Engineering Standard

Safety Division

ALCOA

18.18

ASBESTOS REMOVAL STANDARD

1984 APRIL
PAGE 1

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1. SCOPE

This standard covers the precautionary measures to follow when removing asbestos-containing materials. The plant industrial hygienist should be contacted prior to removal of any materials suspected of containing asbestos to insure the implementation of adequate health protection measures.

Asbestos was used extensively in the past for insulating boilers, furnace linings, duct work, and for general fireproofing. When materials are suspected of containing asbestos, assume that they do unless analytical testing confirms otherwise. Samples of bulk material can be analyzed by the Environmental Health Laboratory at Alcoa Technical Center.

2. REQUIREMENTS

2.1 Notification Procedures. Before beginning any renovation or demolition involving asbestos removal, notification of the work must be filed with the U.S. Environmental Protection Agency regional office or, if the state has authority, with the state environmental regulatory agency.

The nature of the notification depends upon the quantity of the asbestos to be removed:

- If less than 260 linear feet or 160 square feet of asbestos is to be removed, the following information must be submitted at least 20 days before the renovation or demolition is to begin:
  - Company name and address
  - Contractor name and address
  - Location of renovation or demolition
  - Scheduled starting and completion dates of renovation or demolition
- If more than 260 linear feet or 160 square feet of asbestos is to be removed, the following information, in addition to the above four items, must be submitted at least 10 days before the renovation or demolition is to begin:
  - Description of facility to be renovated or demolished (including size, age, prior use, amount of asbestos present)
  - Nature of the renovation or demolition and method(s) to be used
  - Procedures to be used to insure compliance with Emission Standards (40 CFR 61.22d) and Waste Disposal Standards (40 CFR 61.22j)
  - Name and address of waste disposal site
  - Name, title, and authority of government agent, if demolition is a result of government order

2.2 Employee Training. Training shall be provided to all employees involved in asbestos removal operations. The training program should include the following:

(a) Hazards associated with asbestos exposures.

(b) Work practices and control methods for handling asbestos-containing materials to reduce potential exposures.

(c) Procedures outlined in this standard that will be taken to protect employees.

(d) Effectiveness of personal protective equipment.

The plant industrial hygienist can offer assistance in employee training programs. Attendance at these training sessions should be documented and filed where appropriate to the plant.

PLAINTIFF'S EXHIBIT AL-913

2.3 Personal Protective Equipment.

2.3.1 Respirators. Since removal of asbestos-containing material may potentially result in exposure levels above the Alcoa Permissible Limit of 0.5 fibers/cc, respiratory protective equipment is required of all persons in the work area. Either reusable or single-use air purifying respirators are acceptable for use at concentrations not to exceed 5.0 fibers/cc. Full facepiece air purifying or powered air purifying respirators are acceptable for concentrations not to exceed 50 fibers/cc. A Type "C" continuous flow or pressure-demand, supplied air respirator may be used at concentrations in excess of 50 fibers/cc. The plant industrial hygienist can assist in the selection of appropriate respiratory protection.

Whenever respiratory protection is used, a Respiratory Protection Program in accordance with Engineering Standard 18.1.1 must be established.

2.3.2 Clothing. Due to the potential for fiber exposures during removal operations, disposable garments are required during asbestos removal operations. For large removal operations, disposable garments would include: coveralls, shoe coverings taped at the pant cuffs, cotton gloves taped at the sleeves, and head coverings.

Before leaving the restricted work area, specific procedures should be followed for removal of protective garments so as not to contaminate the employee or the surrounding areas. Employees should vacuum the protective clothing, and carefully remove the head covering, coveralls, etc. The respirator should be removed last. Appropriately labeled plastic bags should be located in close proximity for disposal purposes.

2.3.3 Disposal of Personal Protective Equipment. All disposable protective equipment (garments, single-use respirators, gloves, etc.) is to be treated as asbestos-containing material and disposed of accordingly. (See Section 2.7).

Reusable respirators should be thoroughly cleaned with a damp rag to remove any asbestos contamination prior to sanitization and storage (refer to Engineering Standard 18.1.1). The rags should be disposed of as asbestos-containing waste.

2.4 Medical Surveillance. Employees engaged in asbestos removal job tasks require medical approval to wear a respirator in accordance with Engineering Standard 18.1.1. Those employees engaged in asbestos removal activities on an average frequency of twelve 8-hour shifts per year or greater shall also receive an annual medical examination. This periodic evaluation will include: a questionnaire to elicit the symptomatology of respiratory disease; pulmonary function tests (FVC and $FEV_{1.0}$); and a chest X-ray. Employees should be notified by the physician of any abnormalities within 30 days of such a finding.

2.5 Work Practice Controls.

2.5.1 Restricted Area. The asbestos work area should be contained as much as possible to decrease the potential for exposure of other employees in the area. The following containment techniques are recommended, except where it is not feasible or practical:

(a) Construct barriers to enclose the work area with 6 mil polyethylene plastic sheets joined with folded seams, and with sealing tape at the seams and boundaries.

(b) Close or adjust ventilation systems to avoid entrainment of asbestos dust into the system.

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(c) Place caution signs at the perimeter of the work area entrance. In the U.S., signs must conform to OSHA regulation 21 CFR 1910.1001(g), and read as follows:

> 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.

(d) Only properly attired and equipped personnel (see Section 2.3) shall be permitted in the work area.

2.5.2 Personal Hygiene Practices. Smoking and eating are not permitted in the work area. Employees should thoroughly wash their hands, faces, and arms before smoking or eating during breaks and upon job completion.

2.5.3 Dust Suppression Techniques. Prior to removal, asbestos material should be sprayed with water containing a wetting agent to enhance penetration. The wetting agent should consist of 50% polyoxyethylene ester and 50% polyoxyethylene ether in a concentration of one ounce in five gallons of water. The material should be kept wet during all stages of work to minimize exposure to employees and emissions to outside air. Water should not be used if this would introduce other hazards (i.e., electrical, generation of toxic gases, etc.).

Asbestos material should be removed in small sections and handled very carefully. While still wet, the pieces of material should be carried and lowered to ground level rather than dropped, and then placed into 6 mil plastic bags. Bags are typically placed in 55-gallon steel drums for additional protection.

If the work is regulated under U.S. EPA Clean Air Act regulations, and water cannot practically be used for dust control, a dust collection/exhaust system is required. Such a dust control system may be necessary even if not mandated by regulation, depending on the specifics of the job and potential for airborne emissions and employee exposure.

2.6 Clean-Up. All surfaces in the work area should be cleaned with a HEPA-filtered vacuum or with damp rags. Do not dry sweep asbestos materials, as this may generate airborne dust.

The asbestos work area must receive a thorough visual inspection after the clean-up phase to insure adequate clean-up. Industrial hygiene monitoring may also be warranted to document safe exposure levels. Then all plastic sheeting, tape, cleaning material, clothing, and all other disposable items used in the work area shall be packed into impermeable bags and properly disposed of as described in Section 2.7.

2.7 Disposal. The plastic bags containing the asbestos materials should be placed into fiber, metal, or wooden containers for transport. The plastic bags should be sealed or tied before securing the container top. The outside of all containers shall be free of asbestos dust before leaving the work area.

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U.S. regulations require that the bags and drums be labeled with a warning label that reads:

C A U T I O N	-OR-	C A U T I O N
CONTAINS ASBESTOS FIBERS AVOID CREATING DUST BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM.		AVOID OPENING OR BREAKING CONTAINER BREATHING ASBESTOS DUST MAY BE HAZARDOUS TO YOUR HEALTH.

In the United States, containers should be transported with proper D.O.T. shipping documents to a permitted landfill with state approval for asbestos disposal. Before using a landfill for asbestos disposal, it is recommended that the site be visited and investigated to confirm that it is permitted, operating in accordance with Part 61.25 of the Clean Air Act regulations, and is being operated by reputable management.

The sealed plastic bags may be dumped from the drums into the burial site unless the bags have been broken or damaged. Damaged bags should be left in the drum, and the entire drum and its contents buried. Uncontaminated drums may be recycled.

3. OUTSIDE CONTRACTORS

Outside contractors shall be required to follow the provisions of this standard, as well as all Federal, state, and local regulations (where applicable) for the removal of asbestos-containing materials. Contractors should be required to show evidence of experience and/or training in asbestos work, and furnish their standard operating procedures and plans for employee protection during the work. Alcoa should approve these procedures and insure that they are adhered to. Likewise, Alcoa must keep copies of all documents (notifications, landfill approvals, etc.) generated by outside contractors in accordance with regulatory requirements. It is also recommended that Alcoa have right of approval of the landfill to be used for disposal of the material.

4. REFERENCES

For further information, you may find the following references helpful:

1. EPA Report Number 560/5-83-002, "Guidance for Controlling Friable Asbestos-Containing Materials in School Buildings", 1983 March
2. EPA Report, "Asbestos-Containing Materials in School Buildings: A Guidance Document, Parts 1 & 2", 1979 March. Available by contacting EPA at following toll free number: 800/424-9065.
3. I.H. Technical Bulletins Nos. 83-3 and 83-4. Available through Pittsburgh Industrial Hygiene Division.
4. OSHA Safety & Health Standard 29 CFR 1910.1001 - Asbestos.
5. U.S. EPA Regulations for Asbestos (CFR Title 40, Part 61, Subparts A and B).

The following references are not an endorsement of vendors, but may be of assistance:

1. Vacuum Cleaners -- "Absolute Filtered" Vacuum Systems

   Nilfisk of America, Inc.
   201 King Manor Drive
   King of Prussia, PA 19406
   (215/277-3900)

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   Asbestos Control Technology, Inc.
   P. O. Box 183
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   Maple Shade, NJ 08052
   (609/779-1300)

3. Wetting Agents -- 50% polyoxyethylene ester,
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   Aquatrols Corporation of America
   Pennsauken, NJ

   Rohm & Haas
   W. Philadelphia, PA

   Target Chemical Company
   San Jose, CA

   Thompson-Hayward Chemical Company
   Kansas City, KA

4. Disposable Protective Garments -- Type 14 "Tyvek"

   A duPont product; available through area distributors.

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2.7 Disposal. The plastic bags containing the asbestos materials should be placed into fiber, metal, or wooden containers for transport. The plastic bags should be sealed or tied before securing the container top. The outside of all containers shall be free of asbestos dust before leaving the work area.

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   P. O. Box 183
   North Pine Avenue
   Maple Shade, NJ 08052
   (609/779-1300)

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   50% polyoxyethylene ether

   Aquatrols Corporation of America
   Pennsauken, NJ

   Rohm & Haas
   W. Philadelphia, PA

   Target Chemical Company
   San Jose, CA

   Thompson-Hayward Chemical Company
   Kansas City, KA

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   A duPont product; available through area distributors.

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