data, views, arguments, and recommendations shall be certified by the hearing examiner to the Assistant Secretary of Labor for Occupational Safety and Health for his decision. The Assistant Secretary may adopt the proposals with or without changes, or determine not to issue a rule.

Under the authority of section 6(b)(1) and section 7(b) of the Act, the Assistant Secretary of Labor for Occupational Safety and Health will request the recommendations of an advisory committee with regard to the proposed rules. The committee will be provided with copies of these proposals, together with all pertinent factual information which is, or may become, available to the Assistant Secretary, including any information submitted by the National Institute for Occupational Safety and Health. The advisory committee will be asked to submit to the Assistant Secretary written recommendations regarding these proposed rules within 45 days after the publication of this notice. The recommendations will be available for public inspection and copying. No other advisory committee will be consulted with regard to these proposed rules.

Part 1910 of Title 29 of the Code of Federal Regulations is proposed to be amended as follows:

§ 1910.93 [Amended]

1. Table G-3 in § 1910.93 (36 F.R. 15104, August 13, 1971) is proposed to be amended by deleting the following:

Asbestos—12 fibers per milliliter greater than 5 microns in length or * * * 2 Mppcf.

Tremolite * * * 5 Mppcf. $\frac{20\ mg./M^3}{\%SiO_2}$

If so amended, Table G-3 would read as follows:

TABLE G-3—MINERAL DUSTS

Substance	Mppcf	Mg/M³
Silica:		
Crystalline:		
Quartz (respirable)	250	10mg/M³ = %SiO₂+2
Quartz (total dust)		30mg/M³ = %SiO₂+2
Cristobalite: Use ½ the value calculated from the count or mass formulae for quartz.		
Tridymite: Use ½ the value calculated from the formulae for quartz.		
Amorphous, including natural diatomaceous earth	20	80mg/M³ = %SiO₂
Silicates (less than 1% crystalline silica):		
Mica	20	
Soapstone	20	
Talc	20	
Portland cement	50	
Graphite (natural)	15	
Coal dust (respirable fraction less than 5% SiO₂)		2.4mg/M³ or 10mg/M³ = %SiO₂+2
For more than 5% SiO₂		
Inert or Nuisance Dust:		
Respirable fraction	15	5mg/M³
Total dust	50	15mg/M³

NOTE: Conversion factors—
mppcf×35.3=million particles per cubic meter
=particles per c.c.

[1] Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.

[2] The percentage of crystalline silica in the formula is the amount determined from air-borne samples, except in those instances in which other methods have been shown to be applicable.

[3] As determined by the membrane filter method at 430 × phase contrast magnification.

[4] Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	90
2.5	75
3.5	50
5.0	25
10	0

The measurements under this note refer to the use of an AEC instrument. If the respirable fraction of coal dust is determined with a MRE the figure corresponding to that of 2.4 Mg/M³ in the table for coal dust is 4.5 Mg/M³.

2. A new § 1910.93a is proposed to be added to Part 1910, reading as follows:

§ 1910.93a Asbestos dust.

(a) *8-hour time-weighted average.* The 8-hour time-weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed 5 fibers longer than 5 microns per milliliter, as determined by the membrane filter method at 400–450 × (magnification) (4 millimeter objective) phase contrast illumination. Concentrations above 5 fibers per milliliter, but not to exceed 10 fibers per milliliter, may be permitted up to a total of 15 minutes in an hour, but for not more than 5 hours in an 8-hour day.

(b) *Methods of compliance*—(1) *Engineering methods.* Engineering methods, such as, but not limited to, enclosure, vacuum sweeping, and local exhaust ventilation, shall be used to meet the exposure limits prescribed in paragraph (a) of this section. Where such engineering methods are not feasible, or do not reduce the concentrations below the limits prescribed in paragraph (a) of this section, respiratory protective devices shall be provided and used in accordance with subparagraph (2) of this paragraph.

(2) *Other methods.* (i) When the limits of exposure to asbestos dust prescribed in paragraph (a) of this section are exceeded, and engineering controls required by subparagraph (1) of this paragraph are not feasible or do not reduce the concentration of asbestos dust below the limits prescribed in paragraph (a) of this section, the employer shall require the use of respiratory protective devices. The selection of respiratory protective devices shall be limited to those specified in paragraph (c) of this section.

(ii) The employer shall require that each employee test his respiratory protective device before each use in order to insure a proper fit according to the manufacturer's instructions. The employer shall further provide for effective training or supervision of employees in the testing of respiratory protective devices for fit before their use.

(c) *Allowable respirators.* (1) When the 8-hour time-weighted average concentration of asbestos dust is projected to exceed 5 fibers longer than 5 microns per milliliter, but not to exceed 25 such fibers, and when a concentration over a period of 15 minutes exceeds 10 fibers longer than 5 microns per milliliter, but does not exceed 50 such fibers, a reusable or single use filter type respirator, operating with negative pressure during the inhalation phase of breathing, approved by the U.S. Bureau of Mines under the provisions of 30 CFR Part 14 (Bureau of Mines Schedule 21B), shall be used.

(2) When the 8-hour time-weighted average concentration of asbestos dust is projected to exceed 25 fibers longer than 5 microns per milliliter but not to exceed 250 such fibers, and when a concentration over a period of 15 minutes exceeds 50 fibers longer than 5 microns per milliliter but does not exceed 500 such fibers, a powered filter positive pressure respirator approved by the U.S. Bureau of Mines under the provisions of 30 CFR Part 14 (Bureau of Mines Schedule 21B) shall be used.

(3) When the 8-hour time-weighted average concentration of asbestos dust is projected to exceed 250 fibers longer than 5 microns per milliliter a type "C" positive pressure supplied-air respirator approved by the U.S. Bureau of Mines under the provisions of 30 CFR Part 12 (Bureau of Mines Schedule 19B) shall be used.

(4) The employer shall establish a respirator program in accordance with the requirements of American National Standard Practice for Respiratory Protection Z88.2—1969.

(5) The respirators provided each employee shall be properly inspected, cleaned, repaired, and stored.

(d) *Particular operations and products.* (1) When an employer has employees who are exposed to asbestos dust resulting from the operations or the use of tools described in the remaining subparagraphs of this paragraph (d), the employer shall comply with the requirements of this paragraph. The requirements of this paragraph shall apply at all times, and, in addition, the requirements of paragraph (b) of this section may also apply, according to the terms thereof.

(2) All hand- or power-operated tools which produce asbestos dust such as, but not limited to, saws, scorers, abrasive

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wheels, and drills, shall be provided with local exhaust ventilation and dust collectors in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems; ANSI Z9.2—1971.

(3) Employees exposed to the spraying of asbestos, to the demolition of pipes, structures, or equipment covered or insulated with asbestos, or to the demolition of insulating strippings, shall be provided with respiratory protective devices in accordance with paragraph (c)(3) of this section.

(4) Asbestos cement, mortar, coatings, grout, and plaster shall be mixed in closed bags or other closed containers.

(5) Asbestos waste and scrap shall be collected and disposed of in sealed bags or other closed containers.

(6) Accumulation of asbestos dust shall be removed, as soon as practicable, and only by vacuum cleaners.

(e) *Warning signs*—(1) *Posting.* Warning signs shall be provided and displayed at each location where asbestos dust hazards are present. Signs shall be posted at least 50 feet in each direction from the location where the hazard is present, and at intervals of not more than 100 feet along each edge of the area where the hazard is present.

(2) *Sign specifications.* The warning signs shall conform to the requirements for 20" x 14" vertical format signs specified in § 1910.145(d)(2), and to this paragraph. The signs shall display the following legend in the white panel, with letter sizes and styles of a visibility at least equal to that specified in the notation in the following column to the right:

Legend:	Notation
Asbestos	1" Sans Serif Gothic or Block.
Dust Hazard	3/4" Sans Serif Gothic or Block.
Follow these	1/4" Gothic
Safety and Health Rules.	3/4 Sans Serif Gothic or Block
1. Avoid breathing dust.	1/4" Gothic.
2. Wear your respirator.	1/4" Gothic
3. Do not remain in area unless your work requires it.	1/4" Gothic.
Asbestos dust may cause asbestosis, a severe lung disease, and is implicated in the development of certain cancers. Control of exposure to asbestos dust helps protect against these hazards.	14 point Gothic.

(3) *Spacing.* Spacing between lines shall be at least equal to the height of the upper of any two lines, except that the spacing between "Following these" and "Safety and Health Rules" shall be at least 3/4".

(f) *Monitoring*—(1) *Personal.* Employees engaged in the particular operations or using the particular tools specified in paragraph (d) of this section, or exposed to concentrations of asbestos dust in excess of the limits specified in paragraph (c)(3) of this section shall be monitored in accordance with this paragraph.

(i) *Method.* Dust samples shall be collected from within the normal breathing zone of the employees in their normal working posture. Employees wearing respiratory protective devices shall have the sample taken from a point located on the exterior of the respirator facepiece.

(ii) *Procedure.* The sampling procedure shall be such as to permit the determinations required by paragraph (a) of this section.

(iii) *Sampling duration.* The sampling duration shall be for a period of not less than 15 consecutive minutes.

(iv) *Sampling frequency.* Sampling periods shall be of such number and pattern as to represent accurately the exposure of the employees over their working period.

(2) *Environmental.* Environmental monitoring shall be conducted in all areas in which employees are exposed to concentrations of asbestos dust in excess of the limits specified in paragraph (a) of this section.

(i) *Method.* Asbestos dust samples shall be collected from areas which are representative of the concentration of airborne asbestos dust which may reach the breathing zone of exposed employees.

(ii) *Procedure.* Sampling procedure shall be such as to permit the determinations required by paragraph (a) of this section.

(iii) *Sampling duration.* Sampling duration shall be for a period of not less than 15 consecutive minutes.

(iv) *Sampling frequency.* Sampling periods shall be of such number and pattern as to represent accurately the exposure of the employees over their working period.

(g) *Medical examinations.* The employer shall provide, or make available at his cost, appropriate medical examinations on a periodic basis to any employee who is exposed to asbestos dust in excess of the limits specified in paragraph (a) of this section.

(h) *Records.* (1) Every employer shall maintain records of the personal and environmental monitoring, and of the medical examinations, required by paragraphs (f) and (g) of this section. Such records shall be maintained for at least 20 years.

(2) The records of monitoring shall be made available for inspection and copying to the Secretary of Labor and to his designated representatives.

(3) The records of medical examinations shall be made available only to the Secretary of Labor, to the Secretary of Health, Education and Welfare, to designated representatives of either of them, and, at the request of the employee or former employee examined, to his physician.

3. A new § 1910.19 is proposed to be added to Subpart B, reading as follows:

§ 1910.19 Asbestos dust.

Section 1910.93a shall apply to the exposure of every employee to asbestos dust in every employment and place of employment covered by § 1910.12, 1910.13, 1910.14, 1910.15 or 1910.16 of this Subpart B, in lieu of any different standard on exposure to asbestos dust which would otherwise be applicable by virtue of any of those sections.

(Sec. 6, 84 Stat. 1593, 29 U.S.C. 655, 29 CFR 1910.4; Secretary of Labor's Order No. 12-71, 36 F.R. 8754)

Signed at Washington, D.C., this 6th day of January 1972.

G. C. GUENTHER,
Assistant Secretary of Labor.

[FR Doc. 72-403 Filed 1-11-72;8:45 am]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

[21 CFR Part 19]

CERTAIN CHEESES

Proposed Identity Standards Regarding Labeling Requirements

Notice is given that a petition has been filed by the National Cheese Institute, Inc., 110 North Franklin Street, Chicago, Ill. 60606, proposing that identity standards for certain specified cheeses be amended to require that (1) the full name of the food appear on the principal display panel of the label in type of uniform size, style, and color; (2) wherever any word or statement emphasizing the name of any ingredient appears on the label (other than in circumstances described below) so conspicuously as to be easily seen under customary conditions of purchase, the full name of the food immediately and conspicuously precedes or follows such word or statement in type of at least the same size as the type of such word or statement, and (3) optional ingredients be listed conspicuously, either on the principal display panel of the label or on a single appropriate information panel, in accordance with specifications that are consistent with similar specifications for many other food products.

Accordingly, it is proposed that Part 19 be amended:

1. In § 19.750(f) by revising subparagraph (6) and adding subparagraphs (7) and (8), as follows:

§ 19.750 Pasteurized process cheese; identity; label statement of optional ingredients.

* * * * * * *

(f) * * *

(6) The full name of the food shall appear on the principal display panel of the label in type of uniform size, style, and color.

(7) Wherever any word or statement emphasizing the name of any ingredient appears on the label (other than as specified in subparagraph (8) of this paragraph) so conspicuously as to be easily seen under customary conditions of purchase, the full name of the food shall

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MEASUREMENT OF ASBESTOS FIBERS Attachment #2

The sample should be collected on a 37-millimeter Millipore type AA* filter mounted in an open-face filter holder. The holder should be fastened to the worker's lapel and air drawn through the filter by means of a battery-powered personal sampler pump similar to those approved by NIOSH under the provisions of 30 CFR 74. The filters are contained in plastic filter holders and are supported on pads which also aid in controlling the distribution of air through the filter. To yield a more uniform sample deposit, the filter-holder face-caps should be removed. Sampling flow rates from 1.0 liter per minute (lpm) up to the maximum flow rate of the personal sampler pump (usually not over 2.5 lpm) and sampling time from 15 minutes to eight hours are acceptable provided the following restraints are considered:

(a) In order to obtain an accurate estimate of the number of fibers the statistical error resulting from the random distribution of the fibers must be kept to an acceptably low level. Since fiber counts follow a Poisson distribution, a count of 100 fibers in a sample would have a standard deviation of $\sqrt{100}$ or 10 fibers or $\pm$ 10%. Thus the 95% confidence limits would be approximately 2 standard deviations or $\pm$ 20%. Since the 37 mm filter has an effective collecting area of 855 mm^2 and the projected field area of the Porton reticle is 0.005 mm^2, each field represents 1/171000 of the sample. Based on this ratio the following number of fields must be counted to measure the various limits in various sampling times:

*Mention of commercial products does not constitute endorsement by the Public Health Service or U. S. Department of Health, Education and Welfare.

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Sampling Time Minutes	Flow Rate lpm	Number of Fields for 100 Fibers 0.2 fibers/ml	2.0 fibers/ml	10 fibers/ml
10	2	4350	435	91
15	2	2860	286	58
30	2	1430	143	29
90	1	1000	100	20
90	2	500	50	10
240	1	260	26	7
240	2	180	18	4
480	1	180	18	4

(b) Do not count a field containing over 20 fibers because in addition to the fibers being counted, there are also present a number of grains, which interfere with the accuracy of the count.

Based on these restraints, i.e., number of fields to be counted and maximum number of fibers per field, acceptable sampling parameters for the various limits are underlined in the above table.

The following conclusions may be drawn from this analysis:

(1) The short-term limit should be for a period of at least 15 minutes and preferably 30 minutes.

(2) The 2.0 fiber/cc limit may be evaluated over periods of from 90 to 480 minutes.

As many fields as required to yield at least 100 fibers should be counted. In general the minimum number of fields should be 20 and the maximum 100.

Mounting Sample

The mounting medium used in this method is prepared by dissolving 0.05 g of membrane filter per ml of 1:1 solution of dimethyl phthalate

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and diethyl oxalate. The index of refraction of the medium thus prepared is ND = 1.47.

To prepare a sample for microscopic examination, a drop of the mounting medium is placed on a freshly cleaned, standard (25 mm X 75 mm), microscopic slide. A wedge-shaped piece with arc length of about 1 cm is excised from the filter with a scalpel and forceps and placed dust-side-up on the drop of mounting solution. A No. 1-1/2 coverslip, carefully cleaned with lens tissue, is placed over the filter wedge. Slight pressure on the coverslip achieves contact between it and the mounting medium. The sample may be examined as soon as the mount is transparent. The optical homogeneity of the resulting mount is nearly perfect, with only a slight background granularity under phase contrast, which disappears within one day. The sample should be counted within two days after mounting.

Evaluation

The filter samples mounted in the manner previously described are evaluated in terms of the concentration of asbestos fibers greater than 5 um in length. A microscope equipped with phase-contrast optics and a 4-mm "high-dry" achromatic objective is suitable for this determination. 10X eyepieces, one of which contains a Porton or other suitable reticle at the level of the field-limiting diaphragm, should be used. The left half of the Porton reticle field serves to define the counting area of the field. Twenty fields located at random on the sample are counted and total asbestos fibers longer than 5 um are recorded. Any particle having an aspect ratio of three or greater is considered a fiber.

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... following formulae are used to determine the number of fibers/ml

(1) $\frac{\text{Filter area } (mm^2)}{\text{Field area } (mm^2)} = K$

(2) $\frac{\text{Average net count} \times K}{\text{Air volume sampled (ml)}} = \text{fibers/ml}$

For example, assume the following: area of the filter used was 855 mm^2, counting area of one field under the Porton reticle was 0.005 mm^2 average net count per field of 20 fields was 10 fibers; and sample was collected at 2 liters per minute for 90 minutes: Then:

$$\frac{855 mm^2}{0.005\ mm^2} = 171{,}000\ (K)$$

$$\frac{10 \text{ fibers} \times 171{,}000}{2{,}000 \text{ ml/min} \times 90 \text{ min}} = 9.5 \text{ fibers/ml}$$

Calibration of Personal Sampler

The accuracy of an analysis can be no greater than the accuracy of the volume of air which is measured. Therefore, the accurate calibration of a sampling device is essential to the correct interpretation of an instrument's indication. The frequency of calibration is somewhat dependent on the use, care, and handling to which the pump is subjected. Pumps should be calibrated if they have been subjected to misuse or if they have just been repaired or received from a manufacturer. If hard usage is given the instrument, more frequent calibration may be necessary.

Ordinarily, pumps should be calibrated in the laboratory both before they are used in the field and after they have been used to collect a large number of field samples. The accuracy of calibration is dependent on the type of instrument used as a reference. The choice of calibration instrument will depend largely upon where the calibration is to be performed. For laboratory testing, a 1-liter burette or wet-test meter should be used. In the field, a rotameter is the most convenient

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instrument used. The actual set-up will be the same for all of these instruments. The calibration instrument will be connected in sequence to the filter unit which will be followed by the personal sampler pump. In this way, the calibration instrument will be at atmospheric pressure. Connections between units can be made using the same type of tubing used in the personal sampling unit. Each pump must be calibrated separately for each type of filter used, if, for example, it has been decided to use a filter with a different pore size. The burette should be set up so that the flow is toward the narrow end of the unit.

Care must be exercised in the assembly procedure to insure adequate seals at the joints and that the length of connecting tubing be kept at a minimum. Calibration should be done under the same conditions of pressure, temperature and density as will be encountered. The rotameter should be used only in the field as a check if the diaphragm or piston pumps are not equipped with pulsation dampeners. The pulsating flow resulting from these type pumps causes the rotameter to give results which are not as accurate as that obtained with a burette or wet-test meter. Calibration can be accomplished with any of the other standard calibrating instruments, such as spirometer, Marriott's bottle, or dry-gas meter. The burette and wet-test meter were selected because of their accuracy, availability, and ease of operation.

Method based on a modification of the membrane filter method described by Edwards & Lynch "The Measurement of exposure to Airborne Mineral Fibers." Presented at the American Ind. Hyg. Conference, Denver 1969.

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¶ 8330 OSHA SAMPLING DATA SHEETS FOR FIVE TOXIC SUBSTANCES RELEASED

Back references: ¶ 1071; 6647.93; 6647.93a.

The Occupational Safety and Health Administration has released sampling data sheets for the five toxic substances on which its "Target Health Hazards" program will focus. The data sheets cover sampling equipment and procedures for carbon monoxide, asbestos, crystalline silica, lead and its inorganic compounds (except lead arsenate), and raw cotton dust. Criteria for violations of employee exposure to excessive concentrations of each substance are also described.

The sampling data sheets are reproduced below.

OSHA SAMPLING DATA SHEET #2

Substance:
Asbestos.

Standard: 29 CFR 1910.93a(a) of December 7, 1971

¶ 8330

8-hour time-weighted average*: 5 fibers per milliliter greater than 5 microns in length.

Excursion limit*: 10 fibers per milliliter, up to 15 minutes in an hour for up to 5 hours per 8-hour day.

*Unprotected or improperly protected worker exposures

Analytical Method:
Fibers counted at 400-450 magnification, using phase contrast illumination, with sample mounted in high-viscosity solution of membrane filter material.

Sampling Equipment:
Personal sampling pump plus Millipore type AA filter (37mm, 0.8 μ pore size). Face cap is removed and filter used open face during sampling. Sampling rate: 2 l/m.

Sample Size:
Minimum period of 15 minutes for evaluation of excursion limit. Several samples of up to 4 hours for evaluation of 8-hour average. Samples with a visible deposit may be too heavy to count. Compare with a clean filter. Heavy concentrations of visible dust in the air (100 to 500 fibers/ml) may require short sampling periods of only 5 minutes, or less.

Blanks:
With each batch of samples submit two filters which are subjected to exactly the same handling as for the samples except that no air is drawn through them. Label these as blanks.

Shipping:
The cassettes in which the samples are collected should be shipped in a suitable container, designed to prevent damage in transit.

Imminent Danger Situations:
Generally not applicable.

Serious Violation:
5.1 or more fibers per ml, greater than 5 μ in length, for an unprotected or improperly protected worker, for an 8-hour time-weighted average, except for certain proven excursions as noted in the emergency standard, which may raise the 8-hour time-weighted average to 5.8 fibers per ml.

Nonserious Violation:
Not applicable.

De Minimis Violation:
Not applicable.

APC 003811

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Attachment #4

CORRECTED LIST

RESPIRATORS APPROVED BY THE U.S. BUREAU OF MINES UNDER SCHEDULE 21B

AO	R8100 with R100 filter R8156 with R156 filter R5056 and R6056 with R56 filters
Safeline	5550 with 5950 filter 5556 with 5956 filter 5241 with 5971 filter
MSA	96000 with 96042 filter (This identical filter available as Cat. No. 96(package of 5 filters and Cat. No. 96106 packag(of 50 filters) 10-86431 with Type S filter

RESPIRATORS APPROVED BY THE U.S. BUREAU OF MINES UNDER SCHEDULE 19B

Willson	GA2H, GAHS, GAHW, TAHW, GA2, GA8, GAF and GAFW
Acme	4615-1, 4616-1, 4654, 4800, 4810 and 4860
MSA	"Lead-Foe (helmet)," and "Hyperflo"
Pulmosan	HA-99 and AL-180
AO	R6099
Scott	6380DP
Firewel	
U.S. Divers SurvivAir	9011-02

#3

FROM THOMAS B. BONNEY
W. N. DAWSON, M. D.
R. H. WATSON

PITTSBURGH OFFICE

TO INDUSTRIAL HYGIENISTS
PLANT PHYSICIANS
SAFETY DIRECTORS

July 1, 1972

RE: OSHA STANDARD FOR EXPOSURE TO ASBESTOS DUST

Attached is a copy of the latest amendment to Sec. 1910.93 related to asbestos dust exposures. The asbestos standard becomes effective July 7, 1972. Until then, the temporary emergency standard remains in effect. As you look over the requirements of this amendment, you will be impressed that its overall effect, regardless of intent, must be to discourage the use of asbestos and materials containing it.

We urge you to read closely the provisions of the permanent asbestos standard. To impress upon you its wide scope and the significant demands that will be made of plant personnel, highlights of the standard are given below.

Permissible Exposures. Until July 1, 1976, an employee's eight-hour, time-weighted average exposure concentration to asbestos fibers longer than five microns must not exceed five fibers per cubic centimeter of air. In addition, the employee may not be exposed to a concentration in excess of 10 such fibers per cc, regardless of the brevity of exposure. After July 1, 1976, the permissible time-weighted average concentration is reduced to two fibers per cc. The ceiling concentration will remain the same.

We point out that the equivalent concentration of two fibers per cc in terms of millions of particles per cubic foot is 0.06 mppcf. In rural areas, the normal concentration range of dust in ambient air is 0.20-0.5 mppcf. Using this comparison it is easy to see that a restriction to two fibers per cc means, for all practical purposes, no dust at all.

Engineering Controls. Engineering controls in conformance with ANSI Standards are required to keep dust exposures within permissible levels. All tools that produce dust will require local exhaust ventilation. Respirators are not a substitute and may be used only under limited circumstances.

Work Practices. Wherever possible, the asbestos-containing material shall be worked wet. Furthermore, products with asbestos cannot be removed from the containers in which they are shipped without first being wetted or enclosed or ventilated in order to prevent the generation of airborne dust. Spray application and the removal or demolition of asbestos materials will require the use of air-supplied respirators on those exposed.

Personal Protective Equipment. Respirators are permissible control devices only in emergencies or during the time it takes to institute engineering controls. In some instances, and we would anticipate them to be infrequent, OSHA may allow the use of respiratory protection if they consider that other control methods are not technically feasible. The type respirator to be used for any given application will depend upon the associated concentration of asbestos dust. Where respirators are used, a respirator program must be instituted in conformance with ANSI Z88.2-1969. The elements of this ANSI

standard are included in the OSHA regulations, Part 1910.134, page 10590-92 of the May 29, 1971, Federal Register.

No employee will be required to wear a respirator if an examining physician determines the employee will be unable to function normally while wearing one. If necessary, such employees will be removed to another job without loss of pay.

Special clothing must be provided by the employer if the employee is exposed to asbestos concentrations in excess of 10 fibers per cc. Where the employee is exposed to time-weighted, eight-hour concentrations in excess of five fibers per cc (two fibers per cc after July, 1976) or peak concentrations in excess of 10 fibers per cc, he must be provided with a change room and two lockers. The restrictions placed on the manner in which asbestos-containing clothing must be laundered are such that it might force the employer into the laundry business.

Air Sampling and Analysis. All determinations of airborne asbestos will be made by the membrane filter method at 400-450X magnification with phase contrast illumination.

Within six months of the effective date, the employer must undertake both personal and general area sampling in those areas where asbestos fibers are released to the air. The pattern and frequency of sampling must be such that it is representative of exposures. However, the interval between samplings must be no longer than six months.

The employees or their representative shall be given the opportunity to observe the air sampling and have access to the records generated from it. Any employee receiving an excessive exposure must be so notified and told of the corrective action to be taken.

Caution Signs and Labels. Signs of specified dimensions, type size and message must be posted in specified locations where asbestos fibers may be in excess of exposure limits. Specified caution labels must be placed on all raw materials, mixtures, scrap waste and debris and other products containing asbestos.

Waste Disposal. Asbestos waste products which may produce airborne fibers under any foreseeable handling must be collected and disposed of in impermeable containers.

Medical Examination. Preplacement, annual and termination medical examinations must be given to all employees exposed to airborne concentrations of asbestos fibers. The examinations must be comprehensive and include chest x-ray and pulmonary function tests.

As you can see from the above, the asbestos standard is comprehensive. It will require a considerable amount of coordination between all management personnel and education of all employees. If any of us can be of help to you as you implement this standard, please let us know.

T. B. Bonney
W. N. Dawson
R. H. Watson

TBB:WND:RHW:mh

Attachment

cc: F. E. Mueller, Pgh. - 23
C. L. Pittman, Pgh. - 27 O P
G.H. Farrah/J.M. Plunkett, ATC

Information copies to:

F. C. Irving, Jr., Pgh. - 29
R.S. Adams/R. Kohler, Alcas Cutlery Corp.
F.D. Koran/E.A. Moats, Tifton Aluminum Co., Inc.
A.P. LeClair, Jr./J.A. Elliott, H C Products Co.
J.L. McKinley/R.B. Kempton/ M.L. Bookout, Rea Magnet Wire Co., Inc.
R.F. Butler/D. Trudel, Permanent Mold Div., Cleveland Works
J.W. Anderson, ABP, Inc.
A.C. Sheldon/W.J. Koopman, ACPC, Allegheny Center
J.W. Warnock, ACPC, Marshall Works
J.S. Hamilton/J.J. Thimons, Wear-Ever Aluminum, Inc.
R.C. Wilson, LeFiell Sport Products, Inc.
D.D. Rhoads/W.A. Coward, Lincoln Manufacturing Co., Inc.
J.C. Bates, Pittsburgh - 22
R.C. Dean, Frigidome Division

[T.D. 72-153]

PART 10—ARTICLES CONDITIONALLY FREE, SUBJECT TO A REDUCED RATE, ETC.

Free Withdrawal of Supplies and Equipment for Aircraft

In accordance with section 309(d), Tariff Act of 1930, as amended (19 U.S.C. 1309(d)), the Department of Commerce has found and under date of April 25, 1972, has advised the Treasury Department that Poland allows privileges to aircraft registered in the United States and engaged in foreign trade substantially reciprocal to those provided for in sections 309 and 317 of the Tariff Act of 1930, as amended (19 U.S.C. 1309, 1317). The same privileges are therefore hereby extended to aircraft registered in Poland and engaged in foreign trade effective as of the date of such notification.

Accordingly, paragraph (f) of § 10.59, customs regulations, is amended by the insertion of Poland in appropriate alphabetical order and the number of this Treasury decision in the opposite column headed "Treasury Decision(s)" in the list of nations in that paragraph.

(Secs. 309, 317, 624, 46 Stat. 690, as amended, 696, as amended, 759; 19 U.S.C. 1309, 1317, 1624)

[SEAL] EDWIN F. RAINS,
Acting Commissioner of Customs.

Approved: May 25, 1972.

EUGENE T. ROSSIDES,
Assistant Secretary of the Treasury.

[FR Doc.72-8578 Filed 6-6-72;8:50 am]

Title 29—LABOR

Chapter XVII—Occupational Safety and Health Administration, Department of Labor

PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

Standard for Exposure to Asbestos Dust

On December 7, 1971, an emergency temporary standard concerning exposure to asbestos fibers was published in the FEDERAL REGISTER (36 F.R. 23207). In accordance with section 6(c)(3) of the Williams-Steiger Occupational Safety and Health Act of 1970, a notice of proposed rulemaking regarding a permanent standard for exposure to asbestos fibers was published in the FEDERAL REGISTER on January 12, 1972 (37 F.R. 466). The notice invited interested persons to submit both orally and in writing, data, views, and arguments concerning the proposal.

On or about January 24, 1972, the Advisory Committee on Asbestos Dust was established and requested to make written recommendations with regard to the proposed standard on asbestos. On or about February 1, 1972, the Department of Health, Education, and Welfare transmitted to the Secretary of Labor a criteria document containing Recommendations for an Occupational Exposure Standard for Asbestos by the National Institute for Occupational Safety and Health (NIOSH). Public notice was given of the receipt of the recommendations and their availability for inspection and copying. On or about February 25, 1972, the Advisory Committee on Asbestos Dust submitted its written recommendations to the Assistant Secretary of Labor for Occupational Safety and Health.

Pursuant to the notice of rule making, a hearing was held on March 14 through 17, 1972, for the purpose of receiving oral data, views, and arguments concerning the proposed standard. On or about March 31, 1972, the presiding hearing examiner certified to the Assistant Secretary of Labor for Occupational Safety and Health the record of the proceeding. The record includes prehearing written comments, a transcript of the oral presentations made at the hearing, and numerous exhibits received, during the course of the hearing or within the period allowed after the close of the hearing.

The proposed standard dealt with (1) permissible concentrations of asbestos fibers; (2) methods of compliance; (3) warning signs; (4) monitoring; (5) medical examinations; and (6) recordkeeping. Each of these major proposals elicited comments, arguments, objections, and counterproposals. They all have been examined and considered.

1. *Acceptable concentrations of asbestos dust.* The proposed standard would limit occupational exposure to 8-hour time-weighted average (TWA) airborne concentrations of asbestos dust not exceeding five fibers longer than five micrometers per milliliter. Concentrations above five fibers but not to exceed 10 fibers (ceiling concentration) would be permitted up to 15 minutes in an hour, but for not more than 5 hours in any one 8-hour day.

NIOSH in effect has recommended that the five-fiber TWA and 10-fiber peak concentrations be permitted only for 2 years; thereafter, TWA concentrations should be not more than 2 fibers per cubic centimeter (cm.³) of air, and peak concentrations should not exceed 10 fibers/cm.³, with no time restriction. Numerous objections and counterproposals have been made, with regard to both the limits of asbestos fiber concentrations and the time periods to comply with them. Some, for example, have recommended return to a 12-fiber standard of an earlier day; i.e., a level adopted under the Walsh-Healey Public Contracts Act in 1969. Others have recommended a two-fiber standard to become effective in 6 months, then a one-fiber standard for 2 years, and finally a zero-fiber standard after 3 years. These recommendations give a fair indication of the wide spread of the counterproposals.

No one has disputed that exposure to asbestos of high enough intensity and long enough duration is causally related to asbestosis and cancers. The dispute is as to the determination of a specific level below which exposure is safe. Various studies attempting to establish quantitative relations between specific levels of exposure to asbestos fibers and the appearance of adverse biological manifestations, such as asbestosis, lung cancers, and mesothelioma, have given rise to controversy as to the validity of the measuring techniques used and the reliability of the relations attempted to be established. Because of the long lapse of time between onset of exposure and biological manifestations, we have now evidence of the consequences of exposure, but we do not have, in general, accurate measures of the levels of exposure occurring 20 or 30 years ago, which have given rise to these consequences. There are also controversies concerning the relative toxicity of the various kinds of asbestos, and varying hazards in different workplaces.

It is fair to say that the controversy has centered in the area between a two-fiber TWA concentration and five-fiber TWA concentration, with variations on the time needed for compliance. Many employers support a five-fiber TWA. Most medical opinion is divided between a two-fiber standard and a five-fiber standard.

In view of the undisputed grave consequences from exposure to asbestos fibers, it is essential that the exposure be regulated now, on the basis of the best evidence available now, even though it may not be as good as scientifically desirable. An asbestos standard can be reevaluated in the light of the results of ongoing studies, and future studies, but cannot wait for them. Lives of employees are at stake.

It is concluded that there should be one minimum standard of exposure to asbestos applicable to all workplaces exposed to any kind, or mixture of kinds, of asbestos. Reasons of practical administration preclude a variety of standards for different kinds of asbestos and of workplaces. Also, while the evidence tends to show that crocidolite, for instance, is more harmful than chrysotile, the evidence is not sufficient to establish separate standards for varieties of asbestos.

Because there must be one standard governing exposure to all varieties of asbestos, and in workplaces apparently more hazardous than others; because some present employees with regular exposure to asbestos have probably already accumulated great doses of asbestos fibers, due to higher levels of exposure in the past; because it appears that levels of exposure which may be safe with regard to asbestosis are not safe with regard to mesothelioma; because the statute requires the protection of every employee, even of one who may have regular exposure to asbestos during a working life which may reach, or even exceed, 40 years; and because of several other considerations which have been urged and are reflected in the record of the proceeding, the conflict in the medical evidence is resolved in favor of the health of employees. As of July 1, 1976, TWA concentrations of asbestos fibers longer than 5 micrometers will not be allowed to exceed two fibers/cc., with a ceiling value of 10 fibers/cc. The current TWA concentrations of five fibers, and

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ceiling concentrations of 10 fibers/cc. will be permitted until July 1, 1976, during what will be a transitional period deemed necessary to allow employers to make the needed changes for coming into compliance with the more stringent standard.

The record shows that the many work operations subject to the single asbestos standard (textile, manufacturing, industrial, and marine installation, etc.) will meet varying degrees of difficulty in complying with the standard. In some plants, extensive redesign and relocation of equipment may be needed. It appears, however, the delay in the effective date of the two-fiber standard will provide all employers a reasonable time to comply. At the same time, so long as the ceiling limit is complied with, no harm is reasonably expected to result from exposures during the transitional period.

2. *Methods of compliance.* It has been pointed out by many persons, that protection against asbestos fibers is best obtained by controlling the generation of fibers first, and secondly, by controlling the dispersion of released fibers into the ambient air of the workplaces. Therefore, the standard requires feasible technological controls and appropriate work practices as the primary means of compliance. Rotation of employees as a way of meeting the TWA concentration requirement is allowed only in stated exceptional circumstances, because, as a general rule, it would be difficult to implement. Personal protective equipment, such as respirators, cannot be relied upon because, among other reasons, they may be so uncomfortable as to be burdensome, except for short periods of time. Therefore, it is expected that respirators and shift rotation will be used during the period necessary to install engineering controls and to train employees in sound work practices, but, after technological compliance has been achieved, their use must be limited to special work situations and emergencies. Where both are practicable, shift rotation is required.

3. *Labeling.* The proposed standard stopped short of requiring labeling asbestos and asbestos-containing products. The proposed standard would have required only warning signs at locations where asbestos hazards are present. However, labeling, rather than warning signs, has proved to be a point of controversy. Both NIOSH and the Advisory Committee on Asbestos Dust recommended labels for asbestos products and containers, and these recommendations became very controversial in the course of the proceeding. Many counterproposals have been made as to the language of the warning as well as to the products to be subject to the labeling requirements. Employers, in general, strongly contend that (1) finished products which effectively entrap asbestos fibers, so that these would not be released in the normal use of the products, should not be required to be labeled; and (2) words such as "danger" and "cancer" are unwarrantedly alarming.

Both contentions have merit, and the standard has been changed accordingly.

4. *Monitoring.* The proposed standard would have required personal monitoring and environmental monitoring. Many issues have been raised concerning the availability and reliability of measuring instruments, frequency of monitoring, and conditions in which monitoring should be required. The adopted standard takes the objections into consideration. It requires periodic monitoring at intervals no longer than 6 months, thus allowing considerable time and discretion, and prescribes the use of the membrane filter method, which is an acceptable method for determination of asbestos fibers.

It has also been recommended that employees or their representatives should have an opportunity to observe the monitoring. The recommendation has been accepted.

5. *Medical examinations.* The proposed standard would only require an appropriate medical examination on a periodic basis. The generality of the proposal has attracted many objections and also many helpful comments. The recommendations of NIOSH and of the Advisory Committee on Asbestos Dust were much more specific with respect to both frequency and type of medical examinations to be required. The comments vary as to the class of employees to be examined and as to the frequency of the examinations.

The adopted standard requires medical examinations both at the beginning and the termination of employments exposed to concentrations of asbestos fibers, and also requires annual medical examinations of every employee exposed to airborne concentrations of asbestos. It has been pointed out that in certain industries, such as construction, an employee may work for several employers during the same year. Accordingly, the standard does not require either preemployment, or termination, or periodic examinaton of any employee who has been examined in accordance with the standard within the past year.

One question which has been raised goes to whether the employer or the employee should be allowed to choose the examining physician. The standard gives the option to the employer. Since some employers already have a medical examination program in operation, and, also, have medical departments with some expertise in the diagnosis of abestos-related diseases, it seems more reasonable to permit them to utilize the present programs and expertise, than to permit an employee to choose a private general practitioner.

6. *Records.* The standard, as proposed and as adopted, requires maintenance of records of monitoring and of medical examinations. Most of the controversy in this area has revolved around the question whether an employer should be allowed to have access to the results of the required medical examinations. The apprehension of those who have argued against employer access is based on the expectation that some employers will use the medical examinations as a means of screening employment applicants, and worse, as grounds for discharging current employees, who show signs of being affected by exposure to asbestos. Since the purpose of the medical examinations is to monitor the health of employees exposed to the hazards of abestos, employees cannot in reason be granted the privilege of refusing to disclose to their employers results of occupational exposure. It does not make sense to require employers to provide medical examinations if they cannot know and use the results of the examinations. For these reasons the standard provides that employers may have a restricted access to some medical information.

On the other hand, there is no intention to allow employers to abuse medical information obtained pursuant to the Act, to the detriment of employees. Therefore, the administration of the medical records requirement will be closely watched, and, in cases of abuse, appropriate action will be considered.

The issues discussed above are believed to be the major ones. Numerous other issues have been raised in the rulemaking proceedings. Some have been referred to incidentally. Many recommendations, for instance, about work practices, are so obviously meritorious that their adoption needs no exposition here. Other recommendations and many objections have not been adopted for a variety of reasons which should be manifest. Several, for instance, have recommended the use of respirators only pursuant to a variance, or in cases of emergency and occasional short-term exposures. The recommendation with respect to variances undoubtedly has many merits, but is considered administratively impractical.

Accordingly, after consideration of the whole record of the proceeding, and pursuant to sections 6 (b) and (c) and 8(c) of the Williams-Steiger Occupational Safety and Health Act of 1970 (84 Stat. 1593, 1596, 1599; 29 U.S.C. 655, 657), 29 CFR 1910.4, and to Secretary of Labor's Order No. 12–71 (36 F.R. 8754), Part 1910 of Title 29 of the Code of Federal Regulations is amended as set forth below.

(1) Section 1910.93 is amended by revising Table G–3 to read as follows:

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§ 1910.93 Air contaminants.

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TABLE G-9—MINERAL DUSTS

Substance	Mppcf	Mg/M³
Silica:		
Crystalline:		
Quartz (respirable)	250 [1]	10mg/M³ =
	%SiO₂+5	%SiO₂+2
Quartz (total dust)		30mg/M³
		%SiO₂+2
Cristobalite: Use ½ the value calculated from the count or mass formulae for quartz.		
Tridymite: Use ½ the value calculated from the formulae for quartz.		
Amorphous, including natural diatomaceous earth	20	80mg/M³
		%SiO₂
Silicates (less than 1% crystalline silica):		
Mica	20	
Soapstone	20	
Talc	20	
Portland cement	50	
Graphite (natural)	15	
Coal dust (respirable fraction less than 5% SiO₂)		2.4mg/M³ or 10mg/M³
For more than 5% SiO₂		%SiO₂+2
Inert or Nuisance Dust:		
Respirable fraction	15	5mg/M³
Total dust	50	15mg/M³

NOTE: Conversion factors—
mppcf×35.3=million particles per cubic meter
=particles per c.c.

[1] Millions of particles per cubic foot of air, based on impinger samples counted by light-field technics.

[2] The percentage of crystalline silica in the formula is the amount determined from air-borne samples, except in those instances in which other methods have been shown to be applicable.

[3] As determined by the membrane filter method at 430 X phase contrast magnification.

[4] Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	90
2.5	75
3.5	50
5.0	25
10	0

The measurements under this note refer to the use of an AEC instrument. If the respirable fraction of coal dust is determined with a MRE the figure corresponding to that of 2.4 Mg/M³ in the table for coal dust is 4.5 Mg/M³.

2. A new § 1910.93a is added to Part 1910, reading as follows:

§ 1910.93a Asbestos.

(a) *Definitions.* For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) *Permissible exposure to airborne concentrations of asbestos fibers*—(1) *Standard effective July 7, 1972.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(2) *Standard effective July 1, 1976.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) *Ceiling concentration.* No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(c) *Methods of compliance*—(1) *Engineering methods.* (i) *Engineering controls.* Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) *Local exhaust ventilation.* (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2–1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2–1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) *Particular tools.* All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) *Work practices*—(i) *Wet methods.* Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) *Particular products and operations.* No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) *Spraying, demolition, or removal.* Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d)(2)(iii) of this section and with special clothing in accordance with paragraph (d)(3) of this section.

(d) *Personal protective equipment*—(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

(ii) In work situations in which the methods prescribed in paragraph (c) of this section are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by subdivisions (i), (ii), or (iii) of this subparagraph, and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by subparagraph (1) of this paragraph, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(i) *Air purifying respirators.* A reusable or single use air purifying respirator, or a respirator described in subdivision (ii) or (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) *Powered air purifying respirators.* A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in subdivision (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) *Type "C" supplied-air respirators, continuous flow or pressure-demand class.* A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) *Establishment of a respirator program.* (a) The employer shall establish a respirator program in accordance with

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the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2–1969, which is incorporated by reference herein.

b. See § 1910.6 concerning the availability of ANSI Z88.2–1969 and the maintenance of an historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(c) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) Special clothing: The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) Change rooms: (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) Clothes lockers: The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) Laundering: (a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(b) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(c) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (g) of this section.

(e) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400–450 × (magnification) (4 millimeter objective) with phase contrast illumination.

(f) *Monitoring*—(1) *Initial determinations.* Within 6 months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

(2) *Personal monitoring*—(i) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and patterns. After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

(3) *Environmental monitoring*—(i) samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) *Employee observation of monitoring.* Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

(g) *Caution signs and labels.* (1) *Caution signs.* (i) *Posting.* Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section. Signs shall be posted at such a distance from such a location that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) *Sign specifications.* The warning signs required by subdivision (i) of this subparagraph shall conform to the requirements of 20" x 14" vertical format signs specified in § 1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

Legend	*Notation*
Asbestos	1" Sans Serif, Gothic or Block.
Dust Hazard	¾" Sans Serif, Gothic or Block.
Avoid Breathing Dust	¼" Gothic.
Wear Assigned Protective Equipment.	¼" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	¼" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health.	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) *Caution labels*—(i) *Labeling.* Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released.

(ii) *Label specifications.* The caution labels required by subdivision (i) of this subparagraph shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers

Avoid Creating Dust

Breathing Asbestos Dust May Cause Serious Bodily Harm

(h) *Housekeeping*—(1) *Cleaning.* All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) *Waste disposal.* Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(i) *Recordkeeping*—(1) *Exposure records.* Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 3 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National

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Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) *Employee access.* Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this paragraph, which indicates the employee's own exposure to asbestos fibers.

(3) *Employee notification.* Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) *Medical examinations*—(1) *General.* The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) *Preplacement.* The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(3) *Annual examinations.* On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(4) *Termination of employment.* The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(5) *Recent examinations.* No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(6) *Medical records*—(i) *Maintenance.* Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

(ii) *Access.* The contents of the records of the medical examinations required by this paragraph shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either of them, and, upon the request of an employee or former employee, to his physician. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

3. A new § 1910.19 is added to Subpart B of Part 1910, reading as follows:

§ 1910.19 Asbestos dust.

Section 1910.93a shall apply to the exposure of every employee to asbestos dust in every employment and place of employment covered by § 1910.12, § 1910.13, § 1910.14, § 1910.15, or § 1910.16, in lieu of any different standard on exposure to asbestos dust which would otherwise be applicable by virtue of any of those sections.

Effective date. Paragraph (b)(2) of § 1910.93a shall become effective July 1, 1976. All other provisions of §§ 1910.93a, 1910.93, and 1910.19 shall become effective July 7, 1972. The current emergency temporary standard remains in effect until July 7, 1972.

(Secs. 6, 8, 84 Stat. 1593, 1598; 29 U.S.C. 655, 657; 29 CFR 1910.4; Secretary of Labor's Order No. 12-71, 36 F.R. 8754)

Signed at Washington, D.C., this 2d day of June 1972.

G. C. GUENTHER,
Assistant Secretary of Labor.

[FR Doc.72-8574 Filed 6-6-72;8:48 am]

Title 41—PUBLIC CONTRACTS AND PROPERTY MANAGEMENT

Chapter 9—Atomic Energy Commission

PART 9-1—GENERAL

Subpart 9-1.1—Procurement Regulations

MISCELLANEOUS AMENDMENTS

The changes made in AECPR Subpart 9-1.1, Procurement Regulations, have been made in order to establish the AECPR Temporary Regulations, which are a part of the AEC Procurement Regulations and the Federal Procurement Regulations System. The AECPR Temporary Regulations implement and supplement the FPR Temporary Regulations. They also contain policies and procedures initiated by the AEC which are to be effective for a period of 6 months or less. The AEC Procurement Instruction section has been revised accordingly. Minor editorial changes have also been made.

1. Section 9-1.101 *Scope of subpart*, is revised to read as follows:

§ 9-1.101 Scope of subpart.

This subpart describes the Atomic Energy Commission Procurement Regulations and the AECPR Temporary Regulations. It also describes exclusions from the AECPR as contained in the AEC Procurement Instructions.

2. Section 9-1.102 *Establishment of AEC Procurement Regulations*, is revised to read as follows:

§ 9-1.102 Establishment of the AEC Procurement Regulations and the AECPR Temporary Regulations.

§ 9-1.102-1 AEC Procurement Regulations.

(a) The AEC Procurement Regulations (AECPR) are hereby established.

(b) These regulations implement and supplement the Federal Procurement Regulations (FPR) and are a part of the Federal Procurement Regulations System.

(c) The effective date of FPR issuances throughout AEC will be the date indicated in the respective issuances unless otherwise provided in the AEC Procurement Regulations.

(d) The effective date of AECPR issuances throughout AEC will be the date indicated in the respective issuances.

§ 9-1.102-2 AECPR Temporary Regulations.

(a) The AECPR Temporary Regulations are hereby established.

(b) These regulations implement and supplement the Federal Procurement Regulations Temporary Regulations. They also contain policies and procedures initiated by the AEC which are expected to be effective for a period of 6 months or less.

(c) The effective date of the FPR Temporary Regulations issuances throughout AEC will be the date indicated in the respective issuances unless otherwise provided in the AECPR Temporary Regulations.

(d) The effective date of the AECPR Temporary Regulations issuances throughout AEC will be the date indicated in the respective issuances.

(e) The AECPR Temporary Regulations are a part of the AEC Procurement Regulations and the Federal Procurement Regulations System. All references to the AEC Procurement Regulations or AECPR in §§ 9-1.103 through 9-1.109 of this subpart shall be deemed to include the AECPR temporary regulations.

3. Section 9-1.103 *Authority*, is revised to read as follows:

§ 9-1.103 Authority.

The AEC Procurement Regulations are prescribed by the General Manager, Assistant General Manager for Administration, or the Director, Division of Contracts of the AEC, pursuant to the authority of the Atomic Energy Act of 1954, and the Federal Property and Administrative Services Act of 1949.

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Asbestos

FROM THOMAS B. BONNEY
PITTSBURGH OFFICE

TO INDUSTRIAL HYGIENISTS
SAFETY DIRECTORS

July 20, 1972

RE: APPROVED ASBESTOS RESPIRATORY PROTECTION

It has come to our attention that Mine Safety Appliances has in recent months upgraded their Dustfoe 66 respirator which is now approved under Schedule 21B. As such, its use is appropriate for protection against asbestos dusts in concentrations less than 51 fibers per cc. Also, the 3M #8710 single use respirator has been approved under the new schedule, 21C, and is likewise acceptable for asbestos. Since these two respirators, which are smaller and relatively more comfortable than most of the other respirators on the previous lists sent you, we thought you would want to know of their suitability at an early date. A revised list of respiratory protective devices suitable for protection against asbestos dust is attached. The list is not complete. It is merely intended to present a representative group and includes some of the more commonly used brands. If you normally use and prefer other types, we suggest that you contact your supplier to determine which of his respirators meet the requirements of the OSHA regulation for asbestos.

Although the regulation promulgated on July 7 specifies that only respirators approved under 30 CFR 11 shall be used for protection against asbestos dust, there is only one respirator approved under this schedule as of this date. However, the Bureau of Mines has allowed a transition period from the present to March 30, 1974, during which respirators approved under previous schedules will be considered as approved. After this date, we will be required to use filter and air-line respirators approved under 30 CFR 11 (these will be classified as 21C and 19C respectively). Until that time, we consider filter respirators approved under Schedule 21B and continuous flow or pressure-demand, air-line respirators approved under Schedule 19B to be appropriate for protection against asbestos dust.

Thomas B. Bonney

Thomas B. Bonney

TBB:mh

Attachment

cc: R. H. Watson, Pittsburgh
G.H. Farrah/J.M. Plunkett, ATC

Info cc: F. C. Irving, Jr., Pgh.
R.S. Adams/R. Kohler, Alcas Cutlery Corp.
F.D. Koran/E.A. Moats, Tifton Aluminum Co.
A.P. LeClair, Jr./J.A. Elliott, H.C. Products
J.L. McKinley/R.B. Kempton/M.L. Bookout, Rea Magnet
R.F. Butler/D. Trudel, Cleveland Works
J.W. Anderson, ABP, Inc.
A.C. Sheldon/W.J. Koopman, ACPC
J.W. Warnock, Marshall
J.S. Hamilton/J.J. Thimons, Wear-Ever Alum., Inc.
R.C. Wilson, LeFiell Sport Products, Inc.
D.D. Rhoads/W.A. Coward, Lincoln Manufacturing
J.C. Bates, Pgh.
R.C. Dean, Frigidome Div.

ALCOA

APC 003821

FROM HAIG G. SAKOIAN

TO

PITTSBURGH OFFICE

1979 July 30

RE: ASBESTOS SUBSTITUTION

Attached is a summation of asbestos materials currently in use at Alcoa locations. Included in the listing are:

- The material and its use
- The number of plants using the material
- Whether or not there is a potential for employee exposure
- Potential replacements, if available -- and manufacturers (Page 10)

Much effort has been extended to reduce and eliminate asbestos uses in most locations. However, as can be seen by this report, many uses still exist. Because the continued use of asbestos products may result in unnecessary health hazards and concerns to our employees, as well as additional costs to Alcoa to comply with specific provisions of the OSHA Standard, we believe it is in Alcoa's best interest to continue eliminating the use of asbestos products wherever possible. This does not mean that all existing asbestos should be removed immediately which, as in the case of sprayed-on insulation, could create unnecessary exposure potentials. Rather, a systematic effort should be made to discontinue uses, when feasible and practical, by substitution or elimination. By creating this listing and maintaining frequent updating via feedback from all locations, each plant can be provided with the information necessary to attain this goal.

Mr. J. M. McCollum, Pittsburgh Office Mechanical Engineering, has been coordinating such an effort for asbestos replacements in potrooms. A list illustrating Alcoa's experience with potroom replacements is shown on Pages 7, 8, and 9.

It is hoped that this type of registry will be extended to cover all asbestos uses for all locations. To achieve this, it is asked that each location copy this office on all efforts made towards asbestos replacement... whether positive or negative. This information will then be disseminated to all locations on a periodic basis so that each plant can profit from the experience of the others in the Company.

Any questions, comments, or additions to the attached would be appreciated.

HAIG G. SAKOIAN

HGS/eds
Attachments
Distribution: See Page 2

ALCOA

APC 003822

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Belting/Drip Casting Convevors	Potential for exposure during maintenance and removal. * (2 plants: 3, 7)	UNTESTED. Potential candidate: Fiberseal Fabric (NOTE: Must determine operating temperatures and strength/durability requirements for engineering.)
Block or brick/ Furnaces	Potential for exposure during installation, and especially during removal, even though this is infrequent. * (1 plant: 23)	Ceramic refractory block and brick.
Brakes/Vehicles & Equipment	Recent studies indicate some asbestos fibers survive from brake use and are not destroyed, as presumed previously. However, the percentage of fibers not degraded by heat and friction is unknown. * (All plants)	NONE. Should reemphasize requirement of not using air to blow out brake drums and linings. Vacuum systems are available and should be used. (NOTE: Recommend air sampling for asbestos to document and confirm LOW or NO exposures: 1. Vehicle brake mechanics 2. Extruder brake, mechanical presses, or other equipment brake changers)
Cement Patch/Boiler Maintenance	Potential employee exposure. * (2 plants: 18, 24)	Two grades: 1. Hydraulic-setting cement -- Contains mineral wool and Portland cement; temperature range up to 1,000°F. Suppliers: Johns-Manville - "375" Keene Corp. - "Super Powerhouse" 48 Insulation - "Quick-Set Cement" 2. High-Temperature Grade -- Contains mineral wool; temp. range: 1,000°F to 1,900°F. Suppliers: Johns-Manville - "360" Keene Corp.- "Super 1900" 48 Insulation - "Super 48"

APC 003824

* Number of plants using material.

(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Cloth/Insulation, Welding Blankets	Plants indicate NO potential or unknown exposures. In many cases, the cloth is used wet and would, indeed, pose little potential for dust inhalation. However, as several plants indicated, there may be some cases where the exposure is unknown. * (6 plants : 12, 13, 16, 17, 20, & 24)	Pyrotek Fabrics (used in Warrick) Pyrotex™ Refrasil Nor•Fab Keller Gloves Kelnit Welding Blankets
Personal Protection/Gloves, Mittens, Pads, Coats, & Pants	There may or may not be a potential for exposure depending on the type of material, i.e., whether it is aluminized or coated; lined or unlined; and the frequency of use. In general, lined, aluminized protective equipment should not generate a potential for dust inhalation. However, noncoated, unlined materials may pose a problem and should be replaced, preferably with a nonasbestos substitute. * (All plants)	These apply for some applications, not all. Many times asbestos gloves are used in cases where the temperatures encountered do not warrant the need for asbestos. For example, flame-resistant terrycloth gloves can often be effective replacements where up to 700°F temperatures are encountered. For temperatures up to 1,000°F, gloves made of duPont's Kevlar fiber may be acceptable. However, past Alcoa experience indicates that in certain applications the seams of these gloves do not hold up. For this reason, each case should be treated separately. Please keep us advised of your results. "Kelnit 29" Keller Gloves Pyrotex™

APC 003825

* Number of plants using material.

(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Marinite and Marinite Floats/ Molten Metal Casting	Because of the special problems associated with Marinite in ingot casting, it is being treated separately. * (11 plants: 1, 7, 9, 13, 16, 17, 19, 20, 21, 22, & 24)	Alcoa Research Laboratories and our suppliers, in conjunction with plant personnel and Primary Products, have been working for some time to find replacements for molten metal Marinite. Due to this effort, replacements are now available for many -- but not all -- of its uses. Many plants are now using these replacements; however, for one reason or another, many plants continue to use Marinite even in those cases with potential replacements. These reasons include initial cost factors, and increased costs associated with lost or decreased production in ingot casting. Considering the increased costs associated with compliance requirements, i.e., medical exams, protective clothing, disposal requirements, ventilation controls, etc. -- in addition to the less tangible, but more serious costs of potential impairment of employee health -- every effort should be made to institute the replacements now available and to continue the search for those uses not yet replaceable. If it is still considered that the costs associated with replacement remain prohibitive to the location, continue the control program and continue the search for a more feasible replacement. This decision must be arrived at only after careful examination by both management and Medical.

APC 003826

* Number of plants using material.

(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Packing/ General pump packing	In most cases, pump packing materials are bonded in rubber or some other coating compound. As indicated by the plants, these generate little potential for fiber exposure. However, some packings, such as uncoated, noncompressed, braided asbestos may offer a potential for exposure and should be replaced. * (All plants)	Since specific needs and equipment types vary dramatically, pump packing and general packing materials are purchased at the plant level. Suitable replacements should be handled by plant Purchasing by direct contact with manufacturers and suppliers.
Paper/Welding protection, electrical insulation	Should be replaced. * (6 plants: 1, 3, 7, 13, 17, & 20)	Johns-Manville - Cerawool Paper (NOTE: Asbestos paper should not be used for welding protection. Substitutes available for this application can be found in the section dealing with "Cloth".)
Rope/Furnace insulation	Plants are divided on the extent of potential dust hazards. Uncoated material may pose a problem during removal and disposal and should be replaced. * (15 plants: 1, 3, 6, 8, 12, 13, 15, 16, 17, 18, 19, 20, 21, 23, & 24)	MUST BE TESTED. Johns-Manville - Ceraform Rope (used in Warrick) Pyrotek - Fiberseal Rope + Others
Sheet Gasketing/ General	Pre-cut compressed gaskets should pose little potential for employee exposure, especially if they are resin or rubber bonded. Sheet gaskets which must be out at the plant may create a dust hazard during cutting, installation, removal, and disposal. Since the requirements for gasketing material vary depending on the	

* Number of plants using material.

(Cont.)

APC 003827

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Sheet Gasketing (Cont.)	application, each use should be carefully considered. Care should be taken to insure that maintenance personnel do not have on hand and use indiscriminantly such sheet gasket material. Storerooms and users should be carefully monitored to: 1. Determine and document exposures. 2. Evaluate housekeeping. 3. Insure proper disposal of waste material. * (All plants)	
Tape; Tubing/ Furnace seals, general insulation	Majority of plants do not consider this to be a potential dust hazard. However, certain uses may generate free fibers. * (10 plants : 1, 3, 6, 9, 13, 16, 17, 18, 20, & 23)	Tape Replacements: Pyrotex™ Refrasil Fiberfrax Nor•Fab
Thermocouple Wire	Due to deterioration and fraying of the asbestos insulation on thermocouple wire, potential fiber exposure may exist. * (7 plants: 1, 6, 7, 9, 15, & 19; probably more)	Sleeves made of Refrasil or Fiberfrax material may be used in place of asbestos-coated wire in some cases; otherwise, no replacements available.

APC 003828

* Number of plants using material.

KEY TO ALCOA LOCATIONS

1 - ATC

2 - ARKANSAS

3 - BADIN

4 - CHILLICOTHE
(Wear-Ever Aluminum)

5 - CLEVELAND

6 - CORONA

7 - DAVENPORT

8 - FT. MEADE

9 - LAFAYETTE

10 - LANCASTER

11 - LEBANON

12 - MARSHALL (ACPC)

13 - MASSENA

14 - MOBILE

15 - NORTHWEST ALLOYS (ADDY)

16 - PT. COMFORT

17 - REA MAGNET WIRE

18 - RICHMOND, INDIANA

19 - ROCKDALE

20 - TENNESSEE

21 - TIFTON

22 - VANCOUVER

23 - VERNON

24 - WARRICK

ASBESTOS -- POTROOM USES

Specific Application	Substitute	Location	Comments
Cradle to Pot Shell Insulation	Quarry tile	Wenatchee	Tested; proved to be good replacement.
	Cem-Fil GRC Sheet	Warrick	Installed and seems okay; will get back with update.
	Cem-Fil GRC	Massena	Currently testing (just started).
Superstructure Fort Insulation	Cem-Fil GRC - 9" x 7" x 1"	Massena	Received material to be tested.
	Marinite-P -- ½" sheet	Massena	Received material to be tested.
Pot Cover Insulation	Almac Plastics Inc.'s-High-Temp Glass	Massena	Testing.
	Marinite-P -- ½" sheet	Massena	To be tested.
	Pyrotek's Fiberseal H-3 Fabric	Massena	To be tested for P-75 pot covers.
	(Same as above)	Badin	Double the material; works well.
	(Same as above)	Warrick	Works well; now standard; also works for side shield insulation.
	Amatex - Thermoglass #G-36P752	Wenatchee	Satisfactory.
Walkway Grating Insulation	M-50 Pyrotherm Dense Board	Massena	Tested; unsuccessful; it crumbles.
	GRC Cem-Fil - ¼" and 3/8"	Massena	To be tested on P-225.
	Marinite-P -- ½" sheet	Massena	To be tested on P-225.
	Marinite-P -- 1" board	Badin	Currently testing; not optimistic.
	Pyrotherm G-5 Insulating Board	Badin	To be tested.
	Kaowool M	Warrick	Does not stand up (no good).
	Penn Hi-Temp 270	Warrick	Looks good in preliminary tests; to be tested further; limitation might be that it's too expensive.

(Cont.)

APC 003830

ASBESTOS -- POTROOM USES

Specific Application	Substitute	Location	Comments
Bus Insulation	Marinite-P -- 1" sheet	Badin	Currently testing (but it crumbles)
	Cem-Fil GRC - ¼" and ½"	Massena	To be tested.
	Marinite-P -- ½" sheet	Massena	To be tested.
Exhaust Duct Insulator	Pyrotek Pipe	Warrick	Looks good in preliminary tests; now have 8 in use with a ¼" wall; have ordered 8 more 3/8" and 8 more ¼" for testing.
	Hetron 197	Wenatchee	Fiber glass pipe with antimony and dynel liners have failed and have been replaced with normal transite.
	Hetron 92	Wenatchee	Fiber glass pipe with antimony and asbestos linings -- satisfactory.
	Fiberfrax laminate tubes by Carborundum, Inc.	ATC	
Exhaust Duct Gaskets	Pyrotek's Fiberseal Felt T-1	Massena	No plans.
Siphon Gaskets	Pyrotek's Fiberseal Felt G-1 - ½" and Fiberseal Felt T-1 - ¼"	Badin	Tested and proved okay.
	(Same as above)	Massena	To be tested on P-225 siphon gasket and crucible cover plate gaskets.
	Fiberseal M-13 - 1/8" Compressible board	Massena	To be tested on P-225 siphon gasket and crucible cover plate gaskets.
	J-M Ceraform Heat Seal	Rockdale	Not as stable as asbestos; needs replaced more often.

(Cont.)

APC 003831

ASBESTOS -- POTROOM USES

Application			
Ladle & Ladle Lid Seal	Silicon Red rubber air hose - 3/4"	Warrick	Standard (but different seal from other plants).
	Refrasil - wrapped around rubber hose	Badin	No good; rubber melts; seal breaks.
	1-½" Fiberseal rope - F-10	Badin & Massena	On order.
	1" Fiberseal rope - D-1	Anaconda	Uses 600 ft./mo. of D-1
	1-½" Fiberseal rope - F-10	Pt. Henry	

APC 003832

ASBESTOS REPLACEMENT MANUFACTURERS

PRODUCT	SUPPLIER	TELEPHONE
Pyrotex™	Newtex Industries, Inc. Railroad Ave. P.O. Box 25 Victor, NY 14564	716/924-9135
Fiberseal Products	Pyrotek Incorporated East 9601 Montgomery Ave. Spokane, WA 99206	509/926-6211
	- or -	
	Box 77 - R.D. #1 Claremont Rd. Carlisle, PA 17013	717/249-2075
	- or -	
	Santa Fe Springs, CA	
Refrasil	HITCO Division of Armco Steel Middletown, OH 45042	
Nor•Fab Yarns; Fabrics	Amatex 1032 Stanbridge St. Norristown, PA 19404	215/277-6100
Fiberfrax	The Carborundum Company Insulation Division P.O. Box 808 Niagara Falls, NY 14302	716/278-6221
Hi-Temp 270	Penn Compression Moulding, Inc. Burton Street Pittsburgh, PA 15218	412/351-4004
Ceramic Fiber Products	Kaowool Babcock & Wilcox	
	Cem-Fil Corporation Two International Plaza Drive Nashville, TN 37217	615/361-4664
	Keller Glove Mfg. Co. Plumsteadville, PA 18949	215/766-8818

HAIG G. SAKOIAN
1979 July 20/eds

#31A

FROM ROBERT P. CARTER
INDUSTRIAL HYGIENE DIVISION
PITTSBURGH OFFICE

TO INDUSTRIAL HYGIENISTS

August 21, 1972

RE: ASBESTOS-CONTAINING REFRACTORY AND INSULATING MATERIALS USED IN FURNACE AND CASTING EQUIPMENT CONSTRUCTION

Ref: R.P. Carter's letter dated 12/23/71 Re: Emergency Standard for Exposure to Asbestos Dust.
G.H. Farrah's letter dated 4/17/72 Re: Asbestos Dust Exposures.

Because of the very stringent standard which has been established by OSHA for worker exposures to airborne asbestos fibers, we have received several inquiries for information as to which materials used in Alcoa operations contain asbestos so that the use of these materials can be surveyed for our conforming fully with the provisions of this standard. The list below includes, to the best of our knowledge, all asbestos-containing materials used in our furnace, smelting pot and casting equipment construction. We have not made any attempt to include here the asbestos-containing materials which are used for pipe lagging and other forms of insulation in general construction.

Material	Asbestos Content
Superex Insulation	8%
Marinite	25-50%
CFB Asbestos	100%
Asbestos Millboard or Paper (Note: May be supplied by Rubberoid or other supplier)	50% or more
Kaylo (Calcium silicate-asbestos combination)	10-15%
Transite	25-50%
Asbestos Tape	80-99%

For your further information, we are presently making a survey of refractory and insulating materials for free silica content which will be forwarded to you when obtained for your guidance in proper application of the OSHA standard for worker exposures to silica dusts. It will probably be six to eight weeks before this information has been obtained and compiled for transmitting to you.

If we can be of any further assistance in this matter, please do not hesitate to contact Mr. G.H. Farrah on matters relating to the sampling and test methods and either Mr. T.B. Bonney or the writer on other matters related to this asbestos standard. Of course, Mr. V.W. Rieke and the Environmental Engineering Division will be actively involved in our engineering control efforts with respect to worker exposures to asbestos fibers and their assistance should be fully utilized in this area.

Robert P. Carter

RPC:mh

ALCOA

APC 003834

cc: V.W. Rieke, Pittsburgh - 2
G.H. Farrah/J.M. Plunkett - ATC
H.M. Short, Pittsburgh - 7 0 P
M.J. Caprio, Pittsburgh - 19

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F.D. Koran/E.A. Moats, Tifton Aluminum Co., Inc.
A.P. LeClair, Jr./J.A. Elliott, H C Products Co.
J.L. McKinley/R.B. Kempton/M.L. Bookout, Rea Magnet Wire Co., Inc.
R.F. Butler/D. Trudel, Permanent Mold Div., Cleveland Works
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