Asbestos

An estimated 1.3 million employees in construction and general industry face significant asbestos exposure on the job. Heaviest exposures occur in the construction industry, particularly during the removal of asbestos during renovation or demolition. Employees are also likely to be exposed during the manufacture of asbestos products (such as textiles, friction products, insulation, and other building materials) and during automotive brake and clutch repair work.

Asbestos is well recognized as a health hazard and is highly regulated. OSHA and EPA asbestos rules are intertwined.

**Related Technical Links:**
- Synthetic Mineral Fibers
- Construction: Asbestos

**Recognition**

- The following references provide information regarding recognition of asbestos hazards. However, their treatment of compliance issues is out of date, since the standards were updated in 1994. For regulatory information, please refer to the Compliance section of this document.
  - Better Protection Against Asbestos in the Workplace. OSHA Fact Sheet (2001), 2 pages, 88 KB PDF.
  - Substance technical information for asbestos. 1910.1001 App G, 1915.1001 App H, and 1926.1101 App H. These non-mandatory appendices to the pre-1994 OSHA standards were not updated with the standards.
  - What is Asbestos? University of Minnesota, 1 page. Explains the different mineral forms of asbestos.
  - Asbestos Info. Utah Division of Air Quality, 2 pages. Discusses asbestos minerals, diseases, exposure, and occurrence.
  - Asbestos Report. International Program on Chemical Safety (IPCS), (1988). Provides an international point of view. This summary
discusses aspects of asbestos production, use, and disposal, as well as health effects, and sampling and analysis procedures.

- **Asbestos: Criteria for a Recommended Standard**. NIOSH (1976). This asbestos criteria document provides extensive discussion of asbestos hazards and control measures. Though the material is dated, this is a valuable resource.

- **Chrysotile Reference Guide**. Asbestos Institute. Provides an extensive overview of asbestos types and health related issues. Explores evidence of lower toxicity for chrysotile. To read why OSHA rejected this concept, use your browser's "find" feature to locate "chrysotile" in the Preamble to the 1994 OSHA Asbestos Standard.

- **Asbestos in the Home**. EPA Region IV (1997, April), 4 pages. The aim of this booklet is to respond to some frequently asked questions about asbestos and to provide information to help the homeowner make informed decisions about its care and maintenance.

- **Asbestos in Your Home**. EPA Region III (1997), 1 page. Summarizes information for the homeowner, but is applicable to businesses as well.

- **Sample List of Suspect Asbestos-Containing Materials**. EPA Region VI (1997), 1 page. Provides a list of 46 materials that may contain asbestos.


- **USGS - Minerals Information: Asbestos**. Many thousands of tons of asbestos are currently imported, mined, and used every year in the U.S., mostly for roofing, friction products, and gaskets. The references in this link provide information on the amount of asbestos produced by year.

- Other mineral fibers may be hazardous. National Toxicology Program lists respirable size ceramic fibers and glasswool as "reasonably anticipated" carcinogens.

**Evaluation**

- **The Asbestos Advisor 2.0**. The Asbestos Advisor software is an interactive compliance assistance tool. Once installed on your PC, it can interview you about buildings and worksites, and the kinds of tasks workers perform there. It will produce guidance on how the Asbestos Standard may apply to those buildings and that work.

- Medical surveillance guidance is provided in the appendices to the
OSHA Standards:


- Exposure monitoring samples must be analyzed by Phase Contrast Microscopy (PCM) for OSHA purposes. PCM methods accurately assess fiber exposure levels, but PCM can not differentiate between asbestos and non-asbestos fibers. Transmission Electron Microscopy (TEM) methods can be used to identify fibers, but may not be used to quantify air concentrations for occupational exposure.


- NIOSH Manual of Analytical Methods (NMAM) includes asbestos methods 7400 and 7402. Method 7400 is a PCM procedure, equivalent to the OSHA methods. Method 7402 uses TEM to identify fibers (OSHA will accept this TEM procedure, as it uses PCM to determine exposure). These methods are available online as compressed (ZIP) WordPerfect 5.1+ files:
  - NIOSH 7400, Asbestos and other fibers by PCM
  - NIOSH 7402, Asbestos fibers by TEM

- Bulk sample analysis should be done by Polarized Light Microscopy (PLM). Bulk analysis results will likely apply to both OSHA and EPA regulations. Refer to Other Resources for links to EPA rules.


non-mandatory analytical method.

- NIOSH has published two methods for the determination of asbestos in bulk materials. These methods are available online as compressed (ZIP) WordPerfect 5.1+ files:
  - NIOSH 9000, Asbestos, Chrysotile by XRD
  - NIOSH 9002, Asbestos (bulk) by PLM


- Directory of Accredited Laboratories, National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is required for analyses being performed in compliance with AHERA regulations.

- Compliance with OSHA's Asbestos Standard: Composite Bulk Samples. OSHA Standard Interpretation (1997). Each sample layer must be analyzed separately; "composite" analysis is not acceptable.


- ANSI/ASTM E1368-96A Practice for Visual Inspection of Asbestos Abatement Projects. This standard establishes accepted practices for evaluating asbestos abatement projects. This standard is available from ANSI.

Control

- **Automotive**: precautions to prevent exposure to asbestos in friction products (brakes and clutches)


  - OSHA mandatory precautions for automotive asbestos. OSHA Regulation 1910.1001 App F.

  - Preventing Asbestos Disease Among Auto Mechanics. EPA (1986), 4 pages. This document is provided by the Coordinating Committee for Automotive Repair (CCAR). It examines exposure opportunities among auto mechanics involved with brake linings, clutch facings, and other friction products to prevent exposure to asbestos.
Asbestos Removal:

- **Work practices and engineering controls for Class I Asbestos Operations.** OSHA Regulation 1926.1101 App F. This non-mandatory appendix offers work practices and engineering controls for asbestos removal.

- **Guideline specifications.** U.S. Army Corps of Engineers (1999, October), 7.3 MB ZIP file. Index to specifications includes Section 13280 A, Asbestos Abatement. Scroll down and click on 13280.sec. Specifications must be downloaded in a special SGML format (software to view and edit this format is available online).

- **Asbestos NESHAP Adequately Wet Guidance.** EPA (1990), 4 pages. This publication emphasizes the need for proper wetting of asbestos-containing material prior to removal.

**Facilities:** Operations and maintenance (O&M) practices are used to control hazards of asbestos.

- O&M programs from University of Texas and Virginia Tech may be used as examples.


**Other asbestos control links:**

- **Asbestos Removal Procedures for Home Owners.** Utah Division of Air Quality, 5 pages. This publication offers guidance on removing spray-on textured ceilings in non-occupational settings.

- Asbestos Cement in and Around Your Home, HP #EH0036. Environmental Health Service of the Health Department of Western Australia (1997), 3 pages. This resource gives advice on maintaining Asbestos Cement (AC). Note: Asbestos cement is also known as "Transite." Publication can be ordered through the internet (click on Environmental Health, Pamphlets — Environment) or by email.

- **Qualitative and quantitative fit testing procedures.** OSHA Regulation 1910.1001 App C, Mandatory. Procedures for fit testing of respirators used in operations involving asbestos.

- **Work practices and engineering controls for automotive brake and clutch inspection, disassembly, repair and assembly.** OSHA Regulation 1910.1001 App F, Mandatory.

- **Smoking Cessation Program Information For Asbestos.** OSHA

Compliance

- **Compliance information**, including Standards, Directives and Interpretations, is provided on a separate page.

Training

- **Training materials** developed by the OSHA Office of Training and Education. Materials include handouts and a set of slides. The handout is a table listing significant changes. The slides provide an outline of the requirements of the Asbestos Standard for the Construction Industry.

- EPA regulations have influenced OSHA asbestos training requirements. For removal of non-intact ("friable") asbestos in buildings, EPA requires "accreditation" training for workers and competent persons ("supervisors"). This training is identical to that required by OSHA for Class I and II work, but it must be obtained from an EPA-approved course provider. Class III and IV training is based on EPA "AHERA" requirements for schools.

- NIOSH [Educational Resource Centers](http://www.osha.gov/SLTC/asbestos/) provide EPA-approved training. Other non-profit course providers include UC Berkeley, Georgia Tech, and University of Utah, etc.


- Training materials for EPA-developed asbestos courses can be purchased through [NTIS](http://www.osha.gov/SLTC/asbestos/) (search for "asbestos model curriculum").

Asbestiform Minerals Information

- [Asbestiform Fibers: Nonoccupational Health Risks](http://www.osha.gov/SLTC/asbestos/). Index to a report that discusses the health risks posed by nonoccupational airborne exposures to asbestos and other natural or synthetic asbestiform fibers.

Other


- [Asbestos: Construction](http://www.osha.gov/SLTC/asbestos/)
- **US EPA** home page
- **EPA regulations (40 CFR)**. The TSCA Asbestos regulations are found in **40 CFR 763**.
- **EPA COMPLI** database (asbestos NESHAP)
- Oklahoma State University **asbestos links**
- **Asbestos Institute**
- **American Lung Association**
- **Asbestos Bibliography (Revised)**. DHHS (NIOSH) Publication No. 97-162 (1997, September), 224 pages, 8.3 MB PDF file or 9 separate PDF files. This publication is a compendium of NIOSH research and recommendations on asbestos; includes full or partial text of selected NIOSH documents, a comprehensive bibliography, and a summary of asbestos information available from other agencies.

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