

FROM HAIG G. SAKOIAN
PITTSBURGH OFFICE

TO



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



APC 003822

ASBESTOS REPLACEMENT SUMMARY -- BY USE

<u>MATERIAL/USE</u>	<u>POTENTIAL EXPOSURE</u>	<u>REPLACEMENTS AVAILABLE</u>
<u>Belting/Drip Casting</u> Conveyors	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.)
<u>Block or brick/Furnaces</u>	Potential for exposure during installation, and especially during removal, even though this is infrequent. * (1 plant: 23)	Ceramic refractory block and brick.
<u>Brakes/Vehicles & Equipment</u>	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)
<u>Cement Patch/Boiler Maintenance</u>	Potential employee exposure. * (2 plants: 18, 24)	Two grades: 1. <u>Hydraulic-setting cement</u> -- 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. <u>High-Temperature Grade</u> -- Contains mineral wool; temp. range: 1,000°F to 1,900°F. Suppliers: Johns-Manville - "360" Keene Corp. - "Super 1900" 48 Insulation - "Super 48"

* Number of plants using material.
(Cont.)

APC 003824

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) PyrotexTM Refrasil Nor.Fab Keller Gloves Kelnit Welding Blankets
Personal Protec- tion/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 PyrotexTM

* Number of plants using material.
(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Marinite and <u>Marinite Floats/</u> 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.

* Number of plants using material.
(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

<u>MATERIAL/USE</u>	<u>POTENTIAL EXPOSURE</u>	<u>REPLACEMENTS AVAILABLE</u>
<u>Packing/ General</u> <u>pump packing</u>	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.
<u>Paper/Welding</u> <u>protection,</u> <u>electrical</u> <u>insulation</u>	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".)
<u>Rope/Furnace</u> <u>insulation</u>	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) 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	MUST BE TESTED. Johns-Manville - Ceraform Rope (used in Warrick) Pyrotek - Fiberseal Rope + Others
<u>Sheet Gasketing/</u> <u>General</u>		

* Number of plants using material.

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: PyrotexTM 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.

* Number of plants using material.

KEY TO ALCOA LOCATIONS

1 - ATC	13 - MASSENA
2 - ARKANSAS	14 - MOBILE
3 - BADIN	15 - NORTHWEST ALLOYS (ADDY)
4 - CHILLICOTHE (Wear-Ever Aluminum)	16 - PT. COMFORT
5 - CLEVELAND	17 - REA MAGNET WIRE
6 - CORONA	18 - RICHMOND, INDIANA
7 - DAVENPORT	19 - ROCKDALE
8 - FT. MEADE	20 - TENNESSEE
9 - LAFAYETTE	21 - TIFTON
10 - LANCASTER	22 - VANCOUVER
11 - LEBANON	23 - VERNON
12 - MARSHALL (ACPC)	24 - WARRICK

ASBESTOS -- POTROOM USES

<u>Specific Application</u>	<u>Substitute</u>	<u>Location</u>	<u>Comments</u>
<u>Cradle to Pot Shell Insulation</u>	Quarry tile Cem-Fil GRC Sheet Cem-Fil GRC	Wenatchee Warrick Massena	Tested; proved to be good replacement. Installed and seems okay; will get back with update. Currently testing (just started).
<u>Superstructure Fort Insulation</u>	Cem-Fil GRC - 9" x 7" x 1" Marinite-P -- 1/4" sheet	Massena Massena	Received material to be tested. Received material to be tested.
<u>Pot Cover Insulation</u>	Almac Plastics Inc.'s- High-Temp Glass Marinite-P -- 1/4" sheet Pyrotek's Fiberseal H-3 Fabric (Same as above) (Same as above) Amatex - Thermoglass #G-36P752	Massena Massena Massena Badin Warrick Wenatchee	Testing. To be tested. To be tested for P-75 pot covers. Double the material; works well. Works well; now standard; also works for side shield insulation. Satisfactory.
<u>Walkway Grating Insulation</u>	M-50 Pyrotherm Dense Board GRC Cem-Fil - 1/4" and 3/8" Marinite-P -- 1/4" sheet Marinite-P -- 1" board Pyrotherm G-5 Insulating Board Kaowool M Penn Hi-Temp 270	Massena Massena Massena Badin Badin Warrick Warrick	Tested; unsuccessful; it crumbles. To be tested on P-225. To be tested on P-225. Currently testing; not optimistic. To be tested. Does not stand up (no good). Looks good in preliminary tests; to be tested further; limitation might be that it's too expensive.

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(Cont.)

ASBESTOS -- POTROOM USES

<u>Specific Application</u>	<u>Substitute</u>	<u>Location</u>	<u>Comments</u>
<u>Bus Insulation</u>	Marinite-P -- 1" sheet Cem-Fil GRC - ¼" and ½" Marinite-P -- ¼" sheet	Badin Massena Massena	Currently testing (but it crumbles) To be tested. To be tested.
<u>Exhaust Duct Insulator</u>	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 Fiberfrax laminate tubes by Carborundum, Inc.	Wenatchee ATC	Fiber glass pipe with antimony and asbestos linings -- satisfactory.
<u>Exhaust Duct Gaskets</u>	Pyrotek's Fiberseal Felt T-1	Massena	No plans.
<u>Siphon Gaskets</u>	Pyrotek's Fiberseal Felt G-1 - ¼" and Fiberseal Felt T-1 - ¼" (Same as above)	Badin	Tested and proved okay.
	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	Massena	To be tested on P-225 siphon gasket and crucible cover plate gaskets.
		Rockdale	Not as stable as asbestos; needs replaced more often.

(Cont.)

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.
1-1/4" Fiberseal rope - F-10	Badin & Massena	On order.
1" Fiberseal rope - D-1	Anaconda	Uses 600 ft./mo. of D-1
1-1/4" Fiberseal rope - F-10	Pt. Henry	

ASBESTOS REPLACEMENT MANUFACTURERS

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

HAIG G. SAKOIAN
1979 July 20/eds

FROM ROBERT P. CARTER
INDUSTRIAL HYGIENE DIVISION
PITTSBURGH OFFICE

TO INDUSTRIAL HYGIENISTS

#31A

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.

<u>Material</u>	<u>Asbestos Content</u>
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

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Industrial Hygienists
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cc: V.W. Rieke, Pittsburgh - 2
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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
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.
R.C. Dean, Frigidome Division