Procedures for Cutting and Handling of Asbestos Cement Pipe

City of Richmond
Public Works Operations

RICHMOND
Island City, by Nature

Version 2.0

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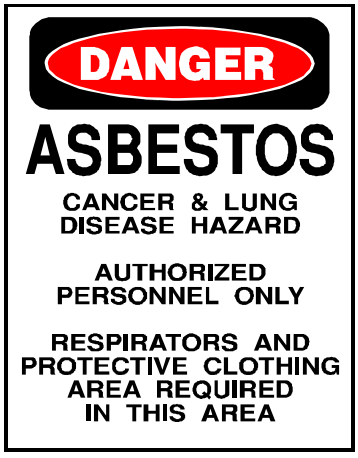
Introduction

During regular maintenance activities, the City of Richmond Public Works Operation's Staff performs work on asbestos cement (AC) pipe. Disturbance of asbestos cement pipe through cutting, drilling, and other activities may result in elevated levels of airborne asbestos fibres. The intention of these work procedures is to provide a guideline for performing the work in a manner which will protect workers from airborne asbestos fibres. These procedures have been prepared in accordance with WorkSafeBC regulations and guidelines outlined in the Occupational Health and Safety Regulations (OHSR) and Safe Work Practices for Handling Asbestos (2006).

Equipment

The following tools and equipment is required when working with asbestos cement (e.g., pipe cutting, drilling, etc):

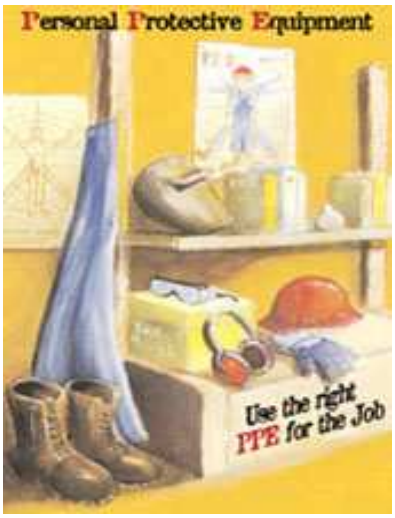
1. Snap-cutter appropriate for size of pipe
2. **Danger Asbestos Authorized Personnel Only Respirator and Protective Clothing Required in this Area** Barrier tape and stakes
3. Stakes or delineators style safety cones for holding barrier tape
4. Water misting bottle or spray hose (for wet asbestos materials)
5. Sprayer for chlorine solution (with appropriate WHMIS workplace label for chlorine)
6. Powdered chlorine (calcium hypochlorite)
7. Two or more buckets (5 gallon) of water and a cloth **for cleaning reusable tools and equipment** contaminated with asbestos
8. High efficiency particulate air (HEPA) filtered vacuum for cleaning reusable tools and equipment contaminated with asbestos (may be used in addition to a damp cloth)
9. Appropriate hand tools, including cleaning brush, sponges, rags, clean disposable towels
10. Pipes, fittings, etc.
11. Masking tape/crayon/grease pencil
12. Labelled asbestos disposal bags (must be double bagged, sealed with duct tape and clearly marked 'Asbestos')
13. Roll of 6 mil polyethylene for wrapping sections of piping
14. Duct tape (for sealing PPE and disposal bags)



Personal Protective Equipment

The following personal protective equipment (PPE) is required for AC pipe cutting and/or drilling:

1. NIOSH approved half facepiece respirator (minimum), complete with combination cartridges for particulate (P100) and organic vapours (OV)
2. Disposable, impermeable protective coveralls (complete with hood, booties and elastic gathers at wrists)
3. Disposable gloves
4. Goggles (to protect eyes from dusts and chlorine mist)
5. Laceless rubber boots with steel toes (non-laced is preferred)
6. Hard hat
7. Hearing protection



Note: All reusable PPE and equipment must be cleaned with a damp cloth or a HEPA filtered vacuum cleaner prior to removal.

Work Area Preparation Procedures

These procedures are to be followed when performing work on AC pipe (which includes cutting, drilling, installing saddles, etc.), in order to minimize fibre release during work activities. All trades and maintenance personnel and outside contractors shall understand the requirements of these procedures prior to conducting any work on AC pipe. The Supervisor 2 shall be in charge of coordinating activities to ensure that PPE is worn when required. A written document must be made available to workers at the work site which identifies the location of the AC pipe and any other hazardous materials. These procedures are to be performed in accordance with "Moderate Risk Work Activities", as outlined in the WorkSafeBC publication, Safe Work Practices for Handling Asbestos (2006):

1. The Supervisor 2 shall set up the job site in accordance with the City of Richmond's Safety Manual and WorkSafeBC regulations, keeping in mind public safety and proper traffic control.

2. Prior to excavation, the Supervisor 2 shall review the underground utility plans and review the course of action with the crew and equipment operators.
3. The Supervisor 2 will ensure the location and marking of all underground utilities with the use of an M-Scope or similar equipment.
4. Excavate and shore or slope the excavation (if required) in accordance with City of Richmond's Safety Manual and WorkSafeBC regulations. Excavate a sufficient distance around the AC pipe to assure adequate tool clearance in the area to be cut (or drilled). Care must be taken to avoid disturbance of the asbestos cement pipe through use of tools and equipment, prior to donning PPE.
5. A barrier tape with the following warning must be posted around the work area at all entrances to the work area, using stakes to hold it in place (this barrier must be in place immediately prior to doing any work):

DANGER ASBESTOS
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

6. Workers must have (at minimum) a half facepiece NIOSH approved respirator with combination cartridges for particulate (P100) and organic vapours (OV). No single use respirators are allowed. Workers shall inspect and clean their respirators prior to each use. Workers must be fit tested and properly trained in the use, limitations, and maintenance of their respirators (refer to Appendix A Job Site Respirator Fit Check Procedure).

7. Labelled asbestos waste bags must be available and placed in the work area for disposal of protective coverall suits and contaminated waste such as sponges and rags.
8. A 5 gallon bucket with clean potable water and disposable towels should be positioned at the entrance to the work area for personal decontamination. Two or more additional buckets of water shall be available for cleaning tools and equipment. Ensure that sufficient water is available in the work area for tool and equipment decontamination.
9. Prior to shutdown of water, ensure that the affected residents and businesses have received notification (on planned shutdowns this should have already been done). Advise the fire department of the location of the shutdown hydrant.
10. Shut down appropriate valves as required (refer to valve book) to isolate the section of watermain to be cut. Open the nearest fire hydrant to release residual pressure. The fire hydrant must remain open at all times during the pipe cutting and replacement operation to eliminate the buildup of water pressure.

Cutting and Drilling Procedures

The following procedures are to be followed for cutting and drilling AC pipe:

1. Workers shall don respirator, perform positive and negative fit check, and put on disposable coveralls, (and other appropriate PPE) prior to performing work that disturbs the AC pipe (e.g., cutting, drilling). Use duct tape or other effective means to assure that the coveralls fit snugly to the contours of the wearer and will not be subjected to tearing when the worker bends or turns (coveralls with attached boot protection). Ensure the elastic seals where the coveralls meet with the work boots are over the boots and sealed with the duct tape. Follow the same procedure for wearing disposable gloves (position elastic seal and tape together with duct tape) and remember that it is best to work in teams to help each other.
2. Once the work has commenced on the pipe, workers, equipment, and materials cannot leave the authorized work zone without going through the decontamination procedure. Only personnel authorized by the sub-foreman in charge of the worksite and who are equipped with the proper PPE may enter the work area.
3. The area of AC pipe affected by disturbance must be sufficiently wetted prior to the disturbance to remove any dirt, sand or gravel.
4. Measure the length of cut and mark with a crayon or grease pencil and attach the snap cutters.
5. Apply water to the area being cut and continue until the cutting has been completed.
6. Operate cutting and drilling tools (and any other equipment used for disturbing AC pipe) in accordance with the manufacturer's instructions, making sure that water is continually applied in sufficient quantities to minimize dust.
7. Detach the cutting equipment and repeat the above mentioned cutting steps. Move to the next cutting location and wet the cutting area prior to the cut. Recheck the measurement and remark if necessary. Again, apply water to the area being cut and continue until the cutting has been completed.
8. Prior to installation, the new pipe component must be cleaned and disinfected by swabbing, spraying, or washing down with a 1% chlorine and water solution.
9. Install pipes, fittings, and couplings (as per City of Richmond's Construction Specifications) necessary to complete the job, taking care to avoid abrasions to the AC pipe. Keep the AC pipe moist during the work process.
10. Open the appropriate fire hydrant at the opposite end of the isolated watermain from where the control valve will be opened (check that the water flow will not cause any damage or unsafe conditions). Close off the hydrant used to monitor any pressure buildup in the watermain. Open the filling valve enough to slowly fill the watermain and have one worker monitor the fire hydrant used to blow off air and dirty water. Once the main is filled and the

discharge water is clean, shut down the fire hydrant and open all valves. Inform the fire department that the hydrant has been re-activated.

11. Once the work in the excavation area has been completed, move any tools and materials from the work zone to the decontamination area.

Clean-up and Decontamination

Tools and materials used to perform cutting and/or drilling of AC pipe will be thoroughly rinsed in a bucket of water and any remaining pieces of debris shall be wiped off the tools using a damp cloth (or cleaned with a HEPA filtered vacuum). Tools and materials must be thoroughly washed and inspected (to ensure there is no asbestos contamination) before being removed from the authorized work zone. Materials contaminated with asbestos will be rinsed with clean water and placed in a labelled asbestos waste disposal bag (see below). Properly sealing disposal bags of asbestos waste will follow these directions:

1. The workers shall clean-up the area and place all asbestos contaminated waste (including PPE, rags and sponges used in work area) into a labeled **'Asbestos Waste'** disposal bag. Gently squeeze the bag to expel the air.
2. Twist tightly the unused top portion of the bag into a tail and seal with duct tape at the base of the tail.
3. Take the leftover twisted tail section of the bag and bend it around to make a loop and attach it to the base of the tail using the duct tape (this seals the bag and makes a handle).
4. Place the first bag into the second bag and repeat the sealing procedure.

Further steps to decontaminate workers' PPE and tools are noted below:

1. PPE and tools that are to be reused are cleaned and immersed in a bucket of water, followed by a second immersion in a second, clean bucket of water. Inspect thoroughly for asbestos contamination and repeat if necessary until all asbestos containing materials have been removed. Place the object outside the authorized work area.
2. If the object is too large to be washed in the buckets of water, such as a shovel or wrecking bar, use a wet cloth to wipe them down until visually "clean". Inspect thoroughly for asbestos contamination and repeat if necessary until all material has been removed from the item.
3. Workers will remove debris from protective clothing using a damp cloth or sponge (or a HEPA filtered vacuum), wash their hands, remove the disposable suits, and place them into a labeled **'Asbestos Waste'** bag (following the sealing of disposal bag procedures noted above).
4. The worker will leave the work area boundary while still wearing a respirator and thoroughly wash hands, respirator, and face with a clean sponge or damp cloth from the designated clean water bucket. This procedure is known as 'personal decontamination'. The worker will seal the HEPA filters with duct tape and place the respirator and filters into a sealable bag for storage.

Disposal of Asbestos Contaminated Waste

Follow the remaining steps to dispose of asbestos contaminated waste:

1. If practicable, deposit waste AC pipe into the excavation and backfill with the previously excavated material. Place a suitable board such as a 3" x 12" on the top of the pipe and have the backhoe or other equipment push into the soft ground (this will fill the void in the pipe and avoid settlement of the excavation in the future). If it is not practicable to dispose of the waste AC pipe in this way, then it must be double bagged following the same procedures as previously mentioned.
2. To decontaminate the buckets that contained the contaminated water, empty the first bucket of water into the excavation. Use the second bucket of water to rinse the first bucket and then rinse with clean water and wipe down with a clean wet rag. Rinse and wipe down the second bucket of water with clean water and ensure at all times that the water is poured into the excavation.
3. Before completing the backfilling, the used barrier tape should be taken down and loosely coiled and placed into the excavation approximately 150-300 mm below the finished ground surface (this will warn others involved in future excavation work of the hazard).
4. Any remaining asbestos waste is then transported back to Richmond City Works Yard to the designated asbestos waste storage area.

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APPENDIX A

Job Site Respirator Fit Check Procedure

Job Site Respirator Fit Check Procedure

Respirators are to be worn only be those who have been trained in respirator use and have been fit-tested. Fit check testing is required on an annual basis for all workers.

Inspect the respirator seals and valves and put on your pre-adjusted personal half facepiece respirator. Perform a check on the operations and fit of the unit as follows:

1. Positive Pressure Test

After putting on the air purifying respirator with the HEPA filters, the wearer closes off the exhalation valve with their hands and exhales gently into the facepiece. If properly sealed the mask will bulge slightly, any air leaks around the facepiece seal indicates the seal is not adequate. The wearer readjusts the respirator and repeats the procedure until a seal has been achieved.

2. Negative Pressure Test

After the positive pressure test is completed, the wearer closes off the openings to the HEPA filters by covering them with their palms. The wearer then inhales gently so the facepiece collapses slightly. The mask if properly sealed will collapse slightly.

Note: If a proper seal cannot be achieved during either test, the wearer must not proceed with the job until a proper fit has been achieved.