

**ADVISORY NO. 3.3: SPECIFICATIONS FOR GLOVEBAG TECHNIQUE FOR
REMOVAL OF UTILITY PIPE & MECHANICAL INSULATION**

GLOVEBAG TECHNIQUE:

A method with limited applications for removing small amounts of asbestos containing material from HVAC ducts, piping runs, valves, joints, elbows, and other non-planar surfaces in an uncontaminated (plasticized) work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of 6-mil transparent plastic), two inward-projecting, long sleeves, rubber gloves; one inward-projecting waterwand sleeve; an internal tool pouch; and an attached-labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process. All workers, who are permitted to use the glovebag technique, must be highly trained, experienced, and skilled in this method.

MATERIALS

1. Glovebag
2. Pump up garden sprayer (2 - 3 gallon size)
3. Amended water (surfactant)
4. Duct tape (3-inch width)
5. Polyethylene disposal bags (6 mil)
6. Smoke tubes with aspirator bulb
7. HEPA filtered vacuum cleaner
8. Flexi-saw (bone saw)
9. Utility knife with retractable blade
10. Wire Cutters
11. Tin snips (if aluminum jacket is present)
12. Polyethylene plastic (4 mil)
13. Dual cartridge respirators with high efficiency cartridges
14. Disposable full body suits with hood and feet covering
15. Small scrub brush
16. Stapler
17. Several rags
18. Wettable cloth
19. Asbestos caution signs and labels
20. Reinsulation materials as necessary
21. Local Exhaust Ventilation (HEPA-filtered fan unit)

PREPARATION OF WORK AREA

- Before any work begins, all necessary tools and materials shall be brought to the work area.
- Isolate and regulate the work area by closing doors and/or roping off with barrier tape (3-inch) with pre-printed asbestos warning. Post OSHA required asbestos hazard warning signs at all entrances to work area.
- If feasible, the H.V.A.C. system servicing the work area shall be shutdown.

- Provide HEPA-filtered local exhaust to each individual glovebag containment or to entire work area.
- If the amount of material exceeds 6 linear feet, a remote shower unit shall be installed within the regulated area if feasible for worker decontamination when required.

EMERGENCY PROCEDURES FOR RUPTURED GLOVEBAG CLEAN-UP

- The contractor shall provide written procedures covering wet cleaning and/or H.E.P.A. vacuuming in the event of a ruptured glovebag. In addition, directions shall be provided for the movement of workers cleaning up the spill to a remote shower facility.
- Employees of the contractor shall be trained in the emergency procedures prior to commencement of work.

REMOVAL PROCEDURES

- Following the manufacturers' instruction, mix surfactant with water in a garden sprayer.
- Have each employee put on a cartridge respirator and check the face-fit.
- Have each employee put on a disposable full-body suit.
- Inspect the pipe where the work will be performed. If it is damaged (e.g. broken lagging, hanging insulation, etc.) encapsulate and wrap the entire length of pipe in poly plastic sheeting and seal with duct tape.
- Slit the top of the glovebag and cut down the sides to accommodate the size of the pipe (approximately two inches longer than the pipe diameter).
- Place the necessary tools into the pouch located inside the glovebag. This should include but not be limited to a flex-saw (bone saw), utility knife, rags, scrub brush, wire cutters, tin snips and wettable cloth. (**Note:** wettable cloth should be pre-cut at this point). Cut out a donut shape with the inner diameter 1/2 inch smaller than the diameter of the pipe beneath the insulation. The outer diameter of the donut should be three inches larger than the diameter of the pipe insulation being removed. Finally, cut a slit in each of the two donuts so they can be slipped around the pipe.
- Place one strip of duct tape along the edge of the open top slit of the glovebag. (**Note:** Some types of glovebags have a zipper top to facilitate the installation of the bag).
- Place the glovebag around the section of pipe to be worked on and staple the top together through the reinforcing duct tape. Staple at intervals of approximately one inch. Next, fold the stapled top flap back and tape it down with a strip of duct tape. Next, duct tape the ends of the glovebag to the pipe itself, which may have been previously covered with plastic and duct tape.
- Using a smoke tube and aspirator bulb, place the tube into the water sleeve opening of the glovebag. By squeezing the bulb, fill the bag with visible smoke. Remove the smoke tube and twist the water sleeve closed. While holding the water sleeve tightly, gently squeeze the glovebag and look for smoke leaking out. If leaks are found, they should be taped closed using duct tape and the bag should be re-tested with smoke.
- Insert the wand from the garden sprayer through the water sleeve. Using duct tape, tape the water sleeve tightly around the wand to prevent air leakage.
- If the section of pipe is covered with an aluminum jacket, this is removed first using the wire cutters to cut any bands and the tin snips to remove the aluminum. It is important to fold the sharp edges in two, to prevent cutting the bag when it is placed in the bottom.
- With the insulation exposed, use the flex-saw to cut the insulation at each end of the section to be

removed inside the glovebag. Throughout this operation water is sprayed on the cutting area to keep dust to a minimum.

- Once the ends are cut, the section of insulation should be slit from end to end using the utility knife. The cut should be made along the bottom of the pipe and water continuously supplied.
- Spray all tools with water inside the bag and place back into pouch.
- Lift the insulation off the pipe and gently place it in the bottom of the bag.
- Using a scrub brush, rags and water, scrub and wipe down the exposed pipe inside the glovebag.
- Wet the donut shaped pieces of wettable cloth over the exposed ends of insulation remaining on the pipe.
- Remove the water wand from the water sleeve and attach the small nozzle from a H.E.P.A. filtered vacuum. Turn the vacuum on briefly to collapse the bag.
- From outside the bag, pull the tool pouch away from the bag and twist it to separate it from the bag. Place duct tape over the twisted portion and then cut the tool bag from the glovebag, cutting through the twisted/taped section. Following this procedure the tool pouch with the tape can be placed directly into the next glovebag without cleaning. Alternatively, the tool pouch with the tools can be placed in a bucket of water, opened underwater, and the tools cleaned and dried without releasing asbestos into the air. (**Note:** Rags and the scrub brush cannot be cleaned in this manner and shall be discarded with the asbestos waste).
- With the removed insulation in the bottom of the bag, twist the bag several times and tape it shut to keep the material in the bottom during removal of the glovebag from the pipe.
- Slip a 6-mil disposal bag over the glovebag (**Note:** It is still attached to the pipe). Remove the tape and open the top of the glovebag and fold it down into the disposal bag.
- Remove the disposable suits and place these into the bag with the waste.
- Twist the top of the bag closed, fold this over, and seal with duct tape.
- Using a clean damp rag, wipe the exterior of the respirator and leave the work area. Remove the respirator.
- The Project Manager or his authorized representative shall have the authority to stop the job at any time if problems associated with contamination arise during work.
- The work area may be considered contaminated if:
 - Airborne concentration of fibers greater than 5 micrometers in length exceeds the index of prevalent airborne fibers taken during pre-abatement monitoring;
 - Visual contamination or debris is noticed.

AIR SAMPLING REQUIREMENTS

All area air sampling shall be taken with a pump at breathing zone height at some stationary position and at a flow rate of 2 to 12 liters per minute. A volume of air shall be collected which will be sufficient to achieve a limit of detection less than 0.1 fibers per cubic centimeter of air. All other parameters shall be in accordance with NIOSH Standard Analytical method for asbestos P&CAM 239 or Method 7400.

OSHA compliance monitoring shall be the responsibility of the contractor.

PRE-ABATEMENT SAMPLING

A sufficient number of samples shall be collected prior to the start of abatement activities to determine an index of prevalent air borne fiber concentrations. Samples shall be taken both inside and outside the work area and outside the building.

SAMPLING DURING ABATEMENT ACTIVITIES

The following schedule of samples shall be required as a daily minimum once the abatement activities begin:

- Three area samples inside the work area or 1 per 5000 sq. ft.; which ever is greater.
- One area sample outside of the building.
- Three area samples outside the work area.

REPORTING RESULTS OF ANALYSIS

The period of time permitted between the collection of air samples and the availability of results shall be less than twenty-four hours.

Results shall be reported on a log sheet documenting: sample number, sample location, sample collection device and identification number, flow rate, start and stop times of sampling period, total volume of air samples, filter in fiber per cubic centimeter of air.

A copy of sample results shall be presented to the owners' representative, contractor and University of Cincinnati, University Health Services.

LABORATORY PERFORMING ANALYSIS

The laboratory utilized for analyzing area air samples taken by NIOSH Standard Analytical Method for asbestos is air P&CAM 239 or Method 7400 shall be a satisfactory participant in the NIOSH Proficiency Analytical Testing (PAT) Program for asbestos analysis.

The analytical laboratory used for analyzing area air samples during abatement work shall be contracted to the University of Cincinnati.

AIR SAMPLING SPECIALIST

An Industrial Hygienist or other qualified individuals shall conduct all area air monitoring throughout the course of abatement activities.

The air-sampling specialist shall be in the employ of the University of Cincinnati.

PAYMENT

The contractor shall pay all cost for OSHA sampling and analysis. The University of Cincinnati will pay all costs pertaining to the area air sampling and analysis other than OSHA compliance sampling and analysis.