

# Asbestos Management

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### **1. Policy Statement**

Dalhousie University recognizes that inhalation of asbestos fibres can lead to illness. As many of Dalhousie's buildings were constructed before the harmful effects of asbestos were known, asbestos-containing material was fairly commonly installed in some University. Although over the past decade Dalhousie has made considerable strides in removing asbestos from many locations in University buildings, asbestos remains in some buildings. Other sources of asbestos are likely to be encountered as renovations open concealed areas of buildings.

Dalhousie is committed to managing the asbestos that is present in University buildings to minimize exposure to airborne asbestos to protect the health of people. Its long term goal is to remove all asbestos from all University buildings.

To deal with the asbestos which remains in University buildings, Facilities Management and Communications Services have developed, in co-operation with the Dalhousie Environmental Health and Safety Committee, an Asbestos Management Program.

The Program aims to ensure that no-one is exposed to harmful asbestos fibres in the air by detailing the practices that are to be followed when working with or around asbestos and the responsibilities and training of those involved.

### **2. Introduction**

The elements of the University's Asbestos Management Program are:

Identification of the locations where asbestos-containing material is present.

Prompt repair or remediation as appropriate when inhalation exposure to asbestos fibres is possible.

The control of access to areas where friable asbestos-containing material is present.

Inspections of friable asbestos-containing material to ensure that asbestos is properly encapsulated.

The provision of training and appropriate procedures for all work with asbestos and work areas where asbestos is present.

Supervision of properly qualified staff and external contractors performing work which could disturb asbestos-containing material.

Notification of building occupants where asbestos related work will be carried out in "public" areas of University buildings.

### **3. Scope**

This Program applies to all buildings and structures owned by the University, to all employees and students of the University, to occupants of University buildings, and to external organizations who may come into contact with or disturb asbestos-containing material in University buildings. The Program applies to routine work during which an employee might encounter asbestos as well as work undertaken to repair or remove asbestos-containing material.

## **4. Definitions**

### **4.1 Asbestos**

Asbestos is a generic term describing a family of naturally occurring fibrous silicate minerals. As a group, the minerals are non-combustible, do not conduct heat or electricity, and are resistant to many chemicals. Although there are several other varieties that have been used commercially, the most common asbestos mineral type likely to be encountered in Dalhousie buildings is chrysotile (white asbestos). Less likely to be encounter are amosite (brown asbestos) or crocidolite (blue asbestos).

### **4.2 Friable Asbestos**

Friable asbestos material means finely divided asbestos or asbestos-containing material that can be crumbled, pulverized, or powdered by hand pressure. Individual fibres in friable asbestos-containing material can potentially become airborne and can then present a health hazard. Friable asbestos-containing material found in some Dalhousie buildings includes:

- Sprayed fibrous fireproofing
- Decorative or acoustic texture coatings
- Thermal insulation

### **4.3 Non-friable Asbestos**

Non-friable asbestos includes a range of products in which asbestos fibre is effectively bound in a solid matrix from which asbestos fibre cannot normally escape. Non-friable asbestos products include asbestos cement pipe, tiles and boards, and asbestos reinforced vinyl floor tiles. Non-friable asbestos is also found in some plaster (typically in an underlying – often quite coarse layer - beneath a finer plaster finish coat) and in the taping compound used until about the mid 1970s to join sheets of drywall.

#### **4.4 Categories of Asbestos Work**

Dalhousie divides asbestos work into three categories:

##### **Category 1**

Category 1 work includes the installation or removal of non-friable asbestos in which the asbestos fibre is locked in a binder such as plaster, cement, vinyl, or asphalt which holds the material together. Category 1 work will generally not involve significant breakage, abrasion, or similar practices which might be expected to release fibres. Also included in Category 1 is cleaning up of minor amounts of asbestos-containing debris in which the clean up of the material is carried out in accord with the procedures outlined in AWP 1.2.

##### **Category 2**

Category 2 work involves work with friable asbestos that is of short duration in situations which create low levels of airborne asbestos and work with non-friable asbestos which could release small amounts of asbestos fibres. Examples of Category 2 work include:

- Enclosure of friable asbestos.
- Application of tape or sealant to asbestos-containing pipe insulation.
- Removal or cleanup of small quantities of friable asbestos.
- Minor installation, maintenance, or repair work above false ceilings where sprayed-on asbestos fireproofing is present on beams, where the work does not disturb the sprayed-on asbestos and where the work is carried out in accord with the procedure outlined in AWP 1.5.
- Minor renovation or repair on asbestos-containing plaster walls and ceilings which requires drilling of holes or scarping or removal of up to 1 square meter of plaster where the work is carried out in accord with the procedures outlined in AWP 1.6.
- Minor renovation or repairs on drywall on which asbestos-containing taping compound was used provided that the work is limited to no more than 10 square meters and where the work is carried out in accord with the procedures outlined in AWP 1.7.
- Repair or replacement of up to 3 square meters of vinyl asbestos tile where the work is carried out in accord with the procedures outlined in AWP 1.7.
- Minor glove bag removal of friable or non-friable asbestos thermal insulation in accord with the procedures outlined in AWP 1.7.
- Collection of samples of building materials for asbestos determination.

At Dalhousie, Category 2 work may be carried out by either University staff or by external contractors.

### **Category 3**

Category 3 work involves possible exposure to friable asbestos over long periods of time or work that generates high levels of asbestos. Included in Category 3 work are removal projects where relatively large amounts of asbestos are removed from a building including removal of friable asbestos from structural material, cleaning or removal of heating or air handling equipment that has been insulated with asbestos. Also included in Category 3 are projects which exceed the scope of Category 2 work.

At Dalhousie, Category 3 work is normally contracted to external contractors.

## **5. Asbestos Inventory and Identification**

### **5.1 Asbestos Inventory**

Dalhousie University has prepared an inventory of the type and locations of asbestos-containing material to:

- Enable the material to be inspected on a regular basis to determine its condition.
- Provide for ongoing maintenance and repair of damaged asbestos- containing material and required cleanup of asbestos-containing debris.
- Type of asbestos-containing material (sprayed fireproofing, texture coating, or thermal insulation).
- The location of the material.
- Sampling date.
- The type and percent asbestos present.

As is not always easy to visually identify asbestos, the inventory also contains sampling results showing the absence of asbestos in material which might be mistaken for an asbestos-containing material.

Additional sampling continues to undertaken which identify new locations where asbestos is present. For these reasons the inventory will be incomplete for some years to come. Responsibility for maintaining the inventory rests with the Requirements Manager.

Staff of Facilities Management can have the inventory searched by Zone Supervisors in each of Engineering Services' Zone Offices as well though Engineering Services' Manager of Maintenance in the Central Services Building.

### **5.2 Asbestos Identification**

The asbestos identification systems operate in tandem with the inventory to alert people to the presence of asbestos. The presence of asbestos in sprayed-on insulation above false ceilings is indicated by signs placed on walls. Where feasible, wrapping on asbestos-containing pipe and fitting insulation is marked with yellow paint. When asbestos has been removed and replaced with material which might be mistaken for asbestos, the wrapping is marked with blue paint. Warnings may also be placed near the entrances of rooms - particularly mechanical rooms - where unusually large amounts of asbestos are be present.

## **6. Inspection**

Inspection of the condition of friable asbestos is integrated into Facilities Management's routine inspection program. As part of the routine inspections, staff of Engineering Services inspect and report on the status of facilities and equipment in University buildings. As they conduct these inspections staff required to report damage to asbestos to a supervisor. Upon receipt of such a report supervisors are responsible for ensuring that situations are promptly resolved.

Facilities Management staff encountering material which the staff member believes might contain asbestos is required to report the situation to a supervisor. Again the supervisor is responsible for ensuring that the asbestos content is clarified by checking the Asbestos Inventory or, when appropriate, by having the material sampled and analyzed.

Other University employees are also required to report damage including damage to asbestos. Reports of damage should be made to the staff member's supervisor, Facilities Management, or the Environmental Health and Safety Office.

## **7. Access Control**

Access to mechanical and electrical rooms, service shafts, tunnels, and other locations is restricted to authorized personnel. It is in such locations were unusually large amounts of asbestos or friable asbestos are likely to be present.

Where sprayed-on fireproofing which contains asbestos is present in a building above a false ceiling, access to the space is restricted to staff of Facilities Management, Communications Services, and authorized contractors. All such work must be carried out in accord with Facilities Management directions.

Where asbestos is present in areas of Dalhousie to which students and staff of units other than Facilities Management have access, the asbestos is most often non-friable. When undisturbed these materials present no hazard.

## **8. Repair and Maintenance of Asbestos-Containing Material**

Should an employee or a contractor encounter material which is not identified, is not listed in the Asbestos Inventory, and which might reasonably be expected to contain asbestos, the person will stop any work which could create airborne asbestos fibre and report the discovery to a supervisor. Where it is determined that friable asbestos-containing material is in a condition that could likely lead to inhalation exposure, the supervisor will immediately limit access to the location and initiate repairs, removal, or encapsulation. Where there is reasonable doubt about the composition of a friable material, it will be treated as asbestos until testing demonstrates that asbestos is present at levels below 0.5%.

Clean-up and repair of asbestos-containing material will only be carried out following the appropriate clean up procedure by staff who have been appropriately trained.

In carrying out other work all staff are required to exercise care around asbestos-containing material and avoid any activities which could damage the material and potentially release asbestos fibres into the air.

When routine work is to take place in an area where asbestos is present or when the work might release asbestos fibres, employees will be informed of the potential for exposure. If upon reviewing the work situation the employee believes that planned work practices will not provide an adequate measure of safety, the employee will report these concerns to the supervisor. The supervisor will review the work situation and authorize any required additional precautions.

Academic and administrative units will be informed in advance when Category 1 or 2 work is to be carried out in "public" areas of University buildings which they occupy.

## **9. Training**

All University employees who remove, repair, or work around friable asbestos and those whose work might disturb friable asbestos-containing material will be trained to carry out their work without endangering themselves, their co-workers or other building occupants.

### **Level 1 Training**

All 'field' employees of Facilities Management who do not receive Levels 2 or 3 training will receive Level 1 training which will acquaint them with:

- Types, properties and uses of asbestos.
- Ways to recognize asbestos.
- Hazards of asbestos fibre inhalation.
- Types of activities which could release asbestos fibres.
- University Asbestos Inventory and Asbestos Identification system.
- Provincial regulations regarding work with asbestos and disposal of asbestos-containing wastes.

Only those with Level 1 training will carry out or supervise Category 1 asbestos work.

### **Level 2 Training**

All those Dalhousie University staff who carry out Category 2 or 3 work will also receive training in:

- Ways to recognize and avoid damage to asbestos-containing material.
- Use, fitting, limitations, care and disposal of protective equipment.
- Asbestos containment and ventilation during removal.
- Wet and dry clean up procedures.

Only those with Level 2 training will carry out or supervise Category 2 asbestos work.

### **Level 3 Training**

Level 3 training will be provided for insulators and others who are authorized to remove friable asbestos and for those who supervise asbestos removal work that is performed by Dalhousie staff. Level 3 training provides staff with the practical, hands-on experience in all phases of small and medium scale asbestos removal appropriate to the tasks that they will be expected to perform

## **10. Work Contracted to External Firms**

### **10.1 Asbestos Removal Work**

Major asbestos removal is normally contracted to external firms which specialize in asbestos removal work. Dalhousie requires that all such work be carried out in accord with the Asbestos Management Plan and the requirements established by the Nova Scotia Department of Environment and Labour. Further Dalhousie requires that all people employed in these projects be fully trained and use the protective equipment required.

At all such projects, the contractor will ensure that clean-up is properly completed and that all asbestos and asbestos-contaminated material is collected and disposed of in accord with the Nova Scotia Department of Environment and Labour regulations. The contractor will be required to submit air testing results to demonstrate that the clean-up has been carried out properly and the area can be re-occupied safely.

### **10.2 Other Work**

Dalhousie often employs contractors to service equipment such as elevators, telephones, refrigeration, and air conditioning equipment and to carry out other construction and renovation projects. When contractors are required to work in areas where asbestos is present or there is a possibility of disrupting asbestos-containing material Dalhousie will provide:

- Notification of the known locations and types of asbestos present (or suspected to be present) in the area where the contractor will work and

- Information on Dalhousie's asbestos labeling system.
- Dalhousie requires that contractors carrying out tasks which could potentially create asbestos-containing dust.
- Follow work practices that reduce to the extent practical the creation of airborne asbestos dust and which meet the asbestos safety standards set by the Nova Scotia Department of Environment and Labour.
- Immediately report to Facilities Management or Communications Services when damage occurs to asbestos-containing materials.
- Employ only workers who have been trained in asbestos safety.

## **11. Disposal of Waste Asbestos**

In Nova Scotia, disposal of asbestos and asbestos-contaminated material is regulated by the Department of Environment and Labour under the Waste Asbestos Disposal Regulations. All waste asbestos and material contaminated with asbestos created by Dalhousie University activities must be disposed of in accord with these regulations.

### **Appendix: Asbestos Work Procedures (AWP)**

#### **AWP 1.1: Discovering Damaged Asbestos**

When a staff member of Facilities Management discovers what appears to be damaged asbestos-containing material the individual will report the situation to a supervisor. The supervisor will respond promptly to:

1. Direct that work that would liberate asbestos fibre be discontinued until the potential for asbestos exposure has been clarified.
2. Determine the asbestos content of the suspect material through the asbestos inventory or when necessary by having the material sampled and analyzed for asbestos.
3. Report the results of the analysis to the Requirements Manager for inclusion in the Asbestos Inventory.

When the testing indicates that damaged material contains asbestos at levels above 0.5%, the supervisor will promptly initiate clean up and removal or repair of the damaged material.

#### **AWP 1.2: Clean up of Asbestos Containing Material**

Asbestos only poses a health hazard when it becomes airborne and people inhale the fibre. When asbestos-containing material has been disturbed, effective clean up will ensure that asbestos does not present a health hazard. Clean up of dust which might contain traces of asbestos, such as a custodian might encounter in routine cleaning in buildings where asbestos is present, will not require special precautions. To ensure that clean up of significant quantities of asbestos will not expose staff to airborne asbestos fibre, the following procedures will be followed:

Procedures:

### **Clean up of non-friable asbestos or small quantities of friable asbestos:**

1. Clean up of non-friable asbestos or dusts which may contain trace amounts of asbestos will be carried out by staff members who have received Level 1 training employing clean up practices which minimize the potential for creating airborne dust. When practical, wet or HEPA filter vacuum techniques will be used.
2. Large pieces of non-friable asbestos containing material will be collected by hand and properly bagged in accord with the disposal procedure described in AWP 1.12.

### **Clean up of moderate quantities of friable asbestos:**

1. Clean up of significant amounts of friable asbestos-containing material will be only be done by staff members who have completed Level 2 training (or are accompanied by a staff member who has completed Level 2 training) and who are wearing appropriate protective clothing (disposable Tyvek coveralls or equivalent) a fitted, air-purifying respirator which provides P100 levels of filtration.
2. Dry sweeping of asbestos-containing waste or other clean up activities which would create airborne dust are not permitted.
3. Large pieces of asbestos containing material will be collected by hand and properly bagged in accord with the disposal procedure.
4. Clean up of asbestos-containing dust will be carried out using a vacuum equipped with a HEPA filter. Alternatively the dust will be thoroughly wetted and clean up with a wet mop or a wet vac. Contaminated water will be discharged to a sewer. Containers, mops and other equipment which might be contaminated with asbestos will be rinsed with water and the rinse water discharged to a sewer.

Facilities Manage has two vacuum cleaners which are reserved exclusively for use in asbestos clean up Each is equipped with HEPA filtered exhaust and is labeled as ASBESTOS ONLY. They are stored on the third floor of the Central Services Building. Servicing of these vacuum cleaners will be carried out by staff members who have completed Level 2 training in accord with the procedure set out in AWP 1.11.

### **AWP 1.3: Work With Non-Friable Asbestos-Containing Materials**

Asbestos that is effectively bonded in a non-asbestos matrix cannot easily become airborne. As a result, there is little risk of inhalation exposure to asbestos provided the material is not broken or abraded. To ensure that minor work involving non-friable asbestos including vinyl asbestos tile, asbestos-containing plaster, asbestos asphalt roofing, and asbestos ceiling and wall tile) does not create asbestos exposure the following procedure will be followed:

Procedures:

1. Before beginning the work the worker will carefully inspect the asbestos-containing material to ensure that the planned work will not create airborne asbestos dust.

2. Where dust that might contain asbestos fibre is present, the worker will clean the material using a wet method or a HEPA filtered vacuum.
3. Following completion of the task the worker will carry out any required clean up using wet methods or a HEPA filtered vacuum and will then carefully bag for disposal all asbestos containing waste.

Note: Cutting, drilling, sanding, or breaking the material are likely to create airborne asbestos dusts and will require additional precautions.

#### **AWP 1.4: Drilling and Cutting Into Floors of Wooden Structures (Campus Houses)**

Testing has shown that a number of University houses have floor structures which contain a layer of asbestos paper that might be disturbed by alteration or renovation activities. To ensure that airborne levels of asbestos fibres are minimized the following procedure will be followed when drilling or cutting into floors of all University houses.

Procedures:

1. Only a staff member who has completed Level 2 training (or who accompanied by a staff member who has completed Level 2 training) and who is wearing appropriate protective clothing (disposable Tyvek coveralls or equivalent) and a properly fitted, air-purifying respirator which provides P100 levels of filtration will drill or cut into floors of campus houses.
2. Cutting and drilling work will only be carried out with a HEPA filtered vacuum in operation nearby to capture dust created by the cutting or drilling.
3. After cutting or drilling is complete and prior to doing any other work in the vicinity, the area will be cleaned using wet techniques or a vacuum equipped with a HEPA filter. Within Facilities Management there are two designation shop vacuums marked "Asbestos Only" which are stored on the third floor of the central Services Building.
4. It is not normally necessary to remove equipment or furnishings from the area before undertaking small tasks of this type, nor is it normally necessary for other people to vacate the area.

#### **AWP 1.5: Work Above False Ceilings Where Asbestos Insulation is Present on Building Structure**

Only workers who have successfully completed Level 2 training (or who accompanied by a staff member who has completed Level 2 training) and who are authorized to do so by Facilities Management may move ceiling tiles or perform work above the dropped ceilings where asbestos insulation is present on building structures. The following procedure shall be used whenever minor work such as installation of telephone or computer lines, or servicing of ventilation or lighting system components requires work above the suspended ceiling:

Procedures:

1. Before removing a ceiling tile, the area around the tile shall be isolated by creating an enclosure of 4 mil or heavier polyethylene sheeting. The sheeting shall be taped to the ceiling t-bar and the floor using duct tape.
2. Those working within the enclosure shall wear appropriate protective clothing (disposable Tyvek coveralls or equivalent) a properly fitted, air-purifying respirator which provides P100 levels of filtration.
3. Air supply or return grills located within the enclosure shall be sealed with 4 mil or thicker polyethylene sheeting to prevent contamination of the ventilation system.
4. The ceiling tile shall be carefully removed and the upper surface vacuumed with a vacuum fitted with a HEPA filter.
5. The worker shall then carefully vacuum the upper surface of surrounding tiles before carrying out the assigned task.
6. Following completion of the above-the-ceiling work, the removed ceiling tile shall be replaced and the interior of the enclosure carefully cleaned using wet cleaning techniques or a HEPA filtered vacuum.

Note: Additional precautions may be required depending upon the specific tasks to be undertaken. Any task which is likely to disrupt the sprayed-on insulation will require additional precautions.

### **AWP 1.6: Repairs to Asbestos-Containing Insulation**

Where asbestos is known or believed to be present in damaged insulation, repairs, or removal are required to prevent asbestos fibre from becoming airborne. Only workers who have successfully completed Level 3 training and who are authorized to do so may undertake such repairs or removal. The following procedure will be used whenever minor repairs to asbestos-containing insulation is undertaken:

Procedures:

1. Access to areas where minor repair is to be carried out will be restricted to authorized people only. When necessary, signs will be posted advising of access restrictions.
2. Workers repairing asbestos containing insulation will wear appropriate protective clothing (disposable Tyvek coveralls or equivalent) and a properly fitted, air-purifying respirator which provides P100 levels of filtration.
3. Before beginning the repair, the area will be carefully cleaned using the Clean up of Asbestos-Containing Material Procedure (AWP 1.2).
4. When feasible a drop cloth shall then be placed beneath the insulation to be repaired.
5. Before beginning the repair, all practical steps (wetting with amended water, encapsulating adjacent asbestos-containing material, etc.) will be taken to prevent the release of asbestos fibres.
6. Following the repair the worker will carefully bag for disposal all asbestos- containing waste and clean the surrounding area using wet cleaning techniques or a HEPA filtered vacuum.

### **AWP 1.7: Minor Repairs to Asbestos-Containing Plastered Ceilings and Walls.**

The base coats of plastered walls and ceilings in a number of Dalhousie buildings contain 0.5% - 5% asbestos – usually of the chrysotile variety. In an undamaged state the asbestos fibre is effectively trapped in the plaster. As a result, the fibre cannot become airborne. However, while affixing items to the wall or during repairs to the plaster, it is possible to create dust from the base coat, which might release fibres into the air.

To prevent exposure to airborne asbestos fibre minor renovation or repair of asbestos-containing plaster walls and ceilings which requires, drilling of holes, hand scarping or, manual removal of up to 1 square meter of plaster will be carried out in accord with the following procedures:

Procedures:

1. The supervisor shall ensure that occupants of immediate areas of the building have been notified that work will be carried out.
2. Prepare the site to minimize the potential for contamination. Move furniture or equipment that is easily relocated. Cover or wrap in plastic any remaining furniture and equipment which is likely to become contaminated or which would render clean up difficult.
3. Close the door to the room and seal air supply or return grills located within the room with 4 mil or thicker polyethylene sheeting to prevent contamination of the ventilation system.
4. Those carrying out the work will have completed Level 2 training (or are accompanied by a staff member who has completed Level 2 training) and will wear appropriate protective clothing (disposable Tyvek coveralls or equivalent) and a fitted, air-purifying respirator which provides P100 levels of filtration.
5. To the extent practical hand tools rather than power tools will be used and a HEPA filtered vacuum will be operated nearby to capture dust.
6. Upon completion of the work the area will be thoroughly cleaned up using a HEPA filtered vacuum or wet techniques as described in AWP 1.2.

Note: Larger projects will be treated as category 3 work.

### **AWP 1.8: Single Use Glove Bag Procedure**

The following procedure will be followed when single-use asbestos removal glove bags are used. The procedure may only be used on tasks that are small enough to be completely enclosed in the glove bag and which do not leave exposed asbestos in place when the bag is removed.

Procedures:

1. Only a staff member who has completed Level 3 training and who is wearing appropriate coverall and an air purifying respirator (3M 6000 Series with a purple, 6240 particulate filter or equivalent) will carry out glove bag removal of asbestos.

2. Before beginning removal work, access to the area will be restricted. If the work site is located in areas where other Facilities Management staff might be exposed to asbestos and in all work sites located in publicly accessible areas, warning notices will be posted.
3. Steps will be taken to prevent accidental movement, contact with heat, cold or electricity, or release of chemicals.
4. The work area will be cleaned using a HEPA filtered vacuum or wet cleaning to remove asbestos-containing material contaminating the immediate work area. Where possible a plastic sheet will then be placed beneath the pipe or fitting from which the asbestos is to be removed.
5. Steps will be taken to prevent exposure where damage to the insulation might allow release of fibres. Steps include making temporary repairs using duck tape or wetting the exposed fibre using amended water.

#### Glove Bag Removal:

1. The asbestos-containing material will be thoroughly wetted using amended water.
2. With tools in bag, the single-use bag will be positioned and secured using adhesive and tape as necessary.
3. Working through the gloves, the asbestos will be removed exercising care to avoid puncturing the bag.
4. When removal is complete or bag is full, sprayer (containing amended water) will be inserted into the bag and the pipe or fitting, tools and the bag interior will be washed. Tools will then be placed in an inverted glove withdrawn from bag and the glove sealed from the bag using duct tape.
5. The tools will then be removed by cutting through the duct tape ensuring that both the bag and the glove remain sealed.
6. The tools will then be submerged in water and the glove opened. Tools will be cleaned under water.
7. The glove bag will then be carefully removed, sealed and placed in a sealed container pending packaging for disposal.

#### Clean Up:

1. The surface of the pipe or fitting will be carefully wet wiped and treated with sealer.
2. The plastic sheet will then be carefully wet wiped and rolled up.
3. All solid waste created during removal jobs including glove bags, disposable coveralls, wipe rags and plastic sheeting will be treated as asbestos containing waste and handled as detailed in the disposal procedure.

### **AWP: 1.9: Multiple-Use Glove Bag Procedure**

This procedure describes the use of multiple use glove bags. It may be used on tasks that require the bag to be repositioned to complete the entire job.

#### Procedures:

1. Only a staff member who has completed Level 3 training and who is wearing appropriate coverall and an air purifying respirator (3M 6000 Series with a purple, 6240 particulate filter or equivalent) will carry out glove bag removal of asbestos.
2. Before beginning removal work, access to the area will be restricted. If the work site is located in areas where other Facilities Management staff might be exposed to asbestos and in all work sites located in publicly accessible areas, warning notices will be posted.
3. Steps will be taken to prevent accidental movement, contact with heat, cold or electricity, or release of chemicals.
4. The work area will be cleaned using a HEPA filtered vacuum or wet cleaning to remove asbestos-containing material contaminating the immediate work area. Where possible a plastic sheet will then be placed beneath the pipe or fitting from which the asbestos is to be removed.
5. Steps will be taken to prevent exposure where damage to the insulation might allow release of fibres. Steps include making temporary repairs using duck tape or wetting the exposed fibre using amended water.

#### Glove Bag Removal:

1. The asbestos containing material will be thoroughly wetted using amended water.
2. With tools in bag, the bag will be positioned and secured using adhesive and tape as necessary.
3. Working through the gloves, the asbestos will be removed exercising care to avoid puncturing the bag.
4. When removal is complete or bag is full, sprayer (containing amended water) will be connected to the valve and the pipe or fitting, tools and the bag interior will be washed. If the bag is to be repositioned to remove additional asbestos, remaining exposed ends of asbestos will be thoroughly damped.
5. Tools will then be placed in an inverted glove withdrawn from bag and the glove sealed from the bag using duct tape.
6. The tools will then be removed by cutting through the duct tape ensuring that both the bag and the glove remain sealed.
7. The tools will then be submerged in water and the glove opened. Tools will be cleaned under water.
8. The glove bag will then be removed and placed in a sealed container pending packaging for disposal.

#### Clean Up:

1. The surface of the pipe or fitting will be carefully wet wiped and treated with sealer.
2. The plastic sheet will then be carefully wet wiped and rolled up.
3. All solid waste created during removal jobs including glove bags, disposable coveralls, wipe rags and plastic sheeting will be treated as asbestos containing waste and handled as detailed in the disposal procedure.

### **AWP 1.10: Modified Enclosure Procedure**

The following Modified Enclosure Method may be used for removal of asbestos from ceilings, walls, beams pipes, or other equipment providing that the job is small enough that it can be completed within one shift without the need for repeated entry into the work area.

The method may not be used for jobs involving: amosite, crocidolite, or friable asbestos of any type. Additional precautions may be required if the exhaust air cannot be discharged outdoors. Modified enclosure removals may only be undertaken by staff who have completed Level 3 training and who have received modified enclosure removal training.

#### Procedures:

1. If dust which might contain asbestos is present, pre-clean the work site using wet cleaning or HEPA vacuum cleaning.
2. Protect floor, walls equipment within the work area which might be damaged by water.
3. Ensure that steps are taken to protect workers from any energized equipment or systems located within the work area.
4. Post signs and restrict access to work area.
5. Seal area to prevent air leakage into adjacent areas or air handling system using framing as necessary, 150 mil plastic sheeting, tape, sealants and caulking as required. Construct an overlapping, double curtained entrance to work area.
6. Install HEPA filtered negative air unit in work area. Unit must provide 4 air changes per hour while maintaining a pressure difference of -0.02 inches of water. Direct filtered exhaust air outdoors.

#### Removal:

1. Staff entering the work area shall wear a disposable Tyvek or equivalent suit including a head cover and an air purifying respirator which provides P100 levels of filtration.
2. With the area sealed and negative air unit in operation, saturate asbestos-containing material with amended water using airless sprayer.
3. Remove asbestos using additional amended water as needed being careful not to create airborne dust.
4. Brush the area from which asbestos has been removed and then wet wipe or vacuum to remove final traces of asbestos. Following removal of asbestos, treat the area with slow dry sealer.

#### Clean up:

1. Place all waste in specially marked heavy duty asbestos waste disposal bags. Seal waste bags securely using duct tape before removing from the enclosure. Wipe tools with a damp cloth to remove traces of asbestos contamination before removing them from the enclosure.
2. Wet wipe or vacuum (using the designated vacuum marked ASBESTOS ONLY) all areas within the enclosure not covered by plastic to remove traces of asbestos.

3. If a HEPA filtered shop vac was used, it shall be wiped with a damp cloth and the hose end covered with tape before being removed from the enclosure. If the vac is to be opened to change a filter or bag, the work will be carried out in an enclosure under negative pressure with HEPA filtered air exhausted outdoors.
4. Wet wipe the interior of plastic sheeting used to form the enclosure. Remove plastic by rolling, wet wiping any visible particulate matter that make be visible. Wet wipe the disposable Tyvek suit and remove. Place the plastic sheeting, the suit and the used respirator cartridges in an asbestos waste bag along with other remaining contaminated material.
5. Arrange for re-connection of any services running through the work area which were disconnected to accommodate removal work.
6. Dispose of waste as per waste disposal procedure.

### **AWP 1.11: Servicing Vacuum Cleaners used in Asbestos Clean Up**

Servicing of vacuum cleaners used in asbestos clean up will only be undertaken by staff who have completed Level 2 training. Emptying units, changing bags and filters, and similar activities will normally be carried out in sheltered, outdoor locations. Vacuum cleaners must be unplugged and servicing conducted in accord with the instructions provided by the manufacturer.

Procedures:

1. Opening of a vacuum used for asbestos clean up will only be done by staff who wearing a fitted, air purifying respirator which provides P100 levels of filtration.
2. Before beginning the work the exterior of the vacuum will be damp wiped to remove surface material. Contaminated material removed from the vacuum including filters, HEPA filters, bags and collected dust and debris will be placed in a 6 mil polyethylene bagged, labeled and disposed of in accord with the disposal procedures described in
3. Wet contents of a HEPA filtered wet vacs will be discharged to a sewer.
4. Before reassembling the unit, the interior with be damp wiped and the wipe added to the asbestos-contaminated waste.

### **AWP 1.12: Disposal of Asbestos Containing Waste Materials**

Handling and disposal of asbestos containing waste is regulated by the NS Department of Environment and Labour. To ensure compliance with these regulations and to ensure that no-one is exposed to asbestos the following procedure is to be followed:

Procedures:

1. Only a staff member who has completed Level 2 training and who is wearing appropriate air purifying respirator will package asbestos waste.

2. Waste asbestos will be thoroughly wetted and then placed in specially labeled 6 mil plastic bags. The bag will be securely sealed using duct tape. The bagged asbestos will then be placed in a second, labeled 6 mil plastic bag which is again taped closed.
3. Asbestos waste may be transported from the location where it was produced to an interim storage location if the bags are free from punctures or tears and if the outside of the bag is free of asbestos. Asbestos waste will be transported in an enclosed vehicle or beneath a secured tarpaulin. No other cargo may be carried while the waste asbestos is being moved. After the waste asbestos is moved to an interim storage site, the driver will, if necessary clean the vehicle to remove asbestos contamination.
4. Asbestos waste must be disposed of at a waste disposal site which is approved to receive asbestos by the NS Department of Environment and Labour. Shipment of waste asbestos must be coordinated with the waste disposal site which is to receive the waste. Asbestos disposal will normally be carried out by external contractors.
5. Shipments for disposal must be done in accord with the Transportation of Dangerous Goods Act and must be accompanied by a properly completed shipping document.

Asbestos for disposal will be carried within enclosed vehicle or covered with a secured tarpaulin. The vehicle will also carry a broom, shovel, respirator, protective clothing, wetting agent, and plastic bags for use in the event of a spill or a leak.

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