

**ENVIRONMENTAL PROTECTION DEPARTMENT  
PRACTICE NOTE FOR PROFESSIONAL PERSONS**

**Handling of Asbestos Containing Materials in Buildings**

**Introduction**

Asbestos is a generic name given to a group of naturally occurring fibrous silicate minerals. Before exposure to asbestos was recognized to be hazardous to health, it had been widely used in fireproofing, thermal and electrical insulation and sound absorption materials. In Hong Kong, asbestos containing materials had been commonly in use before the mid-1980s, in buildings such as factories, hospitals, hotels, schools and some public facilities. A list of materials which are likely to contain asbestos is given in Appendix I.

2. This Practice Note will give guidance to the professional persons on the basic precautionary measures commonly applicable to asbestos abatement work, and the general approaches in management of asbestos in existing buildings. They may also find it useful for works in ships and in civil and construction works such as those involving water pipes containing asbestos.

**Control Provisions under the Air Pollution Control Ordinance**

3. Sections 69 to 79 of the Air Pollution Control Ordinance provide for the control of work involving asbestos, in buildings, at work sites, or in ships. Effective from 19 June 1997, the control provisions require that only qualified asbestos consultants, contractors, supervisors and laboratories registered with the Environmental Protection Department (EPD) can undertake asbestos related activities, and, apart from asbestos abatement work involving exempted materials as listed in Appendix II, the owner of premises must, at least 28 days before he starts the asbestos abatement work, submit an asbestos investigation report and an asbestos abatement plan to the EPD.

## **Role of the Professional Person**

4. Professional persons nowadays must avoid using asbestos containing materials in the design and construction of buildings. For such materials already present in existing buildings, care must be taken in handling them so as to reduce the release of harmful asbestos fibres into the environment and to keep the associated hazard to a minimum. The professional persons should also prevent inadvertent disturbance or work on such materials by people without the knowledge and experience to take the precautionary measures.

5. Professional persons responsible for building work such as renovation and demolition work should help the project proponents to ensure that:

- (i) the project plan includes an investigation into the presence of asbestos containing materials and suspect materials that may be disturbed in the project work;
- (ii) if the work involves materials other than those listed in Appendix II, a registered asbestos consultant is engaged to prepare an asbestos investigation report and an asbestos abatement plan, that the work is carried out by a registered asbestos contractor under the supervision of a registered asbestos consultant, and that the relevant sampling and analysis are carried out by a registered asbestos laboratory;
- (iii) if the work involves materials listed in Appendix II other than asbestos gaskets, asbestos gland packing materials and asbestos friction products, the asbestos work is carried out by a registered asbestos contractor under the supervision of the professional persons in accordance with the Code of Practice on Asbestos Control.

6. The professional persons should also be responsible for ensuring proper disposal of wastes arising from any work involving asbestos. Asbestos waste is controlled under the Waste Disposal Ordinance which governs its packaging, labelling, storage, collection and disposal. The control provisions require that only waste collectors licensed for asbestos waste disposal are allowed to collect asbestos waste, and they must deliver collected wastes to a designated disposal facility within 48 hours in accordance with directions

stipulated by the EPD.

7. A list of pieces of legislation and codes of practice related to the handling and disposal of asbestos is given in Appendix III.

### **Control Measures for Asbestos Abatement Works**

8. Professional persons should familiarize themselves with precautionary measures in dust control in asbestos abatement work at site. Their duty is to ensure that, where appropriate, the asbestos abatement work is carried out in accordance with the asbestos abatement plan prepared by a registered asbestos consultant, or according to the Code of Practice on Asbestos Control. They should ensure that an appropriate level of protection as listed in Appendix IV is adopted for the asbestos abatement work to control the release of asbestos from the work. Other practices should also be adopted where applicable, such as a system for checking the performance of the asbestos control measures, continuous supervision of the work, checking of air monitoring results, interview and consultation with the contractor, and checking the performance of the specialized equipment used.

9. Some of the important precautionary measures are listed in Appendix V for the general knowledge of the professional persons.

### **Effective Management of Asbestos Containing Materials in Existing Buildings**

10. As a good practice, professional persons responsible for the management or maintenance of buildings or building services facilities should seek and implement an operation and maintenance plan prepared by a registered asbestos consultant. The plan will cover proper management of the existing asbestos containing materials and suspect materials before their ultimate removal.

11. The contents of an operation and maintenance plan are listed in Appendix VI. There is no need to remove asbestos containing materials from a building if the materials are in good condition and undisturbed. The plan should be updated once every two years by a registered asbestos consultant, and should be made available to and understood by the building management and workers. The criteria for choosing an appropriate asbestos abatement method are given in Appendix VII.

## Advice from the Environmental Protection Department

12. For further information or specific advice on asbestos management and abatement techniques and lists of registered asbestos consultants, contractors, supervisors and laboratories, please call the Asbestos Management and Control Section of the Environmental Protection Department at telephone: 2755 3554 and faxline: 2834 9960.

13. For information on disposal of asbestos waste, please contact the Waste and Water Management Group of the Department at telephone: 2755 4169 and faxline: 2305 0453.

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*Note: All ProPECC Practice Notes can be downloaded from EPD's homepage at <http://www.info.gov.hk/epd/propecc.htm>.*

**List of materials and products likely to contain asbestos**

The following list is not meant to be exhaustive and is for reference only.

- acoustic plaster
- adhesive
- asphalt floor tile and backing
- autoclave/boiler/calorifier insulation
- balcony grille
- battery casing
- brewery filter
- cable tray and seal
- caulking compound and putty
- ceiling tile and lay-in panel
- cement pipe
- cement wallboard and corrugated sheet
- blackboard
- chimney and flue insulation
- decorative plaster
- ductwork flexible joint
- ductwork fabric lining
- electric wiring insulation
- electrical cloth
- electrical panel partition
- fire blanket
- fire curtain
- fire door
- fireproofing material
- fuse box arc cloth
- high temperature gasket
- HVAC duct insulation
- insulation board
- insulation plaster
- ironing board
- joint compound
- laboratory hood/bench top/wire gauze/glove/apron
- lift brake shoe
- lift equipment panel
- packing material for wall/floor penetration
- pipe insulation and gasket
- plastic resin (thermosetting)
- refuse chute
- roof insulation tile
- roofing felt
- rope lagging
- soil stack
- spray applied insulation
- staircase grille wall
- taping compound (thermal)
- textured paint or coating
- thermal paper product
- vehicle brake shoe
- vinyl floor tile
- vinyl wall covering
- wallboard
- washer and dryer brake shoe
- water pipe

**List of Low Risk Asbestos Containing Materials**

- (1) Non-friable asbestos gasket.
- (2) Asbestos gland packing materials in pump, valve, engine and other mechanical plant items.
- (3) Asbestos friction products, such as brake lining, clutch facing, etc.
- (4) Corrugated asbestos cement sheet.
- (5) Asbestos blackboard.
- (6) Fuse box/switch box containing asbestos material.
- (7) Resilient floor covering, such as vinyl asbestos floor tile, sheet vinyl asbestos floor covering, and bitumen asbestos roofing felt.

**Legislation and Codes of Practice on  
Handling and Disposal of Asbestos**

- (a) Air Pollution Control Ordinance, in particular Part VIII on control of environmental asbestos and Part IX on asbestos control work.
- (b) Air Pollution Control (Asbestos) (Administration) Regulation.
- (c) Waste Disposal Ordinance, in particular the Waste Disposal (Chemical Waste) (General) Regulation.
- (d) Code of Practice on Asbestos Control: Preparation of Asbestos Investigation Report, Asbestos Management Plan and Asbestos Abatement Plan.
- (e) Code of Practice on Asbestos Control: Asbestos Work Using Full Containment or Mini Containment Method.
- (f) Code of Practice on Asbestos Control: Asbestos Work Using Glove Bag Method.
- (g) Code of Practice on Asbestos Control: Safe Handling of Low Risk Asbestos Containing Material.
- (h) Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste. Copies of the above codes of practice can be obtained from the Asbestos Management and Control Section of the Environmental Protection Department. Address: 28/F, Southorn Centre, 130 Hennessy Road, Wan Chai.

### Levels of Protection for Asbestos Work

The level of protection required for an asbestos abatement work or work involving asbestos containing material depends on the friability (i.e., friable or non-friable) of the asbestos containing material involved the type of asbestos abatement method and the degree of disturbance to the asbestos containing material. The guidelines for choosing an appropriate level of protection are summarized as below:

Protection	Features	Applications
1. Full containment	<ul style="list-style-type: none"> <li>* complete isolation of the work area with several layers of plastic sheet.</li> <li>* use of air movers equipped with HEPA filters to maintain a negative pressure of 1.5 to 4 mm water gauge inside the containment, and provide a minimum of 6 air changes per hour to the containment.</li> <li>* installed with 3-chamber decontamination unit for access and egress of working personnel.</li> </ul>	<ul style="list-style-type: none"> <li>* large scale work involving friable asbestos containing materials, such as thermal insulation materials, acoustic plaster, fireproofing stuffing materials, etc.</li> <li>* work involving direct disturbance of asbestos containing materials, such as removal and encapsulation work.</li> </ul>
2. Mini containment	<ul style="list-style-type: none"> <li>* enclosure of work area of a smaller scale, with lesser number of layers of plastic sheet.</li> <li>* use of HEPA-filtered air mover or vacuum cleaner to maintain a slight negative pressure inside the containment, and provide about 3 air changes per hour to the containment.</li> <li>* installed with a 2-chambered decontamination unit.</li> </ul>	<ul style="list-style-type: none"> <li>* small scale work to be carried out by at most 3 workers, and the work can be completed within one work shift.</li> <li>* abatement work involving friable materials, such as pipe insulation, asbestos flexible joint in an air handling unit, etc.</li> </ul>
3. Segregation of work area	<ul style="list-style-type: none"> <li>* physical barrier around the work area.</li> <li>* 2 or 3-chambered decontamination unit, depending on the scale of the work.</li> <li>* HEPA-filtered vacuum cleaner for decontamination.</li> </ul>	<ul style="list-style-type: none"> <li>* abatement work involving low risk asbestos containing materials, that is, non-friable materials such as corrugated cement sheets, cement pipe, vinyl floor tile, bitumen roofing felt, cement roof insulation tiles, gaskets, brake linings, etc.</li> <li>* decontamination work, e.g., preliminary decontamination before erection of containment, emergency clean up after spillage of asbestos.</li> </ul>



**Important Precautionary Measures for Asbestos Abatement Work**

- (i) adoption of protection, such as full containment, mini containment, or segregation of work area;
- (ii) provision of decontamination facilities for cleaning of workers, equipment and bagged waste before leaving the work area;
- (iii) adoption of engineering control technique to prevent fibre release from work area, such as use of negative pressure equipment with high efficiency particulate air (HEPA) filters to control air flow between the work area and the outside environment;
- (iv) wetting of asbestos containing materials before and during disturbance, minimizing the breakage and dropping of asbestos containing materials, and packing of debris and waste immediately after it is produced;
- (v) cleaning of work area by wet wiping and vacuuming with HEPA-filtered vacuum cleaner;
- (vi) coating on any surfaces previously in contact with or contaminated by asbestos with a sealant;
- (vii) proper bagging, safe storage and disposal of asbestos and asbestos-contaminated wastes;
- (viii) pre-treatment of all effluent from the work area before discharged; and
- (ix) air monitoring strategy to check for leakage and clearance of the work area after the asbestos work.

**Contents of an Operation and Maintenance Plan on Asbestos**

The contents of an operation and maintenance plan on asbestos should include:

- (i) operation and maintenance policies and procedures tailored to the need of the specific building, with clear administrative line of authority and responsibilities of key participants;
- (ii) accurate records of all asbestos containing materials and suspect materials, together with details of their locations, types and quantities and hazard assessments with respect to their physical conditions, susceptibility to damage or deterioration, and likelihood of resulting human or environmental exposure;
- (iii) for each identified asbestos containing material and suspect material, the remedial abatement method to be adopted such as removal, encapsulation, enclosure or deferred action;
- (iv) a surveillance scheme for continuous monitoring of the conditions of existing asbestos containing materials and suspect materials; the scheme should include labelling of materials, reinspection schedule, air monitoring strategy, and asbestos release incident response plans;
- (v) methods to avoid disturbing the asbestos containing materials, such as adoption of an authorization system for operation and maintenance activities; and
- (vi) a record keeping scheme for workers training and medical records, fibre release reports, airborne fibre monitoring reports, and reports on reinspection and surveillance of asbestos containing materials.

**Criteria for Choosing an Appropriate Asbestos Abatement Method**

<b><u>Abatement Method</u></b>	<b><u>When Appropriate</u></b>	<b><u>When Inappropriate</u></b>
<p>(1) <b><u>Removal:</u></b></p> <p>(i) immediate;</p> <p>(ii) as soon as possible; or</p> <p>(iii) planned, i.e., during routine maintenance work thus minimizing costs and disturbance.</p>	<p>Material severely damaged or liable to further damage or deterioration.</p> <p>Material friable or poorly bonded to substrate.</p> <p>Prior to building or ship renovation or demolition.</p>	<p>Material located on complex and inaccessible surfaces.</p> <p>Removal extremely difficult and other techniques offer better alternative.</p>
<p>(2) <b><u>Encapsulation:</u></b></p> <p>To form a protective coating on the surface of asbestos containing materials with a sealant.</p>	<p>Removal not feasible.</p> <p>Material still retains firm bonding to substrate.</p> <p>Damage to material unlikely.</p> <p>Limited accessibility of material.</p> <p>Short remaining life of structure.</p> <p>Economic or time advantage.</p>	<p>Material does not adhere well to substrate. Weight of sealant may cause delamination.</p> <p>Material is deteriorating or damaged.</p> <p>Water damage likely.</p> <p>Continuing inspection and maintenance of encapsulated material doubtful.</p>
<p>(3) <b><u>Enclosure:</u></b></p> <p>To erect an air-tight barrier around the asbestos containing material to confine any dust inside the enclosure.</p>	<p>Removal not feasible.</p> <p>Fibres can be completely contained within enclosure.</p> <p>Disturbance or entry into enclosed area unlikely.</p> <p>Economic advantage.</p>	<p>Damaged or deteriorating material causing high levels of fibre fallout.</p> <p>Water damage likely.</p> <p>Damage to enclosure likely.</p> <p>Entry into enclosure probable for repairs and maintenance.</p> <p>Continuing inspection and maintenance of enclosure doubtful.</p>
<p>(4) <b><u>Deferred action:</u></b></p>	<p>Negligible exposure potential.</p> <p>Material inaccessible and fully contained.</p> <p>Material in stable condition and not liable to damage.</p>	<p>Definite or questionable exposure potential.</p> <p>Possibility of deterioration or damage.</p> <p>Continuing inspection doubtful.</p>