Asbestos

Asbestos - Control Strategies for Workplaces

On this page

What are components of an asbestos control program?

A control program is necessary when handling, removing, or disturbing asbestos-containing materials (ACM), or when the presence of ACM is suspected or confirmed in the workplace. The goal is to prevent or minimize the release of airborne asbestos fibres. The employer must make sure that the control plan is developed and implemented according to the requirements for their local government regulations.

In general, the control plan should address:

- Containment of asbestos operations.
- Location, type, friability (how easily it crumbles), and condition of ACM in the workplace.
- Controlling of the release of asbestos fibres.
- Reporting procedures for suspected ACM.
- The engineering controls, work practices, hygiene practices, and facilities necessary to control the exposure of a worker to asbestos.

- Providing workers with task-specific work instructions that address both the hazards and the necessary controls.
- Providing, using and maintaining appropriate personal protective equipment and clothing.
- The methods and procedures needed to monitor the concentration of airborne asbestos and the exposure of a worker.
- The methods needed to decontaminate workers clothes, etc.
- The removal and clean up of asbestos waste and related material.

What is covered in this document?

This document is part of a series of documents on asbestos:

- Asbestos - What is...
- Asbestos - Health Effects
- **Asbestos - Control Strategies for Workplaces**
- Asbestos - In the Home

Where is it possible to find asbestos in the workplace?

If you work maintaining or doing construction in buildings built before 1990, there are many products which may contain asbestos. Public and commercial building owners should keep an inventory of asbestos-containing materials to inform workers, tenants, authorities, and contractors. Ask the building owner or your supervisor whether asbestos is present in your work area. Before any work is completed in an area that may have ACM, check with a qualified asbestos removal specialist for testing. Some provinces require specific training and steps to be taken before working with asbestos.

People can be exposed to asbestos when renovation or demolition activities are occurring. Small asbestos fibres can be released from asbestos-containing materials into the air when:

- Disturbing or removing insulation including insulation around hot water pipes and tanks.
- Removing or disturbing roofing shingles and felt or siding.
- Sanding, breaking apart or scraping vinyl asbestos floor tiles.
- Breaking apart soundproofing ceiling tiles.
- Sanding or disturbing plaster, including acoustical plaster.

- Sawing, drilling or smoothing rough edges of materials.
- Sanding or scraping older surface treatments, such as roofing compounds (including tar paper), spackling, sealants, paint, putty, caulking or drywall.
- Replacing some car parts such as brakes or transmission clutches. Check with your parts supplier to find out if any replacement parts contain asbestos.

Any damage to materials containing asbestos should be reported to the appropriate authority, such as your occupational health and safety professional.

If asbestos is found while renovating in the workplace, stop work immediately. Enclose and barricade the area, and hire a qualified asbestos removal specialist to dispose of the ACM and create a plan to remediate or remove the remaining ACM before beginning any other work. Do not disturb asbestos materials yourself. This action increases the risk of exposure.

Are there different types of asbestos work?

In some jurisdictions (for example, Manitoba, Ontario and New Brunswick), working with asbestos is closely regulated. Typically, the laws break the type of asbestos work into 3 classes:

- Type I (low risk)
- Type II (medium risk)
- Type III (high risk)

A similar approach is used in the United States by the Occupational Safety and Health Administration (OSHA). Note that the OSHA system uses the reverse order of numbering for the categories - for OSHA, Class I is the most potentially hazardous class of asbestos jobs, while Class IV refers to custodial activities where there is clean up of asbestos-containing waste and debris. Please check the regulations for your jurisdiction for an exact list of which activities are in each class for your area.

Type 1 (low risk) involves:

- Installing or removing ceiling tiles covering an area less than 7.5 square metres.
- Installing or removing other non-friable asbestos containing materials (ACM), and the tiles/material are not being broken, cut, drilled, abraded, ground, sanded or vibrated (e.g., dust is not being generated).
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable ACM if the material is wetted to control the spread of dust or fibres, and the work is done only with non-powered hand-held tools. (e.g., dust is being generated, but easy to control).
- Removing less than 1 m^2 of drywall in which joint-filling compounds contain asbestos.

Type 2 (medium risk) involves:

- Removing all or part of a false ceiling to get access to a work area, if ACM is likely to be lying on the surface of the false ceiling.
- The removal or disturbance of less than or equal to 1 m² of friable ACM during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship.
- Enclosing friable ACM.
- Applying tape, sealant, etc. to pipe or boiler insulation that is ACM.
- Installing or removing ceiling tiles that are ACM if the tiles cover an area of greater than or equal to 7.5 m² and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable ACM if the material is not wetted to control the spread of dust or fibres, and the work is done only with non-powered hand-held tools.
- Removing greater than or equal to 1 m² of drywall in which the joint filling compound has ACM.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done with power tools attached to dust-collecting devices equipped with high efficiency particulate air (HEPA) filters.
- Removing insulation that is ACM from a pipe, duct, etc. using a glove bag.
- Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is ACM.
- An operation that is not mentioned above but may expose a worker to asbestos and is not classified as a Type 1 or Type 3 operation.

Type 3 (high risk) involves:

- The removal or disturbance of greater than 1 m² of friable ACM during the repair, alteration, maintenance or demolition of all/ part of a building, aircraft, ship, vehicle, etc.
- The spray application of a sealant to friable ACM.
- Cleaning or removing air handling equipment, including rigid ducting (excluding filters), in a building that has sprayed fireproofing that is ACM.
- Repairing, altering or demolishing all or part of a kiln, metallurgical furnace or similar structure that is made in part of refractory materials that are ACMs.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable ACM, if the work is done with power tools not attached to dust-collecting devices equipped with HEPA filters.

- Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products.

Adapted from: Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations, Ontario Regulation 278/05

What is the Threshold Limit Value (TLV®) for Asbestos?

American Conference of Governmental Industrial Hygienists (ACGIH) recommended exposure limit for asbestos is:

TIME-WEIGHTED AVERAGE (TLV®-TWA): 0.1 fibers per cubic centimeter (f/cc)* - Carcinogenicity Designation A1

The TLV® basis for this rating is pneumoconiosis, lung cancer and mesothelioma.

TLV® Definitions:

*Respirable fibers - Fibers longer than 5 microns and at least 3 times as long as their diameter as determined by the membrane filter method at 400-450 X magnification (4-mm objective) using phase contrast illumination.

CARCINOGENICITY DESIGNATION A1 - Confirmed Human Carcinogen: Substance is carcinogenic to humans based on convincing evidence from human studies. For a substance assigned a TLV®, exposure should be controlled to levels as low as reasonably achievable below the TLV®. Workers exposed to a substance without an assigned TLV® should be properly equipped to eliminate virtually all exposure to it.

NOTE: In many Canadian jurisdictions, exposure limits are similar to the ACGIH TLVs®. Contact your local government agency to confirm the exposure limit in your area. Some jurisdictions have specific regulations respecting asbestos.

What is involved when training workers?

In general, anyone working with asbestos must be educated and trained on:

- The hazards of asbestos exposure.
- How to identify asbestos-containing material.
- Personal hygiene and work practices, including the specific work procedures to be followed.
- The operation of the required engineering controls.
- The use, cleaning, maintenance and disposal of protective equipment and clothing.

- Disposal procedures for asbestos-contaminated materials.
- The purpose and significance of any required health monitoring.

Again, please check your local jurisdiction for exact requirements. Some jurisdictions require that the worker receives and keeps with them an original valid certificate of completion of an instructional course that is approved by the jurisdiction.

What are examples of PPE to use when working with asbestos?

Workers must wear the appropriate personal protective equipment (PPE) clothing and respirator for the type of work that they are doing. If workers require any PPE, employers should establish a PPE program that covers the selection, use and care of respirators and other PPE.

Respirators must be provided for workers working with or near asbestos. The respiratory equipment must be appropriate for the type of operation and the concentration of airborne asbestos. Respirators must be:

- Properly fitted to the worker.
- Used and maintained according to written procedures established by the employer and are consistent with the manufacturer's specifications.
- Cleaned, disinfected and inspected after use on a regular basis.
- Inspected and repaired before being used by a worker.
- Stored in a convenient, clean and sanitary location when not in use.

Protective clothing must be provided by the employer and should:

- Be made of a material that does not readily retain nor permit penetration of asbestos fibres.
- Cover the head and body fully, fitting snugly at the ankles, wrists and neck in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing.
- Include suitable footwear.
- Be repaired or replaced if torn.

What should be done before working with ACM?

Before working with asbestos-containing material (ACM), employers should:

- Identify and mark the boundary of the designated work area by barricades, fences, or similar means.
- Ensure that the immediate work area is cleared of objects, materials and equipment other than what is needed to do the work.
- Ensure that windows, doorways and all other openings are adequately sealed or secured to prevent the release of asbestos fibre into other work areas.
- Post signs at the boundaries of the designated work area indicating asbestos work is in progress, the hazards, and the precautions required for entering the work area. These signs must be posted in a conspicuous location at the entrances to and on the periphery of each restricted area, as appropriate, and must remain posted until the area is no longer a restricted area.
- Restrict entry into the designated work area to authorized persons who are adequately protected against the level of risk within the designated work area.

What are good practices when working with asbestos?

- Workers should not eat, drink, chew or smoke within any work area containing asbestos.
- Drop sheets and barriers used in the work area should be wet-wiped or vacuumed with a HEPA-filtered vacuum.
- Drop cloths should not be re-used.
- Barriers and portable enclosures should not be reused unless they are rigid and can be thoroughly cleaned.
- Compressed air must not be used to clean up and remove dust from any surface.
- Clean the work area frequently and at regular intervals during the work and immediately on completion of the work.
- Dust and waste should be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a container. The container must be:
    - dust tight and suitable for the type of waste,
    - impervious to asbestos,
    - labelled as containing asbestos waste with a warning that the dust from the contents should not be inhaled,
    - cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before being removed from the work area, and
    - removed from the workplace frequently and at regular intervals.

- Before leaving the work area, workers must decontaminate their protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing. If the protective clothing will not be reused, the clothing should be placed in a container as described above. Workers must wash their hands and face before leaving the work area. The employer must provide adequate wash facilities.
- A double locker facility is often used to assist workers with cleaning up after working with asbestos, particularly after medium- to high-risk operations. A "double locker" requires two locker rooms with showers between. Using double locker rooms allows workers remove asbestos contaminated clothes in one locker room, then shower off asbestos contaminants, then use the second locker area to keep their street clothes. Double locker rooms are required in certain jurisdictions.

Controlling the spread of dust beyond the work area is critically important so that people outside of the work area are not exposed to asbestos fibres. The specific controls to achieve this vary from using polyethylene sheeting barriers for low-risk operations, to setting up a separate ventilation system, maintained under a negative pressure for high-risk work areas.

Are there medical monitoring requirements for workers?

In many jurisdictions, regular medical monitoring is required for workers exposed to asbestos. This monitoring could include:

- Medical examinations and clinical tests of a worker which may include a screening chest radiograph, a lung function test, occupational exposure history, and a health questionnaire.
- Personal records to show the exposure of a worker to asbestos at the workplace, including the time-weighted average exposure of the worker and of the concentrations of asbestos. The records should also indicate how the concentrations were determined.

The records of medical examinations and clinical tests should be maintained by the physician who has examined the worker or by the person under whose direction the examination and tests have been performed.

Where can I get more information?

More information is available from:

- Safe Work Practices for Handling Asbestos, Worksafe BC
- Asbestos Controls for Construction, Renovation and Demolition, Infrastructure Health and Safety Association (The former Construction Safety Association of Ontario)

(*We have mentioned these organizations as a means of providing a potentially useful referral. You should contact the organization(s) directly for more information about their services. Please note that mention of these organizations does not represent a recommendation or endorsement by CCOHS of these organizations over others of which you may be aware.)

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