

**PROPOSED ENGINEERING STANDARD
MEASUREMENT AND CONTROL OF ASBESTOS DUST EXPOSURE**

1. SCOPE

- 1.1 This standard sets forth general information on methods of controlling asbestos dust exposures and describes an acceptable method of sampling asbestos dust concentrations in the work area.

2. GENERAL

- 2.1 Asbestosis and lung cancer have long been associated with asbestos; the incidence of these diseases has historically been significantly higher among asbestos workers than among the general population.
- 2.2 Principal sources of airborne asbestos dust exposure in Company operations are:
- 2.2.1 Operation of saws in shop for fabricating insulation.
 - 2.2.2 Opening boxes of new insulation.
 - 2.2.3 Tearing down old insulation on lines and vessels.
 - 2.2.4 Mixing asbestos to form cement.
 - 2.2.5 Removing clothing after completing insulation duties.
 - 2.2.6 Cutting asbestos base shingles, transite, etc.

Exposure may be controlled at acceptable levels by properly engineered dust collection systems, use of respirators, and good personal hygiene.

- 2.3 Safe levels of asbestos dust concentrations in air must conform to threshold limit values established in ST2.
- 2.4 An acceptable method of sampling, to determine the concentration of asbestos dust in air, utilizes a battery-operated sampling pump worn by an employee which continuously draws air through a special filter. Filters are sent to a testing laboratory for a fiber count.

3. CONTROL OF ASBESTOS DUSTS

3.1 Handling Asbestos Insulation

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- 3.1.1 Cartons of block insulation are a potential source of severe dust exposure. The rough, abrasive

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nature of the block material is conducive to creating dust within the cartons.

- 3.1.2 Cartons should be opened at one end and vacuumed for accumulated dust, not dumped out.
- 3.1.3 Handle the blocks with care. If dust cannot be eliminated by vacuum, then respiratory protection is in order.
- 3.1.4 Block insulation with a glaze coating, which makes it virtually dust free for handling purposes, is available in limited quantities.
- 3.1.5 Hand cutting (saw or knife) raises dusts. This work should be done on a perforated cutting board placed over a disposable plastic bag-lined drum or other suitable container. Wet the bag regularly to prevent causing dust from the container when other scrap is dropped into it.
- 3.1.6 Dampening slightly with water tends to reduce all dust hazards.

3.2 Asbestos Power Cutting Operation

- 3.2.1 All operators of machines shall wear suitable respiratory protection while cutting or shaping materials.
- 3.2.2 All major power cutting machines should be isolated in a separate working area. Exhaust systems shall be connected to all machines to draw away all dusts and cuttings. This system should discharge through a cyclone and precipitate into a container where it is wetted to reduce dust when emptying.
- 3.2.3 The machine work area shall have a vacuum clean-up system. This can be a system of hoses connected to the main collection system. All parts of the room must have daily vacuum clean-up of all ledges, shelves, floors, and machines. Avoid sweeping. Caps or dampers are necessary in each hose and machine connection to maintain capacity of the system.
- 3.2.4 Air samples shall be taken, as outlined in Section 6, to assure effective control of all dusts.

3.3 Asbestos - Cement Mixing

- 3.3.1 When handling dry asbestos cement, respiratory protection shall be used.
- 3.3.2 Asbestos cement should be purchased in sealed plastic bags to permit addition of liquid and blending without exposure to dry dust.
- 3.3.3 Any dried out cement should be discarded. Do not attempt to rework it.

3.4 Removal of Asbestos Insulation for Repair or Dismantlement

- 3.4.1 Where possible, the insulation to be removed should be wet down. Continue wetting as insulation is removed.
- 3.4.2 Employees engaged in dismantling asbestos insulation shall wear suitable respiratory protection. Consideration must also be given to exposure of personnel working in the area who are not directly involved.
- 3.4.3 Scrap insulation shall be placed in either plastic bags or closed containers and kept damp, pending disposal.
- 3.4.4 Ultimate disposal of the asbestos shall be according to the local Plant policy.

4. RESPIRATORY EQUIPMENT

- 4.1 Respiratory protection shall be provided where TLV may be exceeded.
 - 4.1.1 Supplied air breathing apparatus will provide complete protection.
 - 4.1.2 Where adequate oxygen is in the air, a cartridge-type respirator, capable of filtering particles at least down to 5 microns, will afford adequate protection. Manufacturers' recommendations for their application and maintenance must be followed.

5. PERSONAL HYGIENE

- 5.1 All smoking shall be prohibited where the potential for exposure to asbestos dust exists.
- 5.2 Respirators and masks must be kept clean.

- 5.3 Clothes must be kept free of dust accumulation. Avoid breathing asbestos dust when removing clothes.
- 5.4 Wash hands before eating or smoking. Do not carry or store food in work areas; do not eat in work areas.

6. SAMPLING

- 6.1 An acceptable method of sampling of personnel exposure to asbestos dust is with a portable battery-powered air sampler worn by the worker. The sample may not be collected in hazardous areas.
 - 6.1.1 Sampling of each operation should be carried out at least monthly for a full 8-hour shift. If results indicate an unsafe level of asbestos dust exposure, the operation should be revised to reduce exposure and resampled.
 - 6.1.2 Equipment. Currently used sampling equipment consists of a Unico Model 440-B "Mighty-Mite" sampler with a Millipore Filter (Cat. No. MAWG-037-AO - .8 microns). The procedure for operation and maintenance of this equipment is available from Haskell Laboratory. Sampling record forms (EN 2731) are available from Stationery.
 - 6.1.3 Sample Analysis. Completed samples (exposed filters) are sealed in a plastic container and mailed with two copies of the sampling record to:

Morton Corn, Ph.D.
Graduate School of Public Health
Department of Occupational Health
University of Pittsburgh
Pittsburgh, Pennsylvania 15213

Attention: Felix Stein

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