

P-12

Asbestos Management

Department of General Services Asbestos Management Program

I. Policy Statement

A. Overview

This program shall be followed to prevent exposure of the public, Commonwealth employees and Department of General Services (DGS) employees, in particular, from uncontrolled exposures to asbestos. Exposures to asbestos shall be eliminated or controlled in all Commonwealth buildings except for employees who have been specifically trained in the hazards of asbestos, and who have been provided with appropriate personal protective equipment. Exposures can be eliminated by removing damaged material, or controlled by keeping installed materials in good condition.

The purpose of this program is to protect the public, employees of DGS and Commonwealth employees in DGS-controlled buildings from the hazards associated with asbestos containing materials (ACM) and to ensure the safety of DGS employees working around ACM. In addition, this program is intended to assist DGS in complying with the intent of [OSHA 29 CFR 1910.1001](#), the OSHA Asbestos Standard for General Industry, and [29 CFR 1926.1101](#), the Asbestos Standard for the Construction Industry; and the requirements of the Environmental Protection Agency and the Commonwealth of Pennsylvania.

Asbestos materials that are in good condition may be maintained in place using an effective Operations and Maintenance Program.

B. Responsibilities

The following personnel have specific responsibilities as detailed herein for the asbestos program:

Position	Name	Phone	e-mail
Agency Safety Coordinator	Tim Burke	717-346-1526	timburke@pa.gov

II. Applicability

The program shall apply to asbestos containing materials in Commonwealth owned or operated buildings under the control of the Department of General Services, and provides for the management of asbestos materials by DGS employees, or contractors working under the direction of DGS.

This program shall apply to DGS employees and to contractors during work that may disturb

asbestos materials such as plumbing repairs, Operations and Maintenance repairs of damaged asbestos materials, clean-up of damaged ACM, intentional removal during building renovations, or modification of HVAC or plumbing systems. The program also is intended to inform employees who may be in the vicinity of asbestos materials of the hazards of asbestos. These employees will not intentionally disturb ACM but may come in contact with materials by virtue of their jobs. This may include mechanics, engineering staff, maintenance workers, and custodial workers.

III. References

- [OSHA 29 CFR 1910.1001](#)- Asbestos (General Industry)
- [OSHA 29 CFR 1926.1101](#)- Asbestos (Construction Industry)
- PA Licensing and Certification of Asbestos Occupations.
- EPA Guidance Document, *Controlling Asbestos Exposures in Buildings* (EPA 1973)
- EPA Guidance Document, *Operations and Maintenance Programs*
- City of Philadelphia Asbestos Control Regulations, for work within the City of Philadelphia
Allegheny County Asbestos Control Regulations, for work within Allegheny County

IV. Definitions

Asbestos-containing material (ACM): ACM includes any material that contains one percent or more asbestos. The analysis of the material is done by polarized light microscopy (PLM) or transmission electron microscopy (TEM).

Class I asbestos work: Class I asbestos work includes the intentional removal of thermal system insulation (TSI), surfacing ACM and presumed ACM (PACM). The removal of more than one bag of asbestos waste is considered Class I work, as opposed to Class III work, which is smaller scale removal for clean up or repair. Only properly trained and licensed workers may do Class I work. Workers must be licensed by the Commonwealth of Pennsylvania Department of Labor and Industry as asbestos abatement workers and supervisors.

Class II asbestos work: Class II asbestos work includes the removal of nonfriable ACM which is not TSI, surfacing ACM, or PACM. Class II work usually refers to removal of floor tiles, roofing, shingles, or transite panels. Workers must be licensed by the Commonwealth of Pennsylvania Department of Labor and Industry as asbestos abatement workers and supervisors.

Class III asbestos work: Class III asbestos work includes repair and maintenance operations, where limited amounts of TSI or surfacing material are likely to be disturbed. For example, Class III operations may involve selected removal to access a valve that needs to be repaired, removing damaged pipe insulation using one glovebag, repair and patching of damaged TSI on a vessel or boiler, and drilling into a transite panel or an asbestos-containing lab bench. Repair is defined to include encapsulation or other sealing of ACM or PACM. Class III operations are limited to the generation of no more than one bag of waste. If more than one bag of waste is generated, the project would be considered a Class I operation. Workers must be licensed by the Commonwealth of Pennsylvania Department of Labor and Industry as asbestos abatement workers and supervisors.

Class IV asbestos work: Class IV asbestos work includes maintenance and custodial work during which employees may contact ACM or PACM, and activities to clean up waste and debris that may contain ACM. Examples of Class IV work include stripping asbestos containing tile floor, and cleaning up small amounts of debris from damaged pipe insulation or surfacing material. General maintenance of floor materials that is not part of a removal project is covered under the general industry standard and is not considered Class IV work.

Competent person: The competent person is someone who can recognize existing asbestos hazards in the workplace, select the appropriate control strategy, and has the authority to take prompt corrective action. The competent person is typically the person in charge of Class I, II, III and IV asbestos work. For Class I and II work, the competent person must have specific EPA model program training as an asbestos abatement supervisor.

Presumed asbestos-containing material (PACM): PACM is TSI and surfacing material found in buildings constructed no later than 1980. Flooring installed prior to 1985 is also PACM. The presumption of a material containing asbestos can be rebutted if building records show the

materials are not asbestos, if there has been a survey and sampling of the materials, or if the materials are clearly fiberglass, expanded foam or rubber.

Permissible exposure limit (PEL): The PEL is the airborne concentration of asbestos fibers that an employee may be exposed to without the use of respirators or other controls. The OSHA PEL is 0.1 fibers per cubic centimeter of air (f/cc), averaged over an eight-hour period. The EPA recommended clearance concentration of 0.01 f/cc is used as the limit in any building to protect the public and Commonwealth employees.

Regulated area: A regulated area is any area where Class I, II, or III work is done, any adjoining area where debris and waste is accumulated, and any work area where there is a reasonable possibility that the PEL will be exceeded.

V. Operations and Maintenance Program

A. Program Overview

An Operations and Maintenance Program shall be established to control asbestos exposures in Commonwealth owned buildings, to provide guidelines for the maintenance of asbestos materials installed in buildings, and to arrange for the removal of asbestos materials if necessary to complete building renovation or maintenance activities. The program shall include:

- Building surveys to identify the location and quantities of asbestos materials.
- A hazard communication program and procedures that includes providing awareness information to Contractors and employees to inform them of the locations and conditions of asbestos materials in project areas.

- Training for individuals who may be responsible to remove asbestos materials, and awareness training for those individuals who may have incidental but unintentional exposure to asbestos materials as part of their jobs.
- Procedures to report damaged asbestos materials.
- Procedures for the removal of asbestos materials.
- Clearance requirements and testing after removal activities.
- Record keeping requirements.
- Providing procedures and training for the management of asbestos in a formal Operations and Maintenance Program, and removal of materials that have become damaged.

B. Facility Surveys

Asbestos surveys have been completed in buildings operated by DGS:

The DGS Fire, Safety and Environmental Division (FSED) maintain the survey report for each DGS owned & operated building, and for the annex properties. The survey reports can be reviewed upon request. The DGS FSED shall ensure the conditions of asbestos materials are reviewed on an annual basis. The Agency Safety Coordinator shall maintain electronic or paper copies of all surveys.

The responsible Supervisor shall review projects that may impact asbestos materials. The responsible Supervisor shall review the work area to identify suspected asbestos materials and review the survey report to verify whether asbestos materials are present. If there are suspected asbestos materials, but a survey is not available, the Agency Safety Coordinator shall be contacted to arrange for sampling of suspect materials. Suspected materials shall not be disturbed until it is known for certain whether asbestos is present. Refer to procedures below for sampling suspect asbestos containing materials.

A request for sampling of suspected asbestos materials shall be forwarded to the Agency Safety Coordinator who will arrange for sampling of the suspect materials. The completed sampling report will be attached to and filed with the building survey.

C. Hazard Communication and Information

1. Signs and Labels

Signs shall be posted at entrances to rooms where asbestos materials are damaged or exposed, or where asbestos work is being performed.

Where feasible, labels shall be placed on installed asbestos materials where the materials are accessible to employees in their workplaces. The labels shall contain the following information:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
KEEP OUT
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA**

2. Hazard Communication

Employees shall be informed that buildings may contain asbestos during initial orientation. They shall be informed of the location of the asbestos survey, and procedures to follow if damaged ACM is observed. The effective hazard communication program shall be used in addition to signs and labels. Contractors shall be informed of the locations and types of asbestos materials in their project areas.

D. Training

1. Initial Training

a. Awareness Information

Information regarding asbestos presence and locations are available through the DGS FSED office. The information should include:

- Location and types of asbestos materials in their work areas.
- The location of the asbestos survey for the building.
- Procedures to follow if damaged asbestos materials are observed.

If employees could have unintentional contact with asbestos materials because of their job requirements, they shall also receive training following the requirements for awareness training for workers. This would generally include plumbers, HVAC mechanics, certain carpenters, maintenance and custodial workers. The training shall include:

- Health effects associated with asbestos exposure.
- Synergistic effects of asbestos exposure and cigarette smoking.
- Procedures to follow to avoid exposure.
- Procedures for floor maintenance.
- Definition of Class I, II, III and IV asbestos work.
- Training requirements for Class I, II, III and IV workers.

b. Inspector Training

Any employee who will conduct a survey to sample and/or assess asbestos materials shall complete the three-day EPA certified Asbestos Building Inspector training. People who may collect bulk samples of asbestos containing materials shall be licensed by the Pennsylvania Department of Labor & Industry as Building Inspectors.

c. Abatement Worker Training

Asbestos abatement workers conducting Class I, II, or III asbestos abatement shall complete the EPA 32-hour Asbestos Worker training. Asbestos abatement workers shall be licensed by the Pennsylvania Department of Labor and Industry as Asbestos Abatement Workers. If work occurs in Philadelphia or Allegheny County, the workers shall be

licensed to complete work in those areas.

d. Asbestos Abatement Supervisor Training

The supervisor or competent person on any abatement project shall complete the EPA 40-hour Asbestos Supervisor training and be licensed by the Pennsylvania Department of Labor & Industry as an Asbestos Abatement Supervisor.

e. Training Records

All training records, copies of course outlines, copies of completion certificates and copies of licenses shall be maintained according to agency guidelines.

2. Refresher Training

Awareness training shall be repeated annually or as conditions change, or if new people are potentially exposed to asbestos materials.

Licensed Workers, Supervisors, and Inspectors shall complete the EPA approved refresher training annually, and shall renew applicable licenses.

E. Reporting Damaged Asbestos Containing Materials

1. Leased Buildings

The Building Owner or Property Manager shall be notified of and shall be responsible to repair or remove any damaged asbestos containing material such as pipe insulation or floor tiles. Contact the Agency Safety Coordinator if asbestos materials are damaged and present an exposure to employees.

2. Commonwealth Owned Buildings

Employees should report the location of damaged asbestos materials to their Supervisor, who will contact the Building Manager. If damaged ACM is discovered, the Supervisor shall isolate the area to prevent exposures to employees and the public. The Building Manager shall contact the DGS FSED to arrange for repair or removal. Procedures shall follow EPA recommendations, requirements of [29 CFR 1926.1101\(g\)](#) and local regulations, as applicable. The DGS FSED shall decide whether the work is done internally or completed by an outside contractor.

F. Maintaining Asbestos Containing Floor Tiles

Specific work practices must be employed during maintenance of asbestos containing floor tiles to prevent damage to the tiles and possible release of asbestos fibers. Requirements are:

- Sanding of flooring material is prohibited.
- Stripping of finishes shall be conducted using low abrasion pads at speeds less than 300 rpm and wet methods.
- Burnishing or dry buffing may be performed only on flooring that has sufficient wax or finish so the pad cannot contact the flooring material.

Maintenance Supervisors or Building Managers shall ensure employees who are assigned to maintain floors are provided with asbestos awareness training, and the proper equipment to complete the work according to the requirements above.

VI. Asbestos Abatement Procedures

A. General Requirements

The DGS FSED shall ensure:

- Removal or repair is done according to EPA guidelines, Commonwealth of Pennsylvania requirements and local regulations as applicable.
- Notifications are submitted to the Commonwealth of Pennsylvania, Environmental Protection Agency and local agencies.
- All abatement work is conducted inside Regulated Areas that are enclosed to prevent exposure to the public, and posted with OSHA warning signs. Any area where Class I, II, or III asbestos removal is done is referred to as a Regulated Area. Only those employees or contractors who are trained in the hazards of asbestos, and have the proper PPE are allowed to enter the Regulated Area. The Regulated Area shall be demarcated with signs bearing the following information:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
KEEP OUT
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA**

- Licensed contractors are retained to conduct the work, or abatement may be completed by the FSED. If FSED conducts the removal, workers must be licensed by the Commonwealth. A licensed asbestos abatement supervisor must supervise the work.
- The DGS Industrial Hygienist or an Environmental Consultant conducts project inspections, clearance inspections and air sampling according to local and state regulations.
- Asbestos surveys are updated to document the location and quantity of asbestos removed.

- Documents are retained for the project including project notifications, copies of contractor and worker licenses, project logbook, air sampling results, certification of clearance inspections, and final clearance air sampling results. Waste manifests documenting the proper disposal of asbestos waste shall be maintained with the project information.

B. General Class I Removal Procedures

Removal of thermal system insulation, acoustic plaster, or other types of friable asbestos containing material shall follow the requirements of the OSHA standard [29 CFR 1926.1101\(g\)](#). The Competent Person or a Licensed Asbestos Project Designer shall review and approve the project set up and removal procedures. The specific requirements of the project and materials to be removed shall be considered in the project design, but the following general requirements shall apply:

1. Post regulated work area signs at all entrances to the work area.
2. Pre-clean the work area using HEPA vacuuming and wet methods.
3. Install critical barriers over all openings into the work area such as doors, windows, HVAC diffusers, etc. Critical barriers shall be installed with two layers of 6-mil polyethylene sealed with tape.
4. Cover fixed objects with one layer of 6-mil polyethylene sealed with tape.
5. Install a three-stage decontamination facility with a shower and attach to the work area.
6. Install HEPA exhaust in the work area and direct the discharge to the exterior of the building through a manifold installed in a window or door. Maintain a negative pressure within the work area of 0.02 inches water gauge, measured by a recording manometer.
7. Construct an enclosure with two layers of 6-mil polyethylene on the walls and floors or construct a mini-enclosure with two layers of polyethylene supported by wood or metal studs.
8. Request a work area preparation inspection by the DGS Industrial Hygienist or Environmental Consultant.
9. Remove asbestos materials using wet methods.
10. Bag the wetted material in properly labeled 6-mil disposal bags.
11. Clean to remove all visible dust, debris and water from all surfaces.

12. Remove inner layers of polyethylene and reclean the work area. Critical barriers shall remain in place until clearance has been achieved.
13. Encapsulate the entire work area, if applicable.
14. Request a clearance inspection by the DGS Industrial Hygienist or Environmental Consultant.
15. The DGS Industrial Hygienist or Environmental Consultant shall conduct clearance sampling inside the work area and verify the final clearance concentration is within applicable regulations.

C. Glovebag Removal Procedures

Pipe insulation may be removed from horizontal pipes using glovebag removal techniques. Glovebag work areas shall be constructed as follows:

1. Install covers over all critical barriers.
2. Install a secondary containment with one layer of 6-mil polyethylene.
3. Install a HEPA exhaust that is directed to the outside of the building.
4. Install a two or three stage decontamination facility as required by OSHA regulations and local regulations.
5. Remove pipe insulation using glovebags sealed with tape. The DGS Industrial Hygienist or Environmental Consultant shall verify the glovebags are airtight before removal begins.
6. Clean the area, encapsulate, and prepare for clearance sampling as per the procedures above. The secondary containment and HEPA exhaust shall remain in place until final clearance of the work area is achieved.

D. Floor Tile and Mastic Removal Procedures

1. Install a limited enclosure with critical barriers and HEPA exhaust. Follow the requirements of the OSHA standard [29 CFR 1926.1101\(g\)\(8\)\(i\)](#).
2. Install a two-stage decontamination facility.
3. Remove floor tiles with wet methods and manual scraping. Alternately, the floor tiles can be removed intact after diking and flooding the area, or

by removing the tiles with an infrared heating machine.

4. In Philadelphia, establish a fully enclosed work area unless the tiles are all removed intact.
5. Remove asbestos containing mastic by using a low odor hydrocarbon mastic solvent, a citrus-based mastic softener, or a soy based mastic remover. The soy based remover would be preferred in sensitive areas where odors could be a problem. Do not use mastic removers containing methylene chloride. Maintain Safety Data Sheets for all chemicals used during the project.
6. Thoroughly clean the project area with wet methods and HEPA vacuuming and remove all dust, debris and water.
7. Prepare the work area for clearance sampling by the DGS Industrial Hygienist or Environmental Consultant.

E. Personal Protective Equipment

The DGS FSED shall be provided with and use personal protective equipment at all times when asbestos materials may be disturbed. Requirements for personal equipment shall follow the requirements of the OSHA standard [29 CFR 1926.1101](#)(h) for Respiratory Protection, and section (i) for Protective Clothing. The following PPE is generally used for all asbestos abatement:

- Tyvek suits that cover the entire body, head and feet.
- Safety glasses or full-face respirators.
- Safety shoes or boots.
- Gloves.
- Respirators equipped with HEPA filters. The Competent Person shall conduct workplace air monitoring to decide the level of respiratory protection to be used, ranging from full-face, powered, air-purifying respirators (PAPR), to full-face, negative pressure respirators, to half face negative pressure respirators. Refer to the OSHA standard for protection factors and selection criteria of the types of respiratory protection. Employees shall be fit-tested for respirator use at least twice per year, using qualitative or quantitative fit test procedures. Disposable respirators shall not be used.

Personal protective equipment shall be decontaminated or disposed of as asbestos waste at the conclusion of the project.

VII. Medical Monitoring Procedures

All DGS employees who may be involved in Class I, Class II or Class III asbestos abatement shall be included in a medical monitoring program that meets the requirements of the OSHA standard [29 CFR 1926.1101\(m\)](#). The medical program generally includes an annual medical review by a licensed medical professional, pulmonary function testing, and periodic chest x-rays and EKGs. The records of employee medical monitoring shall be maintained in the employee confidential personnel files for thirty years beyond employment. The Agency Safety Coordinator shall be informed if any employee is not medically fit to wear a respirator. Such employees shall be restricted from working on DGS environmental work.

VIII. Testing and Monitoring

A. Environmental Testing

The DGS Industrial Hygienist or Environmental Consultant shall conduct environmental monitoring during all asbestos abatement projects to verify asbestos is not released from the work area. The type and number of samples will be dependent on the specific project, but will generally include the following types of samples:

- Background samples to measure fiber concentrations inside and outside the work area.
- Clearance samples after the project is completed, but before the area is cleared for re- occupancy.

In Philadelphia, the Environmental Consultant shall be certified and licensed as an Asbestos Project Inspector (API).

Background and project air samples shall be analyzed by an American Industrial Hygiene Association accredited laboratory or by an analyst who is certified in the AIHA Asbestos Analyst Registry. Samples shall be analyzed by phase contrast microscopy (PCM).

Clearance samples shall be analyzed by PCM or transmission electron microscopy (TEM) if required by local regulations. The DGS Industrial Hygienist or Environmental Consultant may confirm any PCM clearance samples with additional TEM analysis.

B. Collecting Bulk Samples

If bulk samples must be collected to determine whether materials contain asbestos, the following procedures shall be followed:

1. A licensed Asbestos Building Inspector shall collect the samples.
2. Mist the area to be sampled with amended water.

3. Collect a sample of thermal system insulation (TSI) or surfacing material by coring through all layers with a hollow bit or a cork borer. To prevent a fiber release, drill through a wet sponge to control the fibers. Collect at least three samples of each homogeneous material. Collect at least one cubic inch of material and seal it in a snap cap vial.
4. Seal the TSI sampling point with caulk and cover with duct tape. For future reference, label the sample location with the sample identification.
5. Seal sample locations of surfacing material by spraying with encapsulant.
6. For floor tiles, collect sample behind furniture or in damaged areas to prevent damaging finished surfaces.
7. Collect approximately 1 square inch of floor tile and ensure that the mastic is collected with the tile.
8. Submit the samples to an AIHA and NVLAP certified laboratory for analysis by polarized light microscopy. Floor tiles and mastic may need to be analyzed by transmission electron microscopy (TEM) to conclusively determine whether asbestos is present. Put all samples inside a zip-lock bag and submit with a completed chain of custody. Keep the chain of custody outside the bag of samples to prevent contamination of the paperwork.

IX. Contractors

Only Commonwealth of Pennsylvania licensed contractors shall be used to conduct asbestos abatement work. Other contractors must be informed of the locations of asbestos materials before they begin their work.

X. Recordkeeping/Documentations

Records of all asbestos abatement shall be maintained by the Agency Safety Coordinator. Surveys shall be updated to indicate the materials that were removed, or conditions that were changed. Records and documentation of any asbestos abatement shall be maintained.

The following records shall be maintained for thirty years following an abatement project:

- Copies of project design drawings or specifications.
- Copies of notifications and permits.
- Copies of air sampling data sheets and the daily site log maintained by the

DGS Industrial Hygienist or Environmental Consultant throughout the project.

- Names and license numbers of abatement workers.
- Copies of clearance sampling reports.
- The original waste manifests certifying the waste was disposed at an EPA or Pennsylvania licensed asbestos landfill.

XI. Notifications/Reporting

Notifications shall be submitted to federal, state and local authorities for any large asbestos project. The abatement contractor is responsible to submit the notifications and should provide a copy of the notification to the Agency Safety Coordinator. A copy of the notification shall be posted at the project site.