

ASBESTOS DUST
A DIRECT OF OSHA STANDARD

The items shown below are in the order in which they appear in the OSHA standard. They are intended to serve as a working guide for use in the field. When questions arise which are not covered by this digest, the attached copy of the OSHA standard should be consulted.

1. Permissible Exposure Levels

- 1.1 The permissible time weighted average (TWA) concentration of air-borne asbestos fiber is 5 fibers greater than 5 microns in length per cubic centimeter of air over an 8-hour exposure period.
In 1976 the TWA will be reduced to 2 fibers greater than 5 microns in length per cubic centimeter of air.
- 1.2 The permissible ceiling concentration, i.e., the maximum allowable concentration regardless of exposure time is 10 fibers greater than 5 microns in length per cubic centimeter of breathing air.

2. Local Exhaust Ventilation

- 2.1 Local exhaust ventilation is required for hand and power tools which may produce or release asbestos fibers in excess of the permissible concentration levels.
- 2.2 All ventilation and collection systems must be designed and installed in accordance with the American National Standard, ANSI Z9.2 - 1971.

3. Work Methods

- 3.1 Wet Method -- Where practical, asbestos bearing material should be kept wet throughout the entire exposure period to prevent releasing fibers in excess of the permissible concentration levels.

4. Personal Protective Equipment

- 4.1 Compliance with the standard through the use of respiratory and shift rotation may not be used except:
 - 4.1.1 Until engineering controls can be implemented, or
 - 4.1.2 Suitable work practices can be implemented, or
 - 4.1.3 The above two are not feasible, or
 - 4.1.4 In emergency work.

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4.2 Respiratory Protection

- 4.2.1 Where either respirators or personnel rotation is applicable, OSHA states that personnel rotation is preferred.
- 4.2.2 Respirators must be approved by the Bureau of Mines or NIOSH. The type employed must be suitable for the expected concentrations as shown below.
- 4.2.3 Air purifying respirators, either the reusable or single-use type, shall be used by employees who are present where asbestos is being removed or where asbestos scrap or debris are being handled. This type of respirator may be used for exposures in which the airborne concentration is not expected to exceed 10 times the permissible TWA concentration (50 fibers greater than 5 microns in length per cubic centimeter of air). Approved respirators are available from the Safety Storeroom.
- 4.2.4 Powered air purifiers (air compressor supply) shall be used when the airborne concentration does not exceed 100 times the permissible TWA concentration (500 fibers greater than 5 microns in length per cubic centimeter of air).
- 4.2.5 Type C continuous flow or pressure demand supplied air respirators (Scott Air Pacs or air cylinders) shall be used when the airborne concentration is expected to exceed 100 times the permissible TWA concentration (500 fibers greater than 5 microns in length per cubic centimeter of air).
- 4.2.6 A respiratory training program shall be established in accordance with ANSI Z88.2 - 1969, where respirators of any class or type are, or may be, required.
- 4.2.7 Employees who, according to a medical examination, cannot function normally with a respirator shall not be assigned to work requiring a respirator. They shall be assigned to other work in the same geographic location and at the same pay and seniority, if such work is available.

4.3 Special Clothing and Lockers

- 4.3.1 Special clothing shall be provided and used if the concentration is expected to exceed the permissible TWA concentration (5 fibers greater than 5 microns in length per cubic centimeter of air).
- 4.3.2 Change rooms are required for employees working regularly at a fixed place of employment where the concentration is expected to exceed the permissible TWA concentration.

- 4.3.3 Two separate change lockers or containers shall be provided for each employee to prevent contamination of street clothes by contact with work clothes. The two change lockers are required only if a change room is required per 4.3.2 above.
- 4.3.4 Laundering asbestos contaminated clothes shall be performed so as to prevent releasing asbestos fibers in excess of the permissible TWA concentration.
- 4.3.5 Employers giving asbestos contaminated clothes to someone for laundering shall inform that person or agent about the requirements to prevent his releasing excessive amounts of asbestos fibers. The standard does not specify whether or not an employee is required to inform the launderer under similar circumstances.
- 4.3.6 Contaminated clothes shall be transported in a sealed container which displays a caution label. (See attached for details of the label.)

5. Method of Concentration Measurement

- 5.1 Airborne fiber concentration measurements -- This is done by a qualified person using the prescribed type vacuum pump and membrane filter. The filter cassette is then sent to a commercial laboratory equipped to count the fibers.
- 5.2 Initial monitoring must be done in the places of employment where fibers are released to determine the concentration of airborne asbestos fibers. If the concentration is above the permissible TWA concentration, a compliance program must be undertaken immediately. Initial measurements of the concentration of airborne asbestos fibers performed in the Beaumont Refinery indicated that airborne concentrations were well below the permissible TWA concentration.
- 5.3 Personal monitoring must be done by sampling at the breathing zone to determine the airborne asbestos concentration. Sufficient samples shall be taken to determine the 8-hour TWA concentration and the maximum or ceiling concentration of asbestos fibers. The sampling interval and pattern will be performed in a manner so as to represent, with reasonable accuracy, the actual level of employee exposure. If the exposure may reasonably exceed the permissible TWA concentration, then the sampling interval may not exceed a 6-month period.

Personal monitoring performed in the Beaumont Refinery indicated that airborne concentrations were significantly below the permissible TWA concentration.

- 5.3.1 Samples must be collected on membrane filters of 0.3 micron porosity which are mounted in an open-face filter holder.

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5.4 Environmental monitoring -- This is nearly identical to the requirements spelled out in the personal monitoring section described above in 5.3.

5.5 Affected employees or their representative are to have a reasonable opportunity to observe the monitoring process and have access to the results of that monitoring.

6. Caution Signs and Labels

6.1 Caution signs are to be displayed where airborne concentrations may exceed the permissible TWA concentration. They shall be located at all approaches and far enough from the location so that employees may take protective measures before entering the location.

6.2 Caution labels shall be attached to all containers of asbestos raw material, waste, scrap, debris, and contaminated clothing, unless the asbestos fibers have been modified by a bonding agent or some binder which will prevent the release of asbestos fibers to the air during any reasonably foreseeable use, handling, transportation, or disposal of material.

6.3 Caution signs and container labels are available from the Safety Storeroom.

7. Housekeeping

7.1 Housekeeping -- External surfaces shall be kept clear of accumulated asbestos fibers which if dispersed would be in excessive concentration. The accumulation described has not been quantified.

7.2 Waste Disposal -- Asbestos waste, scrap, and clothing consigned for disposal which may in a reasonably foreseeable use, handling, transportation or disposal, release asbestos fibers, shall be collected and disposed of in sealed impermeable containers. A caution label shall be attached, unless the fibers are modified by a suitable bonding agent or binder.

8. Record Keeping

8.1 Exposure records as determined from personal and environmental monitoring shall be kept for at least three years. They shall be made available to OSHA and NIOSH personnel, and employees or former employees whose own exposure may be shown in these records.

8.2 Employee exposure notification -- Any employee found to have been exposed to concentrations in excess of the permissible TWA concentration is to be notified in writing as soon as possible and not later than five days after the finding. He shall also be timely notified of the corrective action being taken.

9. Medical Examinations

- 9.1 Preplacement examinations -- The employer shall provide or make available to each of his employees who are exposed to airborne asbestos fibers, a comprehensive medical examination at the employer's expense. The examination must be performed within 30 days following the first work exposure to asbestos fibers. Examinations are not mandatory by the federal law. If the employee refuses to take the examination, a signed statement of refusal is required.
- 9.2 Annual examinations are required for employees who may be exposed on or before January 31, 1973, and at least annually thereafter. All insulator are identified on a computer program which automatically schedules each insulator for the required physical examination.
- 9.3 Termination of employment -- The employer shall provide or make available a comprehensive medical examination within 30 days before or after employment is terminated. However, no examination need be provided if records show that the employee has been examined within the past one-year period.
- 9.4 Medical records shall be kept at least 20 years. They shall be available for examination or copying by OSHA, NIOSH, present employees, former employees, and employee's personal physician. The physician who performs such an examination shall furnish the employer all the information related to the employee's occupational exposure to asbestos.