

# ASBESTOS CONTROL

# Introduction

- The inhalation of regulated asbestos fibres can cause serious lung diseases including asbestosis, cancer of the lungs and mesothelioma. These diseases usually become apparent **only some years after exposure to asbestos** and sometimes not until 40 or more years after the first exposure
- Our legislative framework makes it compulsory for an employer to protect the environment from any pollution (water, air and soil).
- Although asbestos was used for various applications it was primarily used for roofing and insulating material on pipes, ducts and ventilation systems. Virtually all buildings older than 10 years contain some asbestos

# Definitions

- Asbestos is defined as any mixture containing any type of asbestos mineral and exposed to asbestos means exposed to or likely to be exposed to asbestos dust while at the workplace. It is obvious that the latter implies that it is not necessary to physically work with asbestos before it would be regarded as being exposed to asbestos
- **Risks associated with asbestos exposure**
- Susceptible people might from one excessive exposure have irreversible damage caused to their lungs, with far reaching consequences. Exposure to asbestos should thus at all costs be avoided. Smokers are particular vulnerable.
- The following asbestos-related illnesses can be distinguished:
- Pleural thickening (locally or diffused);
- Asbestosis (pulmonary fibrosis);
- Lung cancer; and
- Mesothelioma.

# Pleural thickening

- In contrast to inert dusts, biologically active dusts, such as asbestos, will drastically decrease the active life of macrophages. This results in an uncontrolled accumulation of dust particles in the alveolar region. Moreover, the number of fibroblasts increases and masses of interlacing collagen fibres develop, mature fibrosis is then characterized by the deposition of hyalin (glasslike tissue). On further inhalation, these deposits acquire a highly nodular appearance and develop into a conglomerate stage, which may extend to involve the pleura, with the result that the pleura is thickened over a large portion of the lung.
- **Asbestosis**
- Asbestosis is a type of pneumoconiosis, which is caused by the inhalation of asbestos fibres.
- Collagenous pneumoconiosis, i.e. pneumoconiosis caused by fibrogenic dusts, is characterised by: permanent changes in, or destruction of, the alveolar architecture; collagenous stromal reaction of a moderate to high degree; and permanent scarring of the lung.

- These pulmonary changes lead to a decrease in the elasticity of the pulmonary tissue as well as lower and less efficient oxygen uptake. The clinical picture is that of breathlessness, decreased lung expansion, and a lessened physical capacity for work. In severe cases the additional strain on the heart may lead to right-sided cardiac failure and death. The amount of scar tissue, which has been rendered functionless by the presence of fibrogenic dust, will determine the degree of incapacitation.
- Pulmonary changes associated with asbestosis differ markedly from those of silicosis. With asbestosis, the fibrosis is more marked, especially in the basal region of the lung, and the typical nodulation of silicosis is not apparent. The most obvious changes are in the form of a thickening of the pleura, which is puckered and raised in folds. The progressive massive fibrosis, which often develops as a complication of silicosis and coal-worker's pneumoconiosis, is seldom found in asbestosis.
- Asbestosis may further be diagnosed from the formation of small to large plaques, which occur almost exclusively in the parietal pleura. These plaques consist of thickened tissue, which is sometimes calcified. Plaque formation can develop without the accompanying pulmonary fibrosis. However, the mechanism, which leads to this, is still unknown.
- In the early stages of asbestosis, a physical examination often reveals persistent dry crackling sounds. This is known as crepitations or rales and is audible over the lung bases from the posterior. Clubbed fingers may also be present with cyanosis.

- The diffuse fibrous tissue bands, which are found with asbestosis, stretch right across the lungs and thus reduce the tensibility of the normal lung tissue. This, together with an actual loss of lung substance due to its replacement with fibrous tissue, leads to a restrictive type of pulmonary impairment. As a result, the total lung volume, vital capacity, and residual volume are reduced without an increase in resistance to air flow in the proximal conducting system. In severe cases breathing becomes increasingly difficult and the maximum capacity for ventilation decreases. This leads to abnormal breathlessness and dyspnoea. The loss of total vascular surface, as well as local hypoventilation of entrapped air, may lead to decreased oxygen transfer, which can then lead to arterial hypoxia. If the vascular bed has decreased substantially, the pressure in the pulmonary artery rises, especially during exercise, and right ventricle hypertrophy and cardiac arrest may follow.
- Lung cancer

Bronchial cancer is often associated with asbestos exposure. It was also found that the smoking of cigarettes has an additional and even synergistic influence on the forming of malignant bronchial tumours. Carcinogenic substances appear to be adsorbed on the surface of the asbestos fibres. The inhaled fibres carry the carcinogens into the lung. Thus the risk of bronchial cancer decreases substantially with a decrease in the risk of asbestosis.

- **Mesothelioma**

- Mesothelioma, a rare diffuse cancer that spreads across the pulmonary surface (pleura) and abdominal organs (peritoneum), has also been associated with an excessive exposure to asbestos – mainly crocidolite

# ASBESTOS MANAGEMENT PROGRAMME GUIDELINES

- An initial asbestos survey to identify and record the locations and conditions of all friable asbestos containing material (ACM).
- The preparation of a survey report detailing results from the survey and providing recommends for remedial actions
- The provision of appropriate procedures for all asbestos related work that may disturb friable ACM.
- Notification of all workers or building occupants that ACM is present so that they can adopt safe work procedures to protect themselves or their occupants in the building.
- Training and education of workers who may disturb friable ACM.
- Personal protective equipment for all workers who come in contact with ACM.
- Inspection and air monitoring at the workplace to ensure that asbestos is being contained in the workplace.
- Specific criteria for determining abatement, control and monitoring of external contractors performing work that may disturb friable ACM.
- The maintenance of records of all asbestos related work with ACM.
- The provision for auditing the implementation and effectiveness of the programme.



- Thus based on the above-mentioned, the following is required:
- Train middle management and/or supervisors to identify, assess and control asbestos exposure.
- Compile an inventory of asbestos.
- Conduct a risk assessment to determine who is at risk and the extent thereof.
- Regularly examine the condition of the asbestos.
- Determine who might have to renovate, cut, and drill asbestos and inform them of the new requirements.
- **Provide information on the location to anyone likely to disturb it (i.e. contractors).**
- **Renovating, cutting, drilling, cleaning, removal, etc. should be conducted according the prescribed methods.**
- Audit these contractors when necessary.
- Compile Standard Operating Procedures for dealing with emergencies.
- Assess the risk to exposure every **second year**.
- Records should be kept for forty (40) years of all required actions.
- Remove all asbestos as soon as possible.

# RISK RATINGS - CATEGORIES OF ASBESTOS WORK BASED UPON RISK

## Type 1 - Low Risk

These include the following:

- Installation or removal of manufactured goods containing asbestos: vinyl tiles, acoustics tiles, gaskets, and seals. and asbestos cement products (non friable).
- Sawing, cutting, shaping, or drilling of the products mentioned above with hand or power tool fitted with duct collection device equipped with **High Efficiency Particulate Filter (HEPA filter)**.
- Removal of dry wall with asbestos joint filling compounds.

## Type 2 –Moderate Risk

- The total or partial removal of false ceilings where friable materials containing asbestos may be found.
- Enclosure of friable material containing asbestos except by the sprayed application of a sealant
- Removal of friable asbestos material where the work area can be sealed from the workers' breathing area, such as work in a glove bag for the removal of pipe lagging.

- All work which is susceptible to emit asbestos dust not classified as low risk or high risk.
- The manipulation or removal of friable materials containing asbestos where the volume of debris does not exceed 0.03 cubic metres for each minor renovation or regular work specific to the area.

### **Type 3 –Moderate High Risk**

- The manipulation or removal of ventilation systems of friable systems containing asbestos where the volume of debris is greater than 0.03 cubic meters and does not exceed 0,3 cubic meters for each minor renovations or regular work specific to the area.

### **Type 4 –High Risk**

- Cleaning or removal of ventilation systems including rigid ducts in building where insulation contains asbestos applied by spraying.
- Enclosure (encapsulation) of friable material, by spray application of a sealant.
- Repair, alteration or demolition of kilns, boilers or similar devices made partially or completely of refractory materials containing asbestos.

# ASBESTOS REGISTER

- 1) Name of company:**
- 2) Name and address of site: (principal site information)**
- 3) Asbestos Procedure number**
- 4) Where the asbestos containing materials (ACM's) were found on the site (e.g. floor, room #, etc):**
  - 1.
  - 2.
  - 3.
- 5) The type\* of ACM's found (including identification of the minerals if unbound) (p.5/5):**
  - 1
  - 2.
  - 3.
- 6) The form\* of the ACM's found (eg. wall/roof sheeting, brake pad, gasket, seal, etc):**
  - 1.
  - 2.
  - 3.

- 7) Form of Asbestos – (e.g. Cement Insulation, Insulation Board)**
- 8) Occupational Hygiene monitoring (year)**
  - 1.
  - 2.
- 9) Background to Risk Assessment (occupational hygiene) (short description)**
  - 1.
  - 2.
- 10) Methodology for Risk Assessment**
  - 1.
  - 2.
- 11) Fibre Content (refer to risk matrix)**
  - 1.
  - 2.
- 13) Summary of Risk Assessment**
- 14) Safety of Asbestos friable present**
- 15) Estimate of the amount of each of the ACM's found (mass - kg and/or area - m<sup>2</sup>):**
  - 1.
  - 2.

**16) Any changes to the information since the survey that identified the ACM's was carried out, or any other relevant comments/notes:**

**17) Access Prohibited (areas)**

- 1.
- 2.

**18) Frequency of building maintenance (per area)**

- 1.
- 2.

**19) No Information on presence or absence of Asbestos (areas)**

- 1.
- 2.

**20) Asbestos Standards Communicated (yes/no and when)**

• **Other relevant information (steel frame, age of building)**

- 1.
- 2.

**21) Do Boilers have thermal insulation?**

- 1.
- 2.

- 22) List work activities, which may require evacuation**
  - 1.
  - 2.
- 23) Emergency contact details**
  - 1.
  - 2
- 24) Asbestos demolition and disposal (e.g. area)**
  - 1.
  - 2.
- 25) Name of company conducting asbestos demolition and disposal**
  - 1.
  - 2.
- 26) Asbestos disposal (details of company, site waste disposed of etc)**
  - 1.
  - 2.
- 27) Situation at dumpsites under our control (where applicable)**
  - 1.
  - 2
- 28) Training provided (details) (applicable to internal training)**

**29) Annexure (building or site plans, or plans of property)**

**30) Full Name of person making entry**

**Date**