

ASBESTOS GUIDELINESCorporate Guidelines for the Handling and Use of Asbestos

One of the standards covered in OSHA Subpart Z, "Toxic and Hazardous Substances" is 1910.1001, Asbestos. The following guidelines are intended to aid the industrial hygienists and/or engineers responsible for employee safety and health in complying with the specific requirements of the standard.

The Hazard

The hazards of asbestos are well documented and universally recognized. Its notoriety is widespread among unions and employees. Asbestos has long been known to cause asbestosis, a disease characterized by scarring and thickening of the lung wall. Today it is also known to produce a variety of irreversible cancers including pleural mesothelioma (cancer of the lining of the chest cavity), peritoneal mesothelioma (cancer of the lining of the abdomen) as well as cancers of the lungs, stomach, colon and rectum. The early detection and treatment of these diseases is usually not possible because the symptoms are not clinically evident until 20 years after the first exposure. Additionally, there is no known safe exposure level. In recognition of the serious health hazards associated with asbestos, the Occupational Safety and Health Administration (OSHA) has imposed strict regulations designed to protect employee's exposed in the workplace.

Acceptable Concentrations of Asbestos Dust

The OSHA standard prescribes two exposure limits. One, the Permissible Exposure Limit (PEL) is for an 8-hour time weighted exposure; it limits an employee's exposure to 2 fibers per cubic centimeter (cc) of air sampled. The second, the ceiling limit, is for short term exposures; it limits this exposure to 10 fibers per cc of air based on a 15 minute sample.

Methods of Compliance

The standard requires feasible technological (Engineering) controls and appropriate work practices as the primary means of compliance. These controls include but are not limited to the following:

- 1) Engineering Controls
 - a) Isolation of processes utilizing asbestos
 - b) Enclosure of dry operations

- c) Use of local exhaust ventilation and dust collection systems. Systems should be designed and maintained in accordance with ANSI Z9.2-1971.
- d) Ventilation of hand and power operated tools which may produce or release asbestos fibers in excess of prescribed exposure limits.

2) Work Practices

- a) Thorough wetting of asbestos when it is handled, mixed, applied, removed, cut or scored in order to prevent the emission of airborne fibers. Wetting usually requires the addition of a penetrant to the water solution.
- b) When removing asbestos from pipes or other structures the material should not be dropped or thrown but carefully lowered to the floor in order to prevent the emission of asbestos fibers.
- c) Controls to prevent the release of asbestos fibers such as wetting, enclosure or ventilation should be used when removing asbestos containing materials from shipping containers.
- d) 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 covering should be provided with approved respiratory equipment and special clothing.

Note: For the aforementioned operations, the OSHA Standard requires the use of Type "C" supplied - air respirators continuous flow or pressure demand class.

Compliance with the standard may not be achieved through the use of administrative controls (i.e. rotating employees to shorten exposure time) or the use of respirators, except during the time required to install engineering controls and institute work practices, in situations where engineering or work practice controls are either technically not feasible or feasible to an extent insufficient to reduce fiber concentrations below acceptable limits, (i.e. spraying, demolition or removal of asbestos insulation) and during emergencies.

Material Substitution

It is company policy to minimize and/or eliminate the use of asbestos and asbestos containing materials to the maximum extent possible via material substitution. The ideal substitute is one which has no health hazard associated with it and does the job just as well. The location of substitutes should be given priority consideration.

Personal Protective Equipment

1) Respiratory Protection

In those situations previously described where filter purifying respirators are permitted, they should be selected from those approved by NIOSH. The selection of respirators will depend on the exposure. The following types are prescribed in the standard

- a) Air purifying respirators. These are to be used when the ceiling or 8-hour time weighted average concentration of asbestos are reasonably expected to exceed no more than 10 times the prescribed limits. Examples of approved equipment are:

Mine Safety Appliance Co.	MSA No. 459440
400 Penn Center Blvd.	Comfo II Type F
Pittsburgh, PA 15235	TC-21, C-133
3M Company	No. 8710
Occ. H/S Products Dept.	Disposable type
1201 Hudson Road	
St. Paul, MN 55101	

- b) Powered air purifying respirators. These are to be used when the ceiling or 8-hour time weighted average concentration of asbestos are reasonably expected to exceed 10 times but not 100 times the prescribed limits.

The units are expensive and complex to maintain. If the concentration of asbestos are expected to exceed 10 times the prescribed limits, consideration should first be given to supplied air devices with hood and protective clothing.

If further information is required contact the sole manufacturer.

3M
Occupational Health and Safety Products
3M Center
St. Paul, Minn. 55101

- c) Type "C" supplied-air respirators continuous flow or pressure demand class. These are to be used when the ceiling or 8-hour time weighted average concentration of asbestos are reasonably expected to exceed 100 times the prescribed limits and during spraying, demolition or removal operations involving asbestos.

The type "C" respirator is an air line respirator for entry into and escape from atmosphere not immediately dangerous to life or health, which consists of a source of respirable breathing air, a hose, a detachable coupling, a control valve, orifice, a demand valve or pressure demand valve, an arrangement for attaching the hose to the wearer and a face piece, hood, or helmet.

Manufacturers of air line respirators include the following:

Mine Safety Appliances Co.
400 Penn Center Blvd.
Pittsburgh, PA 15235

Willson Safety Products
P.O. Box 626
Reading, PA 19603

American Optical Corporation
Southbridge, MA 01550



Whenever respiratory protective equipment is provided, all provisions of OSHA 1910.134 "Respiratory Protection" must be complied with. See attachment 1 "Requirements for a Minimal Acceptable Respiratory Program."

2) Protective Clothing

The standard requires the employer to provide and require the use of special clothing for any employee exposed to airborne concentrations of asbestos fibers which exceed the prescribed ceiling level and for those employees

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involved in the spraying, demolition or removal of asbestos. The special clothing required include the following:

- a) Coveralls or similar whole body clothing. Resin-impregnated paper or similar disposable clothing may be used to avoid laundering problems associated with fabric type clothing.
- b) Head covering - A hard hat or bump cap is adequate.
- c) Gloves - any hard-finished impermeable glove such as the Edmont Vinyl impregnated (Werx, Seams-Rite or equivalent are recommended.
- d) Foot covering - rubber boots or disposable foot covering such as the Edmont Poly-D boots are recommended.

Change Rooms

The employer must provide change rooms at places of employment where employees are regularly exposed to concentrations of asbestos fibers in excess of the prescribed exposure limits. Additionally, the employer must provide two separate lockers or containers for each employee so separated or isolated as to prevent the contamination of the employee's street clothes from his work clothes.

Laundering of Asbestos Contaminated Clothing

The standard requires that laundering be done in such a way as to prevent the release of airborne asbestos fibers in excess of prescribed limits. If clothes are sent out for laundering, the employer must inform the person doing the work of the aforementioned requirement.

Contaminated clothing must be transported in labeled impermeable bags or other sealed containers. See labeling section for specific label required.

Note: The laundering requirements could be avoided through the use of disposable clothing.

Monitoring

Monitoring must be conducted in every place of employment where asbestos fibers are released. See appendix II for the NIOSH sampling and analytical methodologies.

- 1) **Personal monitoring.** Samples must be collected from within the employee breathing zone in order to determine his 8-hour time weighted average and ceiling exposure to asbestos fibers. The frequency and pattern of monitoring should be such that it represents with reasonable accuracy the levels of employee exposure. In cases where employee exposures are reasonably expected to exceed the prescribed exposure limits, sampling must be repeated at least every six months.
- 2) **Environmental Monitoring.** Samples must be collected from areas of a work environment which are representative of the airborne concentration of asbestos which may reach the breathing zone of employees. Samples should be collected for the determination of eight-hour time weighted average and ceiling concentrations of asbestos fibers. The frequency and pattern of monitoring should be such that it represents with reasonable accuracy the level of employee exposure. In cases where employee exposures are reasonably expected to exceed the prescribed exposure limits, sampling must be repeated at least every six months.

Note: Personal monitoring must be accomplished whenever asbestos demolition or removal work is done. OSHA compliance officers have interpreted that, because work of this nature is done intermittently, and because the concentration of asbestos fibers may vary over wide limits, monitoring must be conducted each time a demolition or removal job involving asbestos is performed, and that monitoring must be conducted irrespective of the provision and use of respiratory protective equipment. Their position is further supported by the employee notification requirement of the standard.

- 3) **Employee observation of monitoring:** The standard requires that affected employees or their representatives be given a reasonable opportunity to observe any monitoring required.
- 4) **Exposure Records.** All records of the work, monitoring, employees involved, results of sampling and related informations must be kept in a plant OSHA file on this subject. These records must be maintained for at least three years and should be made available upon request to the Assistant Secretary of Labor for Occupation Safety and Health, the Director of the National Institute for Occupational Safety and Health and to authorized representatives of either. Additionally, every employee

and former employee shall have reasonable access to any record required to be maintained which indicates the employees' own exposure to asbestos fibers.

- 5) Employee Notification. Any employee found to be exposed to concentrations of asbestos in excess of the prescribed limits must be notified in writing within five days of the finding. The employee must also be notified of the corrective action being taken.

Caution Signs and Labels

- 1) Caution signs.. Each work area where airborne concentrations of asbestos fibers may be in excess of the prescribed exposure limit must be posted with a precautionary warning sign. The signs shall display the following legend.

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

For sign specifications see 1910.1001 (g)(1)(ii)

- 2) Caution labels. All raw materials, mixtures, scrap, waste, debris, and other products containing asbestos or their containers must bear caution labels. Those materials containing asbestos fibers which have been modified by a bonding agent, coating, binder or other material that during any handling, storage, disposal, processing or transportation, no airborne concentrations of asbestos in excess of prescribed limit, are exempted from this requirement. The label shall state the following:

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

For label specifications see 1910.1001(g)(2)(ii)

Housekeeping

The standard requires that all surfaces be maintained free of accumulations of asbestos fibers, if the dispersion of such accumulations would result in excessive concentrations.

All cleanup of asbestos dust should be performed by approved vacuum cleaners equipped with special absolute filters, or wet methods in order to prevent the dispersion of asbestos fibers. Under no circumstances shall compressed air or dry brushing be permitted. Additionally, employees should be instructed to vacuum off protective clothing with approved vacuum cleaner at the end of work periods so that movement and activity will not cause asbestos fibers to become airborne and spread the contamination.

Waste Disposal

All asbestos waste scrap, debris, bags, containers, equipment and asbestos-contaminated clothing, consigned for disposal must be collected and disposed of in sealed impermeable bags or containers bearing caution labels.

EPA requirements for disposal of hazardous solid waste materials have become very strict. Only approved hazardous material landfill sites may be used for such disposal. Locations are advised to check with the State Waste Management Agency for compliance with local disposal regulations.

Medical Examinations

The employer must provide or make available medical examinations to all employees exposed to asbestos fibers in any measurable quantity.

1) Types of examinations

- a) Preplacement examinations are to be provided within 30 days of a workers first employment in an occupation exposed to airborne concentrations of asbestos fibers.
- b) Annual examinations are to be provided to all workers exposed to airborne concentrations of asbestos fibers.
- c) Termination of employment examinations are to be provided within 30 days before or after the employees last day of employment in an occupation exposed to airborne concentrations of asbestos fibers.

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See your locations medical organization for specific details of the examinations required.

- 2) Medical Records. The employer must maintain complete and accurate records of the medical examinations required. These records must be maintained by the employer for at least 20 years. Additionally, these records must be made available to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians or medical consultants of either, and upon the request of an employee or former employee, to his physician.

APPENDIX 2

REQUIREMENTS FOR A MINIMAL ACCEPTABLE RESPIRATORY PROGRAM

THE ELEVEN COMMANDMENTS OF 29 CFR 1910.134

1. WRITTEN STANDARD OPERATING PROCEDURES GOVERNING THE SELECTION AND USE OF RESPIRATORS SHALL BE ESTABLISHED.
2. RESPIRATORS SHALL BE SELECTED ON THE BASIS OF HAZARDS TO WHICH THE WORKER IS EXPOSED.
3. THE USER SHALL BE INSTRUCTED AND TRAINED IN THE PROPER USE OF RESPIRATORS AND THEIR LIMITATIONS.
4. WHERE PRACTICABLE THE RESPIRATORS SHOULD BE ASSIGNED TO INDIVIDUAL WORKERS FOR THEIR EXCLUSIVE USE.
5. RESPIRATORS SHALL BE REGULARLY CLEANED AND DISINFECTED. THOSE ISSUED FOR THE EXCLUSIVE USE OF ONE WORKER SHOULD BE CLEANED AFTER EACH DAY'S USE, OR MORE OFTEN, IF NECESSARY. THOSE USED BY MORE THAN ONE WORKER SHALL BE THOROUGHLY CLEANED AND DISINFECTED AFTER EACH USE.
6. RESPIRATORS SHALL BE STORED IN A CONVENIENT, CLEAN AND SANITARY LOCATION.
7. RESPIRATORS USED ROUTINELY SHALL BE INSPECTED DURING EACH CLEANING. WORN OR DETERIORATED PARTS SHALL BE REPLACED. RESPIRATORS FOR EMERGENCY USE, SUCH AS SELF-CONTAINED DEVICES SHALL BE THOROUGHLY INSPECTED AT LEAST ONCE A MONTH AND AFTER EACH USE.
8. APPROPRIATE SURVEILLANCE OF WORK AREAS CONDITION AND DEGREE OF EMPLOYEE EXPOSURE OR STRESS SHALL BE MAINTAINED.
9. THERE SHALL BE REGULAR INSPECTIONS AND EVALUATIONS TO DETERMINE THE CONTINUED EFFECTIVENESS OF THE PROGRAM.
10. PERSONS SHOULD NOT BE ASSIGNED TO TASKS REQUIRING USE OF RESPIRATORS UNLESS IT HAS BEEN DETERMINE THAT THEY ARE PHYSICALLY ABLE TO PERFORM THE WORK AND USE THE EQUIPMENT. THE LOCAL PHYSICIAN SHALL DETERMINE WHAT CONDITIONS ARE PERTINENT. THE RESPIRATOR USER'S MEDICAL STATUS SHOULD BE REVIEWED PERIODICALLY (FOR INSTANCE ANNUALLY).
11. APPROVED OR ACCEPTED RESPIRATORS SHALL BE USED WHEN THEY ARE AVAILABLE. THE RESPIRATOR FURNISHED SHALL PROVIDE ADEQUATE RESPIRATORY PROTECTION AGAINST THE PARTICULAR HAZARD FOR WHICH IT WAS DESIGNED IN ACCORDANCE WITH STANDARDS ESTABLISHED BY COMPETENT AUTHORITIES.

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