

DEMOLITION/REMOVAL OF ASBESTOS-CONTAINING MATERIALS

I. PRIMARY CONSIDERATIONS

- A. Health Effects -- Asbestos dust exposures may cause permanent lung damage and cancer.
- B. Consult your plant hygienist for more detailed guidance about appropriate safeguards and controls.

B. Clothing

1. Disposable protective garments are required.
2. Dispose of contaminated garments as asbestos waste. (See IV-A).

III. WORK PRACTICES

A. Personal hygiene practices --

1. Prohibit smoking or eating in the work area.
2. Thoroughly wash exposed skin before eating, smoking, or upon job completion.

A. Restrict Area

1. Enclose the work area as much as possible. Rope off and post warning signs.*

ASBESTOS
DUST HAZARD

Avoid Breathing Dust.
Wear Assigned Protective Equipment.
Do Not Remain In Area Unless Your
Work Requires It.
Breathing Asbestos Dust May Be
Hazardous To Your Health.

II. PERSONAL PROTECTIVE EQUIPMENT

A. Respirators

1. Use of a respirator approved for asbestos (e.g., 3M-9910, etc.) is mandatory during demolition/removal of asbestos-containing materials. The Hygiene/Safety Departments can offer assistance in this area.
2. Train employees in the capabilities and limitations of the respirator, and test them for proper fit.

*OSHA Requirement

2. Prohibit access to work area to all but properly trained and attired personnel

B. Dust Control

1. Wherever possible, wet down the material to be removed to minimize dust generation. Do not use water if electrical or other hazards exist (i.e., water on phosphorous-containing refractories may result in phosphine gas formation.
2. Avoid dry sweeping asbestos material. Use vacuum methods to collect dust.

DEMOLITION/REMOVAL OF ASBESTOS-CONTAINING MATERIALS

IV. DISPOSAL

- A. Place all asbestos-containing material in labeled containers.
- B. Label containers.*

CAUTION

Contains Asbestos Fibers.
Avoid Creating Dust.
Breathing Asbestos Dust May Cause
Serious Bodily Harm.

*OSHA Requirement

- C. Follow appropriate EPA disposal requirements. Contact plant Environmental Engineer for assistance.

V. OUTSIDE CONTRACTORS

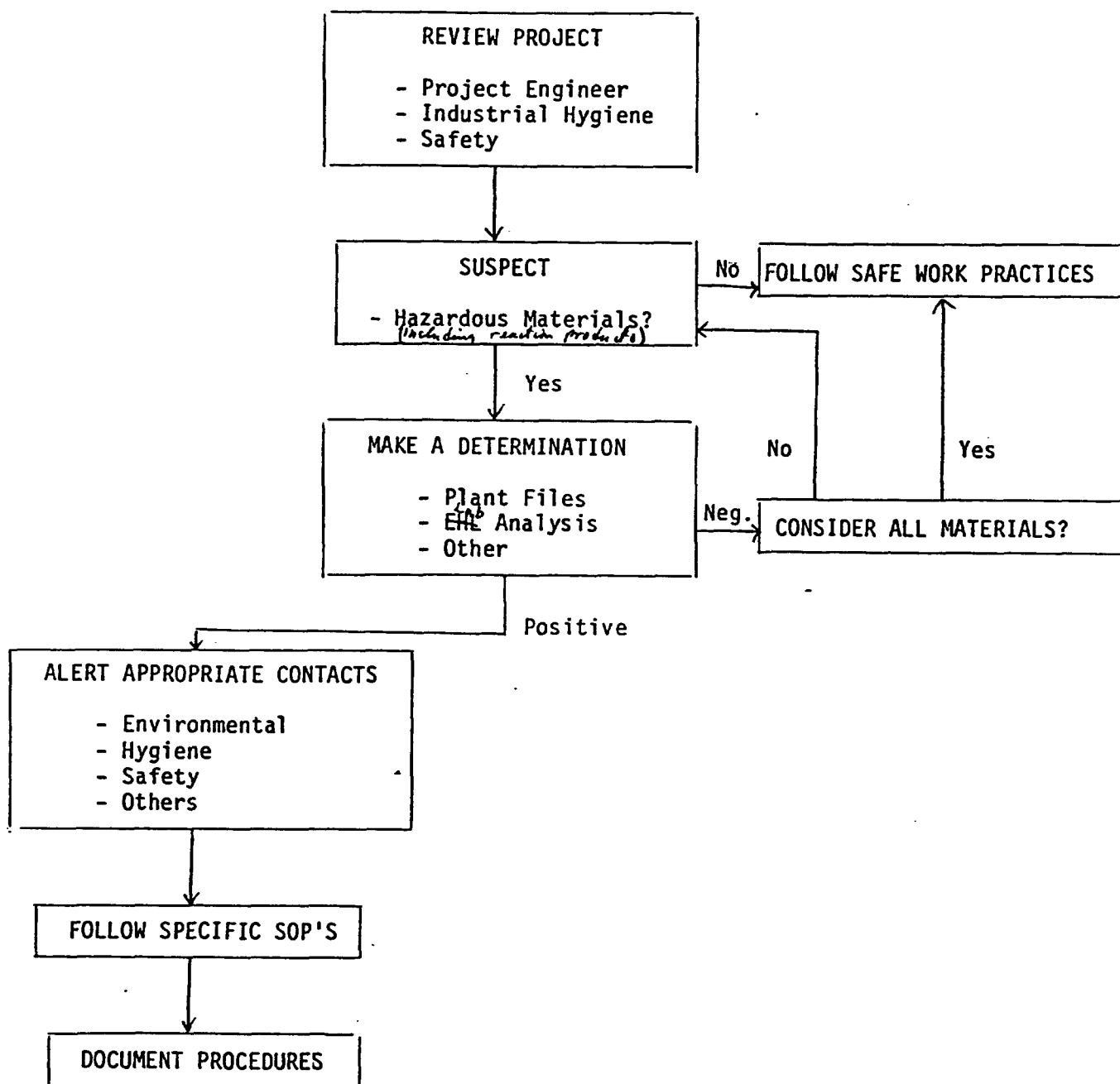
- A. Alert contractors to the presence of asbestos.
- B. Must conform to Alcoa procedures.
- C. Alcoa must keep documentation of EPA contacts (i.e. notification procedures, etc.) made by outside contractors.

VI. REFERENCES

- A. Alcoa MSDS #40 - Asbestos.
- B. OSHA 21 CFR 1910.1001.
- C. I.H. Technical Bulletin #83-3 - "Asbestos Exposures".

14 Jan 83

MAINTENANCE DEMOLITION/RENOVATION JOBS



HAZARDOUS MATERIAL - ASBESTOS

I. ALLOWABLE LIMITS:

- A. 2 Fibers/cc air - 8 hr. time weighted average
- B. 10 Fibers/cc air - ceiling concentration.
- C. Perform IH monitoring if appropriate.
(Industrial Hygienist should make determination.)

II. EDUCATION & TRAINING

- A. Employees should be informed of the presence of asbestos, explained the hazards and the appropriate measures to be taken.

B. Personal Hygiene Practices

- 1. Smoking and eating should not be permitted in the area.
- 2. Wash all skin surfaces that have been exposed to asbestos before eating, smoking or leaving work.

III. PERSONAL PROTECTIVE EQUIPMENT

A. Respirators

- 1. The appropriate respirator (NIOSH-approved-disposable dust mask, powered air purifying, type "C" supplied-air) should be selected by safety/hygiene and should be based on the actual or potential fiber concentrations present.

- 2. Employees should be trained in the use and limitations of the respirator, and be fit-tested.

B. Clothing

- 1. Disposable protective garments should be provided to the employee where the potential for fiber accumulation exists or limits in section (I) are exceeded. Exposures should be assumed to be excessive unless demonstrated otherwise.

- 2. Such clothing should be handled as asbestos material with regard to disposal.

IV. WORK PRACTICES

A. Restricted Areas

- 1. Delineate the work area with tape or rope and warning signs.

- 2. Enclose the work area to the maximum amount feasible.

- 3. Only authorized personnel (properly trained and attired) should be allowed in the work area.

B. Wet Methods vs Dry Methods of Removal

- 1. Wherever possible, the material to be removed should be wetted down to prevent the emission of airborne fibers.
- 2. Dry methods of removal are preferred for applications where a water spray may create other hazards (i.e. refractory linings with phosphate-containing bricks due to the evolution of phosphine gas, working near live electrical apparatus, etc).
- 3. Asbestos material should never be dry swept. Local exhaust or vacuum methods should be utilized to collect fibers.

V. CLEANUP & DISPOSAL

- A. All asbestos containing material should be disposed of in plastic bags and sealed in specially marked steel drums.

B. Appropriate Labeling:

CAUTION

Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May Cause
Serious Bodily Harm

- C. Follow appropriate state or federal requirements (approved landfill sites, etc.)

VI. OUTSIDE CONTRACTORS

- A. Contractors should be alerted to the presence of asbestos and must be required to meet Alcoa's procedures for asbestos removal.
- B. Documentation of federal and state EPA ~~requirements~~ contacts through contractors should be kept on file by Alcoa.

FROM: S. M. ANDERSON-30

TO: MEMORANDUM

*File -
Asbestos
(Removal
Procedures)
- or similar section*

1983 April 28

RE: ASBESTOS REMOVAL

During the past several years, we have replaced many of our asbestos containing products with ones that are asbestos-free. However, we still have a significant amount of asbestos insulating some of our furnaces and steamlines. This presence will continue to be a source of asbestos exposure for many years.

To reduce employee exposure to asbestos during the removal of asbestos containing insulation, the following guidelines are being recommended. These guidelines will put us in compliance with OSHA's asbestos regulations (attached).

Please review these guidelines and prepare your comments for a meeting scheduled for Thursday, May 5, at 1:00 PM in the Chem Lab Conference Room.

Scott

SCOTT M. ANDERSON

SMA:vle

Attachments

cc: (w/attachments)

V. C. Adorno-301
S. R. Barr-60
J. E. Bintz-210
R. H. Hargis-204
~~G. D. Hicks-30~~
B. L. Konkoski-73

W. B. Parker-60
B. A. Schafer-301
W. K. Shinn-60
~~P. T. Woerz-25~~
P. F. Woodward-8

Geo

Informational Copies Only:

W. T. Burt-201
W. J. Curtin-59
M. J. Elder, MD-22
J. R. Feeley-59A

R. H. Feild-8
D. E. Jackson-301
G. L. McCullough-28
G. H. Schneider-303

PRE-PLANNING

- Consult with the Industrial Hygienist several days prior to the removal of asbestos containing material. The Industrial Hygienist will take samples of the material and analyze it for asbestos content. If asbestos is present, strict work practices must be followed to prevent exposure to asbestos fibers.
- Personal and area air sampling may be conducted to document the extent of personal exposure and the effectiveness of control methods.
- Inform employees about the presence of asbestos; explain the hazards and control measures to be taken.
- No smoking or eating is to be permitted in the work area. If a lunch table is nearby, those employees who eat there must be relocated. All lunch tables near the work area must be washed following the completion of asbestos removal.
- All employees removing or handling asbestos must wash all exposed skin prior to eating, smoking, or leaving work.

WORK PRACTICES

- Enclose the work area with plastic to maximum feasible extent and delineate the work area with tape or rope and the following warning signs:

ASBESTOS
DUST HAZARD
Avoid Breathing Dust
Wear Assigned Protective Equipment
Do Not Remain in Area Unless Your Work Requires It
Breathing Asbestos Dust May Be Hazardous to Your Health

- Prohibit access to work area to all but properly trained and equipped personnel.
- Wet methods of removal (i.e. water spray) should be used whenever possible to prevent the emission of asbestos fibers. However, water should not be used where electrical or other hazards exist.
- Never dry sweep or blow asbestos material; utilize local exhaust or vacuum methods to collect fibers.
- All persons in a restricted area shall wear a 3M 8710 dust/mist respirator approved for asbestos use or other suitable respiratory protective equipment. The 3M 9906, the blue potroom respirator, is not approved for asbestos use and is not to be used.

•Protective disposable garments are to be worn by all employees engaged in the removal of asbestos insulation. The protective clothing shall include: white disposable coveralls, gloves, and caps. All contaminated clothing is to be disposed of as asbestos material. The coveralls should be replaced each day or when torn. Protective clothing shall be removed prior to leaving a restricted area. When removing protective clothing, the respirator should be the last piece of equipment removed.

DISPOSAL

•All asbestos containing waste must be disposed of in specially marked steel drums. These drums are available from Paul Perkins, 4121.

•Asbestos drums are labeled as follows:

Caution
Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May Cause
Serious Bodily Harm

•Seal full drums and contact Paul Perkins, 4121 for the disposal of full drums.

OUTSIDE CONTRACTORS

•Any outside contractor working with or removing asbestos containing materials must meet Alcoa's practices.

STANDARDS AND INTERPRETATIONS

The value of E_m shall not exceed unity (1).

Since E_m is less than unity (1), the exposure combination is within acceptable limits.

(ii) To illustrate the formula prescribed in subdivision (i) of this subparagraph, consider the following exposures:

Material	Actual concentration of 8-hour exposure	8-hour time weighted average exposure limit
Acetone (Table Z-1)	500 p.p.m.	1,000 p.p.m.
2-Butanone (Table Z-1)	45 p.p.m.	200 p.p.m.
Toluene (Table Z-2)	40 p.p.m.	200 p.p.m.

(e) To achieve compliance with paragraph (a) through (d) of this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with § 1910.134.

Substituting in the formula, we have:

$$E_m = \frac{500}{1,000} + \frac{45}{200} + \frac{40}{200}$$

$$E_m = 0.500 + 0.225 + 0.200$$

$$E_m = 0.925$$

1910.1001—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

STANDARDS AND INTERPRETATIONS

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

STANDARDS AND INTERPRETATIONS

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 the requirements of the American National Standard 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 per-

STANDARDS AND INTERPRETATIONS

son 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 so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted

STANDARDS AND INTERPRETATIONS

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.

<i>Legend</i>	<i>Notation</i>
Asbestos -----	1" Sans Serif, Gothic or Block.
Dust Hazard -----	¾" Sans Serif, Gothic or Block.
Avoid Breathing Dust -----	¾" Gothic.
Wear Assigned Protective Equip- ment.	¾" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	¾" 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 read-

ily 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 20 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

[41 F.R. 11504, March 19, 1976.]

(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

STANDARDS AND INTERPRETATIONS

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.

(i) 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.

1910.1002—COAL TAR PITCH VOLATILES; INTERPRETATION OF TERM

As used in § 1910.1002 (Table Z-1), coal tar pitch volatiles include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum, wood, and other organic matter.

DEMOLITION/REMOVAL OF ASBESTOS-CONTAINING MATERIALSI. PRIMARY CONSIDERATIONS

- A. Health Effects -- Asbestos dust exposures may cause permanent lung damage and cancer.
- B. Consult your plant hygienist for more detailed guidance about appropriate safeguards and controls.
- C. Personal hygiene practices --
 1. Prohibit smoking or eating in the work area.
 2. Thoroughly wash before eating, smoking, or upon job completion.
- D. Inform employees of the health effects associated with excessive exposures to asbestos. Emphasize the importance of personal protective equipment in controlling exposures.

III. WORK PRACTICESA. Restrict Area

1. Enclose the work area as much as possible. Rope off and post warning signs.*

ASBESTOS
DUST HAZARD

Avoid Breathing Dust.
Wear Assigned Protective Equipment.
Do Not Remain In Area Unless Your
Work Requires It.
Breathing Asbestos Dust May Be
Hazardous To Your Health.

*OSHA Requirement

2. Prohibit access to work area to all but properly trained and attired personnel.

I. PERSONAL PROTECTIVE EQUIPMENTA. Respirators

1. Use of an approved respirator (e.g., 3M-9910, etc.) is mandatory during demolition/removal of asbestos-containing materials. The Hygiene/Safety Depts. can offer assistance in this area.
2. Employees should be trained in the use and limitations of the respirator, and be tested for proper fit.

B. Clothing

1. Disposable protective garments are required.
2. Dispose of contaminated garments as asbestos waste. (See IV-A.)

B. Dust Control

1. Wherever possible, wet down the material to be removed to minimize dust. Do not use water if electrical or other hazards exist (i.e., water on phosphorus-containing refractories may result in phosphine gas formation).
2. Avoid dry sweeping asbestos material. Use vacuum methods to collect dust.

IV. DISPOSAL (See Page 2)

DEMOLITION/REMOVAL OF ASBESTOS-CONTAINING MATERIALS

V. DISPOSAL

- A. Place all asbestos-containing material in labeled containers.
- B. Label containers,*

C A U T I O N

Contains Asbestos Fibers.
Avoid Creating Dust.
Breathing Asbestos Dust May Cause
Serious Bodily Harm.

*OSHA Requirement

- C. Follow appropriate EPA disposal requirements. Contact plant Environmental Control Engineer for assistance.

V. OUTSIDE CONTRACTORS

- A. Alert contractors to the presence of asbestos.
- B. Must conform to Alcoa procedures.
- C. Alcoa must keep documentation of EPA contacts (i.e., notification procedures, etc.) made by outside contractors.

VI. REFERENCES

- A. ALCOA MSDS No. 40 - Asbestos.
- B. OSHA 21 CFR 1910.1001.
- C. I.H. Technical Bulletin #83-3 - "Asbestos Exposures".

5 copies

J. E. SANDER

MR. E. E. RUMBERGER

PITTSBURGH OFFICE - 6

PITTSBURGH OFFICE - 6

1982 October 15

RE: REMOVAL OF ASBESTOS CONTAINING PRODUCTS

I have attached a rough draft outlining control procedures for removal of asbestos containing products. I thought this might organize our thoughts for the upcoming meeting with the Materials and Standards group next week.

The Asbestos Information Association is sending me some literature concerning encapsulation of fibers via application of a spray coating to existing material. I want to review this material before incorporating it into the draft.

I welcome all comments. It might be beneficial for us to sit down and discuss the draft prior to meeting with the engineers.

J.E.S.

J. E. SANDER

JES:sc

*McCune
Alkire
Barry Clark Byers / Crouth
Lummy*

REMOVAL OF ASBESTOS CONTAINING PRODUCTS

I General

Various forms of asbestos products were previously used extensively as thermal insulation in duct work, high temperature wiring, furnace lining and general fireproofing. Because of the potential health hazards involved with excessive exposures to asbestos fibers, special precautions must be followed to prevent asbestos exposure of either the worker or of non-involved employees.

Prior to renovation or demolition, every project should be reviewed for potential asbestos containing products. If asbestos products are suspected, a sample of material should be tested for positive identification. ^{Alcoa's Envtl. Health Lab} ~~ATC~~ is capable of making this determination. If the test confirms the presence of asbestos, the precautions outlined for asbestos removal should be followed.

(A discussion of spray-on coatings to encapsulate fibers as well as a comment about unnecessary removal of material in good condition will be included here.)

II Permissible Exposure Levels

(OSHA 1910.1001 states) that no employee shall be exposed at any time to airborne asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air. The 8 hour time weighted average airborne asbestos concentrations of asbestos fibers to which any employee may be exposed shall not exceed 2 fibers, longer than 5 micrometers per cubic centimeter of air.

(Refer to Alcoa Material Safety Data Sheet #40 for additional information.)

*check list -
asbestos
substitutes*

*It can assist
you in detm. the
existing
identification
adequate non-binding
if exp.*

*Incorporate
ACGIH
strict limits
in all countries
(Introductory)*

Air monitoring for asbestos fibers should be performed by an Industrial Hygiene representative to assure that Alcoa employees are not overexposed as defined above.

whether or not it is appropriate will be left to discretion of hygienist. IH should always be a part of the project

III Personal Protective Equipment

~~OSHA 1910.1001 states that~~ employees engaged in the removal or demolition of structures or equipment covered or insulated with asbestos, ^{should} ~~be~~ be provided with respiratory equipment and special clothing. ^{With the assistance of the IH,} Employees should be instructed in the potential health effects of asbestos, and the control methods to be utilized to circumvent such consequences.

OSHA applicable to these areas.

A. Respirators

A NIOSH approved air purifying or type "C" supplied air respirator (shall be provided) to reduce the concentration of airborne asbestos fibers in the respirator below the exposure limits prescribed in Section II. Respirator usage is governed by (OSHA 29 CFR 1910.134) which details the components of an acceptable respirator program.

Refer to engr. std. 18.1.1

B. 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 air-borne concentrations of asbestos fibers, which exceed the ^{10 fiber/cc level} ~~ceiling level~~ prescribed in Section II.

ceiling

Disposable coveralls, gloves, hair covering (under hard hats) and respirators approved for asbestos shall be worn at all times when work is in progress ~~in the enclosure~~ ^{work area}. The coveralls are to be taped at the ankles and wrists. All disposable clothing is to be removed and discarded each time a workman leaves the work area. Shoes must be wiped with a damp rag or vacuumed so that the area outside the enclosure is not contaminated. Before leaving the contaminated area for any reason, the workmen shall vacuum the protective clothing, remove the head covering, unzip the coveralls and carefully peel them off, with gloves and shoe coverings remaining attached. The respirator is removed last. The disposable clothing and used filter cartridges shall be disposed of in plastic bags, appropriately labeled for asbestos waste. Respirators shall be cleaned and sanitized at the end of every shift. Workers must wash all skin surfaces that have been exposed to asbestos before eating, drinking, smoking or leaving work. Any water that is used for these purposes must be placed in plastic bags and then into the drums with the contaminated clothing. No smoking or eating is permitted while ~~in the enclosure~~ ^{in the work area}.

IV Work Practice Controls

A. Restricted Area

The asbestos work area should be delineated with tape or rope and warning signs. ^{In the U.S., these signs should conform to} ~~conforming to the requirements of 1910.1001~~ (w)

(1) (ii) should be posed at the work entrance. Entry should be restricted to authorized personnel only wearing the protective clothing prescribed in Section III A & B. Plastic curtains

insert

draped to enclose the work area, should be used to contain the asbestos fibers. (Where ~~applicable~~ feasible or appropriate, plastic).

B. Wet Methods - Preferred

Asbestos should be handled in a wet state insofar as possible to prevent the emission of air-borne fibers. Asbestos must never be dry swept. Local exhaust or wet methods should be employed in collection of fibers. ^{For some applications this is not possible i.e. refractory linings (phosphate containing brick & phosphine gas)} Reference to removal of 1 ft should be involved to make detmn.

C. Tools

All ~~hand-operated~~ and power-operated tools used in the operation which may result in the production or release of asbestos fibers in excess of the limits prescribed in Section II, should be provided with local exhaust ventilation systems.

Dry Methods
AIA - brown book

These drums must then be disposed of in an approved land fill.
Most land fill facilities cannot accept this kind of waste so
there is an incentive to completely fill the drums.

(May want addit. input from the Rogers group.)

VI Environmental Monitoring

(Input from Smith Control group.)

VII. Outside Contractors

It is imperative that the outside contractor know he is dealing with asbestos. It is recommended that a copy of Alcoa Material Safety Data Sheet No. 40 (asbestos) ^{& this standard} be included with either the specifications or the order, as well as verbally calling the contractor's attention to the hazard.

Safety Const.
The contractor will be required to meet all of Alcoa's Engineering Stds. for Asbestos removal. While Alcoa has no direct responsibility under the asbestos section of OSHA 1910.1001 for contractor employees, it is Alcoa's responsibility to see that the contractor furnishes appropriate personal protective equipment as outlined in Section III.

The contractor shall be required to post caution signs around the area as outlined in OSHA 1910.1001(g)(i)(i) and (ii).

The final cleanup of pieces and particles that may contain asbestos fibers shall be bagged and sealed in specially marked steel drums (see V) and labeled according to OSHA 1910.1001(g)(2)(ii).

~~{Final disposition of the material shall be as covered by RCRA.}~~

[Alcoa should monitor nearby Alcoa work stations during the demolition or renovation to insure that Alcoa employees are not overexposed as defined in Section II.]

INTER-OFFICE COMMUNICATION

FROM	TO	FILE
OFFICE	OFFICE	COPY
SUBJECT	DATE	
MESSAGE		

As you begin to plan your asbestos removal job on your arena you may find some massena asbestos removal plans interesting. Massenas job involved pipe insulation which is different from your oven insulation but some of their job procedures are applicable to all asbestos jobs. Scott Anderson is applying to New York State for a variance and he has put together a very good and comprehensive work plan. Ask him if he has an extra copy for you to review. I believe that you will find it helpful even though New York rules are much more strict than OSHA's. Laura

ORIGINAL SENDER • DO NOT WRITE BELOW THIS LINE

REPLY:

DATE

SIGNED

SF 2848

ORIGINATOR: DETACH THIS COPY, SEND REMAINING SET, CARBON INTACT, FOR USE OF REPLIER.