

Code of Practice on Safe Handling of Low Risk Asbestos Containing Material - Issued Pursuant to Section 37 of the Air Pollution Control Ordinance (CAP 311)

This Code of Practice is issued by the Secretary for Planning, Environment and Lands under Section 37 of the Air Pollution Control Ordinance (Chapter 311) after consultation with the Advisory Council on the Environment. It sets out the procedures to be adopted by Registered Asbestos Contractors and Registered Asbestos Supervisors in handling low risk asbestos containing materials such as corrugated asbestos cement sheets and asbestos containing vinyl floor tiles.

Although this Code is not legally binding, compliance with the advice given could be used as evidence of good practice in the course of legal proceedings.

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Introduction

1. This Code of Practice provides guidance and advice to Registered Asbestos Contractors, Supervisors and Laboratories on handling of low risk asbestos containing material.
2. In handling certain categories of asbestos containing materials such as corrugated asbestos cement sheets and asbestos vinyl floor tiles, a 'full containment' approach is normally not necessary because of the relatively low risks involved. This is because the asbestos fibres in the materials are generally locked into the cement or the resin and any dust released under normal usage or handling is of a size not considered to present a health risk. When adequate precautionary measures as described below are taken to suppress dust release, the removal of low risk asbestos containing materials may be carried out with only minimal segregation.
3. The measures and procedures described in this Code are considered to be the minimum requirements necessary for safeguarding the environment and the health of occupants of areas where asbestos work has been carried out. Additional precautions may be necessary for certain operations and this Code should not be interpreted as precluding the adoption of such measures. The requirements of the Factories and Industrial Undertakings Ordinance for worker safety are particularly relevant in this regard.

Materials and Equipment

4. The materials and equipment used should conform to the following.
 - a) For preparation of work area, transparent **plastic sheeting** of 0.15mm thickness manufactured from extruded low-density polythene to B.S. 4932:1973 or equivalent should be employed.
 - b) Duct tape, foam agent and spray adhesive should be capable of sealing joints of adjacent sheets of polythene, facilitating attachment of polythene sheets to finished and unfinished surfaces, and of adhering under both wet and dry conditions, including during the use of amended water.
 - c) Wetting agent for preparing **amended water** to enhance penetration should be 50% polyoxyethylene ester and 50% polyoxyethylene ether or equivalent, diluted to a specific concentration in accordance with the manufacturer's instructions.
 - d) **HEPA**-filtered appliances which include air movers, vacuum cleaners and respirators, should be fitted with high efficiency particulate air filters capable of trapping and retaining 99.97% of particles (asbestos fibres) greater than 0.3 micron mass median aerodynamic equivalent diameter.
 - e) Water-based polyvinyl acetate (**PVA**) adhesives should be used during final clean-up of work areas to encapsulate all exposed surfaces that might still be contaminated with traces of asbestos. The adhesives should be dyed, say 'red',

to indicate where (and whether) they have been applied to facilitate cross-checking at a later stage.

- f) Polythene sheeting, transparent or colour-coded bags and containers used for packing of asbestos waste should meet the specifications given in the Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste issued by the Secretary for Planning, Environment and Lands.
- g) Respiratory protective equipment and protective clothing used for asbestos abatement should comply with the requirements of the Factories & Industrial Undertakings (Asbestos) Special Regulations enforced by the Labour Department.
- h) Joints and ends of ladders and scaffolds used in the contaminated area should be sealed with tape to prevent incursion of asbestos fibres.

Documentary proof on the safety and specifications of the above materials and equipment may be required for submission to the Authority for endorsement.

Site Preparation

- 5. The proposed **work area** (the area containing asbestos containing materials to be worked on) should be vacated prior to any site preparation work. Warning notices in English and Chinese (see appendix 1) should be displayed outside the segregated area in a conspicuous place on the first day of site possession and should remain posted until work acceptance testing is satisfactorily concluded.
- 6. A designated secure place outside the work area should be identified solely for transit storage of bagged asbestos wastes which are to be stacked not more than 3 bags high. This place should bear adequate warning notices and particular attention should be given to maintain good fire safety measures.

Decontamination Facility

- 7. For abatement work involving more than 15 sq.m. of corrugated asbestos cement sheets or asbestos vinyl floor tiles, a **3-chamber decontamination unit** should be constructed to provide safe access and egress for authorised working personnel, and for the exit for disposal of bagged asbestos wastes in special circumstances when the provision of a separate **debris port** is not possible. A reduced, **1-chamber decontamination unit** may be acceptable for abatement work of a smaller scale. Also, depending on the size of the job and its proximity to other occupants of the premises, an induced draught ventilation system may be required for the decontamination unit by fitting a HEPA-filtered air mover at the dirty end of the unit.
- 8. Construction details of a decontamination unit are as follows.
 - a) The decontamination unit will consist of three sealable compartments of progressively lower fibre burden, namely the dirty room, the shower room and the clean room. Each compartment should have a minimum size of 2m

(height) x 1m (width) x 1m (length). Size of the shower room should be 1m square and 2m headroom for every shower head provided.

- b) The unit may either be of a prefabricated design (thoroughly cleaned and decontaminated before re-use) or be constructed on site with 3 individual layers of plastic sheeting with sealed taped joints supported on suitable framing.
 - c) Each compartment should be separated by a curtained doorway consisting of a polythene sheet with an I-shaped slit opening covered by a plastic flap which hangs and lifts in the direction of access. The plastic flap should have an overlap of at least 100mm on each side of the slit opening and be weighted at the bottom.
 - d) The shower room should be constructed and tested against water leakage and fitted with a tray of adequate size to collect waste water. Hot and cold water adjustable at the shower should be provided at a minimum of one shower head per 6 workers calculated on the basis of the largest shift. All waste water should be taken by a sump pump through pipework and hosing to an aquarium type filter unit to remove suspended particles (down to 5 microns) before being discharged to covered soil drainage system or drummed and then properly disposed. The sump pump should be switched on while the facility is in use to prevent overflow of waste water. The electrical fittings, etc. should be so installed and protected as to eliminate any possibility of electrocution.
 - e) The shower room should be wet cleaned and HEPA vacuumed after each shift change and meal break.
 - f) Correct procedures for entering and leaving each compartment are summarised in appendix 2. A warning sign to approved details as given in appendix 1 should be posted at eye level at the clean entrance of the unit.
9. Where practicable, a separate, 2-chamber **debris port** (consisting of a washing room fitted with cold water supply and waste water filtration facility, and a clean room) should be constructed for controlled transfer of bagged wastes and equipment. Each compartment should have a minimum size of 2m (height) x 1m (width) x 1m (length). This debris port is normally sealed and used only during the period of active waste and equipment transfer. A warning sign (see appendix 1) should be posted conspicuously at the entrance of the clean end.
- a) Before entering the debris port, external surfaces of contaminated materials and equipment should be cleaned by HEPA vacuuming and wet-wiping in the work area. The surfaces should be further decontaminated in the washing room by 'flushing' with a fine water spray followed by wet-wiping. Workers in the clean room, who should have entered from the uncontaminated side wearing appropriate respirators, gloves and protective clothing, should receive the materials and equipment in 0.15mm transparent plastic bags (or sheeting as the item's physical features demand) which are then vacuum packed and

goose-neck sealed with tape.

- b) Workers in the clean room must not enter the washing room. Upon completion of work, they should discard their protective clothing and gloves as contaminated waste and exit by the clean room.
- c) The washing room should be wet cleaned twice using amended water upon completion of waste and equipment transfer. When the main decontamination unit alternates as a debris port, the shower room should be washed immediately with cloth saturated with a detergent solution prior to wet cleaning.

Preliminary Decontamination

- 10. Prior to masking the work area with plastic sheeting, the area should be pre-cleaned using HEPA-filtered vacuum unit(s) and/or wet-wiping method. Fixed objects which remain within the work area should be cleaned and sealed with 2 layers of plastic sheeting to protect them from re-contamination. The floor (up to at least 1.5m away from the activities) should be covered with 2 individual layers of plastic sheeting which should extend, where appropriate, at least 300mm up and be sealed to the wall with adhesive tapes. All wall openings such as windows should be covered and sealed with 2 layers of plastic sheeting. For removal of asbestos containing vinyl floor tiles, floor sheeting will not be required but a continuous one-meter high dust barrier sealed to the floor should be constructed around the work area.

Abatement Procedures

- 11. All workers should put on approved respirators and full-body protective clothing with hoods and shoe covers. Only non-powered hand tools should be used. Extreme care should be exercised in handling the asbestos containing material to reduce breakage to a minimum. The asbestos containing material should be kept wet throughout by generous application of amended water in a fine mist.
- 12. For removal of asbestos containing vinyl floor tiles, individual tiles should be lifted by scraping manually at the base. The underlying mastic adhesives (which may also contain asbestos) and any adhering remnant of tiles should be completely removed from the floor slab by manual scraping. Alternatively, chemical mastic removers of proven safe formula may be used.
- 13. It is important that debris is not allowed to lie around where it may be further broken or crushed. It should be cleared as soon as possible and certainly before the end of each work shift. All debris should be packed, labelled and disposed of in strict accordance with the Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste.
- 14. All personnel, tools, instruments and bagged wastes leaving the work area must be thoroughly decontaminated in the decontamination unit to a condition of no visible debris.

Acceptance of Work

15. Upon completion of the asbestos work, all surfaces in the work area should be cleaned by suitable dustless method such as HEPA vacuuming or wet-wiping.
16. The Registered Asbestos Contractor should then perform a thorough visual inspection to ensure that any debris in the form of contaminated items, dust, chips or untreated effluent has been cleared from the work area. A Registered Asbestos Laboratory should be engaged to conduct a reassurance air test which should have at least two samples, unless the volume of the enclosure is less than 10 cu.m. when only one sample would suffice. With that overriding condition, the number of samples required should be at least the whole number next below ($\sqrt[3]{A - 1}$), where A is determined as follows:
 - i) if the enclosure is less than 3m high, or in enclosures which are taller but where exposure is only likely to be at ground level, A is the area of the enclosure in sq.m.;
 - ii) in other cases A is one third of the enclosure volume in cubic meters. If there are large items in the enclosure, their volume may be subtracted from the gross volume before calculating A.
17. Sampling should be carried out only after a thorough visual inspection of the work area to establish that it is clean, dry and free from any visible debris. Aggressive sampling techniques should be used to agitate any dust deposit that may be present inside the work area.
18. Reassurance air testing is considered satisfactory only when every collected sample is less than 0.01 fibre/ml as determined by phase contrast microscopy. Each homogeneous work area which does not meet this criterion should be thoroughly recleaned using wet-wiping method. This process should be repeated until the work area passes the test.
19. When satisfactory air test results are attained, all used plastic sheeting should be PVA sprayed, allowed to dry and then disposed of as contaminated wastes in accordance with the Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste.

Warning Notice for Posting outside the Work Site



Specification

The Warning Notice should comprise both warning signs and explanatory labels.

1. Material : Durable, weather-resistant and rigid on a vertical plane outside the work site.
2. Colour : (a) For 'Danger' sign
Sign : Black lines on yellow background
Label : Black letters and characters on yellow background
(b) For 'No unauthorised entry' sign
Sign : Red lines on white background with the figure in black
Label : White letters and characters on red background
3. Size : Height of Sign - Not less than 120mm
Height of Capital Letters - Not less than 25mm
Height of Chinese Characters - Not less than 35mm

PROCEDURES FOR ENTERING AND LEAVING DECONTAMINATION UNIT

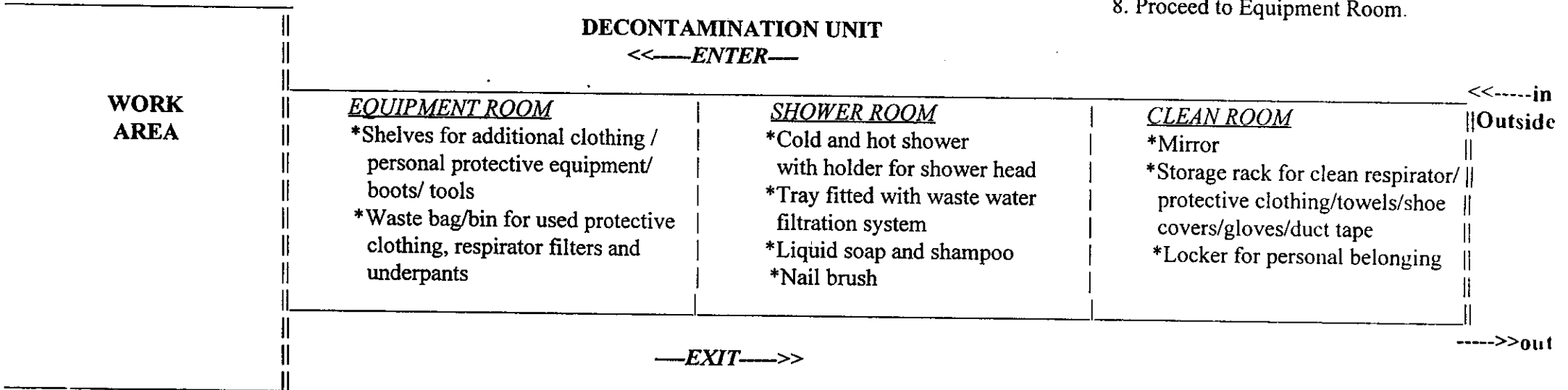
While in Equipment Room

9. Put on any additional clothing, shoes and hard hat
10. Collect necessary tools and proceed to Work Area

While in Clean Room

1. Remove clothing and place in locker
2. Put on disposable underpants (optional)
3. Put on clean coveralls
4. If separate disposable foot coverings are used, these are put on
5. Apply tape around ankles, wrists, etc.
6. Inspect respirator, put it on and check fit
7. Put on hood over respirator headstraps
8. Proceed to Equipment Room.

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Upon leaving Work Area

1. HEPA vacuum contamination on clothing etc.

While in Equipment Room

2. Remove all clothing except respirator
3. Place disposable protective clothing in a bag or bin
4. Store any other contaminated articles
5. Proceed to Shower Room

While in Shower Room

6. Wash respirator and soak filters (without removing) under a shower
7. Remove respirator, discard used filters and wash and brush facepiece with soap and water
8. Place disposable underpants and used filters in the bag or bin placed inside the Equipment Room
9. Thoroughly wash body and hair
10. Proceed to Clean Room

While in Clean Room

11. Dry off, dress in clean coveralls or street clothing
12. Clean any dry respirator, replace filter (if applicable)
13. Leave the Clean Room