

NOTE: works so underlined to be typed in BOLD.

SLT

7/5/72 - CEM

MEASUREMENT AND CONTROL OF ASBESTOS DUST EXPOSURE

1. SCOPE

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:

- a. Cutting insulation by power saws in fabrication shops
- b. Opening boxes and removal of new insulation
- c. Removing old insulation from lines and vessels
- d. Mixing asbestos to form cement
- e. Removal of clothing after completing insulating duties
- f. Cutting asbestos shingles, Transits, etc.
- g. Spraying insulation or fireproofing

2.3 Permissible Exposure

Asbestos dust concentrations in air shall not exceed an 8-hour time-weighted average of 5 fibers longer than 5 microns per ml. At no time may the concentration exceed 10 fibers longer than 5 microns per ml.

2.3.1 After July 1, 1976, the time-weighted average is reduced from 5 to 2 fibers longer than 5 microns per ml.

2.4 Engineering methods, such as but not limited to, enclosure, vacuum sweeping, and local exhaust ventilation, shall be used to meet the exposure limits. Where such engineering methods are not feasible, or do not otherwise reduce the concentrations below those prescribed, respiratory protective devices shall be provided and used. See section 3 for control methods, section 4 for respiratory equipment, and section 5 for hygiene requirements.

2.5 See section 6 for sampling equipment, monitoring analysis and record keeping.

2.6 Warning signs conforming with OSHA 1910.93a shall be posted at all approaches to areas where asbestos concentrations may be above the limits in 2.3 at a sufficient distance to permit an employee to read the signs and take necessary precautions before entering the area.

2.7 Non-asbestos bearing materials should be sought for substitution to eliminate the problem entirely.

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3. CONTROL OF ASBESTOS DUSTS

3.1 Handling Asbestos Insulation

3.1.1 Cartons of block insulation are a potential source of severe dust exposure. The rough, abrasive nature of the block material creates dust within the cartons.

3.1.2 Cartons of new insulation should be opened and vacuumed to remove dust prior to removal of blocks for fabrication or bin storage.

3.1.3 Asbestos blocks must be handled with care. If dust cannot be eliminated by vacuum, ~~respiratory protection must be used.~~ *See other methods to meet requirements of 2.3.*

3.1.4 Purchase ^{of} block insulation with a glaze coating is recommended. This makes it virtually dust free for handling purposes.

3.1.5 All hand-operated or power-operated tools which may produce or release asbestos fibers in excess of the limits of 2.1 shall be provided with a dust collection system. See 3.6.

3.2 Asbestos Power-Cutting Operation

3.2.1 All major power-cutting machines should be isolated in a separate working area. Each machine shall be connected to a dust collection system, see 3.6.

3.2.2 The machine operators shall wear suitable respiratory protection while cutting or shaping materials if the exhaust system cannot maintain concentrations below the M₁ requirements of 2.5.

3.2.3 The machine work area shall have a vacuum cleanup system. This can be a system of hoses connected to the main collection system. All parts of the room must have daily vacuum cleanup of ledges, shelves, floors, and machines.

~~3.2.4~~ CAUTION: No dry sweeping shall be performed.

3.2.4 Air samples shall be taken, as outlined in section 6, to determine that dusts are effectively controlled.

3.3 Asbestos-Cement Mixing

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

3.3.2 Any dried out cement should be discarded. Do not attempt to rework it.

1.4 Removal of Asbestos Insulation for Repair or Dismantlement

3.4.1 Insulation to be removed and discarded should be dampened prior to and during removal wherever possible.

3.4.2 Employees engaged in dismantling asbestos insulation shall wear atmosphere supplying respirators, see 4.1.1.

3.4.3 Scrap insulation shall be collected and disposed of in sealed bags or other containers and disposed of according to local, state or government regulations.

1.5 Asbestos Spraying - Employees engaged in spraying asbestos for insulation or fire proofing shall wear atmosphere supplying respirators, see 4.1.1.

3.6 Exhaust ventilation and dust collection system or systems shall be in accordance with ANSI Z9.2 - Fundamental Governing the Design and Operation of Local Exhaust Systems.

3.6.1 Caps or dampers should be provided in each intake hose and machine connection to maintain capacity of the system.

3.6.2 Discharge should be into bag filters which meet the following criteria:

- a. Cotton bag filter having air flow permeability not exceeding 20 cfm/sq ft
- b. No by-pass devices
- c. No leakage of unfiltered air
- d. Ability to empty hoppers without creating visible emissions of particulate matter
- e. No torn or ruptured bags
- f. No worn or threadbare bags
- g. No improperly positioned bags

4. RESPIRATORY EQUIPMENT

4.1 Respiratory protection shall be provided to all personnel in areas where the requirements of 3.1 may be exceeded.
Refer to 3.1 for general description.

4.1.1 Atmosphere supplying respirators (Type "C" supplied-air or self-contained), *Bureau of Mines Schedule 19E, they are required for dismantling and spraying, and when the limits of 3.1 are reasonably expected to exceed 10 times these limits.*

4.1.2 In other cases, where ambient oxygen does not fall below 18 percent, a mechanical filter type respirator, *Bureau of Mines Schedule 21E, will afford adequate protection. Manufacturers'*

Recommendations for their application and maintenance must be followed.

4.2 Each employee shall be instructed in testing respiratory devices for proper fit and be required to do so prior to each use.

5. HYGIENE

5.1 Respirators and masks must be kept clean and sterilized prior to re-issue.

5.2 Clothes must be kept free of dust accumulation.

5.3 Food, gum, tobacco, or other material placed in the mouth should not be kept or consumed in work areas.

5.4 Change Rooms and duplicate lockers must be provided for employees exposed to concentrations above the limits in 2.1.

6. SAMPLING

6.1 Equipment.

An acceptable method of sampling of personnel exposure to asbestos dust is with a portable battery-powered air sampler. The specifications for sampling equipment together with the procedure for operation and maintenance instructions are available from Haskell Laboratory, Employee Relations Dept, Wilmington Del.

Caution: Sample may not be collected in hazardous areas as defined OSHA without a proper permit.

6.2 Monitoring. Sampling of each operation must be for at least 15 minutes duration and taken in a frequency and pattern to accurately represent the employee's exposure over his work period. If results indicate a level of asbestos dust in excess of the limit, the operation should be revised to reduce exposure and reassessed. The initial sample must determine the 8-hour time weighted average. Intervals between samples shall not exceed six (6) months.

6.3 Analysis. Completed samples (exposed filters) are sealed in a plastic container and mailed with two copies of the sampling record to a qualified laboratory designated by Haskell Laboratory. All determinations shall be made by the independent laboratory at 40-422 (manufacture) (asbestos) with short contact illumination.

6.3.1 Sampling record forms (EN2731) are available from Stationery Stores, Eng. Dept, Wilmington Del.

6.4 Record Keeping. Records of personnel and environmental monitoring shall be maintained for three (3) years and made available upon the request of authorized representatives of OSHA and NIOSH (National Institute of Safety and Health).

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Underlined portions - mandatory under OSHA 1910.93(a)

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