The Management of Asbestos at the University of Manitoba

WHAT IS ASBESTOS?
Asbestos is a name given to a group of minerals which occur naturally as masses of long silky fibres. Asbestos is known for its unique properties of being resistant to abrasion, inert to acid and alkaline solutions, and stable at high temperatures. Because of these attributes, asbestos was widely used in construction and industry. Asbestos fibres are woven together or incorporated within other materials to create many products.

There are three main types of asbestos fibres:

- Chrysotile (White Asbestos): Fine, silky, flexible white fibres (the most commonly used asbestos in the United States and Canada). Current evidence suggests that Chrysotile may be less hazardous than Amosite or Crocidolite, although still considered a carcinogen.

- Amosite (Brown Asbestos): Straight, brittle fibres that are light grey to pale brown (the most commonly used in thermal system insulation).

- Crocidolite (Blue Asbestos): Straight blue fibres.

There are three other types of asbestos fibres: Anthopylite, Tremolite, and Actinolite, which are found as contaminants in Asbestos Containing Materials (ACM).

HOW IS ASBESTOS USED?
Asbestos has been mined and used commercially in North America since 1880, but its use increased greatly during and after World War II. The building and construction industry used asbestos for strengthening cement and plastics. Asbestos was also used for heat insulation, fire proofing, and sound absorption. Because of its good friction and wear characteristics, asbestos is often used in brake shoes and clutch pads in cars, trucks, and airplanes.

WHERE CAN ASBESTOS BE FOUND ON CAMPUS?
Asbestos containing materials can be classified into one of three types: Sprayed or trowelled-on material, Thermal System Insulation, or Miscellaneous materials.

1- Sprayed or trowelled-on materials used on ceilings or walls: This surfacing material is found as a white, popcorn textured decorative, acoustical, and fire proofing cover in homes, buildings, and schools.
2- Thermal System Insulation: Here asbestos is often found as plaster cement wrap around boilers, on water and steam pipe elbows, tees, fittings, and pipe runs. Asbestos is also found on duct systems, and as a cardboard type of material (called aircell) found on steam pipe runs.

3- Miscellaneous material: This includes all materials containing asbestos which were not included in the above groups. For example: floor tile, sheet rock, ceiling tiles, automotive friction products, rubber tile matting, rubber stair treading and risers, auditorium acoustical panels and sound proofing, gasket material, stage curtains, roofing materials, transite siding, caulking, cement pipe, kiln insulation, electrical panel insulation and wiring, fire brick, tar, and others.

All three types of ACM are found on campus since many of the University structures were built prior to the time that government controls were placed on the use of asbestos in construction materials. The University has procedures in place to protect employees, students, and the public from exposure to asbestos.

**HOW ARE PEOPLE EXPOSED TO ASBESTOS?**

People are exposed to asbestos by the inhalation of asbestos fibres. Asbestos Containing Materials (ACM’s) which can be crumbled, pulverized, or reduced to powder by hand pressure are known as friable asbestos. When friable ACM is damaged or disturbed it releases fibres into the air. Airborne asbestos fibres are small, odorless, and tasteless. They range in size from 0.1 to 10 microns in length (a human hair is about 50 microns in diameter). Because asbestos fibres are small and light, they can be suspended in the air for long periods. People who come in contact with friable asbestos are at risk of inhaling fibres. People who live or work near asbestos related operations may also inhale asbestos fibres that have been released into the air by work activities.

As long as ACM’s remain undisturbed and asbestos fibres are not released into the air, there is no hazard to people coming in contact with the materials.

**WHAT DETERMINES THE AMOUNT OF EXPOSURE TO ASBESTOS?**

The amount of asbestos a person is exposed to will vary according to several factors:

1- the fibre concentration in the air;
2- the duration of exposure;
3- the worker's breathing rate;
4- the environmental conditions; and
5- whether or not personal protective equipment is worn.

Asbestos has been so widely used in North America that the entire population has been exposed to some degree. Air, beverages, drinking water, food, drugs, dental preparations, and a variety of consumer products all may contain small amounts of asbestos. In addition, asbestos fibres may be released into the environment from outcrops of bedrock in the earth. The asbestos containing rocks release fibres as a result of wind, water and chemical erosion.

**WHAT IS THE OCCUPATIONAL EXPOSURE LIMIT FOR ASBESTOS?**
Asbestos is identified as a designated material by the provincial Workplace Health Hazard Regulation and therefore is automatically declared as posing a potential health hazard. The Workplace Health Hazard Regulation (MR 53/88) defines the occupational exposure limit of a designated material as the level as close to zero as is reasonably practicable, but shall not exceed the Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists. Workplace Safety and Health recognizes the level as close to zero as is reasonably practicable for all forms of asbestos as 0.1 fibres per cubic centimetre of air.

WHAT ARE THE EFFECTS OF EXPOSURE TO ASBESTOS?

Once inhaled, the small, inert asbestos fibers enter the lungs. They are deposited and retained in the airways and tissues of the lungs. In the alveoli, the location of gas exchange, asbestos causes the development of scar tissue. This thickening of the alveoli wall reduces the amount of oxygen available to the body. Because asbestos fibers remain in the body for a prolonged period of time, each exposure increases the likelihood of developing one or more of the following diseases. All of these conditions only become apparent many years after the start of exposure.

1- Asbestosis: A chronic lung ailment caused by the build up of scar tissue inside the lungs. Asbestosis can cause shortness of breath, permanent lung damage, and increases the risk of lung infections. The development of asbestosis requires significant prolonged exposure to high concentrations of asbestos fibers and is rarely seen.

2- Asbestos related pleural fibrosis: A thickening in the lining of the lungs. This is the most common effect of asbestos seen today and usually causes no symptoms. This condition is not cancer, but is a marker of significant asbestos exposure.

3- Lung cancer.

4- Mesothelioma: A rare form of cancer of the chest cavity lining or abdominal cavity.

5- Other cancers: There is evidence to suggest that cancers at some other sites, primarily gastrointestinal, may be associated with asbestos exposure.

Asbestos is so ubiquitous we are all exposed to it in minute quantities. However, to develop disease one must have substantial exposure to friable asbestos. Usually, such exposure requires working with the friable product over a long period of time. Generally, asbestos respiratory diseases take two or more decades to develop from the time of exposure, and then only after extensive and long term exposure to friable asbestos. The more extensive and longer the exposure, the more risk an individual has for developing asbestos-related disease.

Many studies have shown the combination of smoking and asbestos exposure to be particularly hazardous. Cigarette smokers exposed to high concentrations of asbestos, are on the average fifty times more likely to develop lung cancer than non-smokers who are not exposed to asbestos.

WHO SHOULD BE ‘TESTED’ FOR ASBESTOS?

Workers who have had significant exposure to asbestos, should document this exposure. There is no specific test to measure asbestos in the body. Medical surveillance programs have been
developed to try to identify whether workers show any effects of asbestos exposure. These programs involve taking a work history and a chest radiograph and lung function test. The University is in the process of developing a surveillance program for its staff who may have had higher exposures to asbestos for long periods of time. The details of this program will be provided at a later date.

WHAT PROCEDURES ARE IN PLACE FOR DEALING WITH ASBESTOS AT THE UNIVERSITY?

The University recognizes its responsibility to ensure the safety and health of all employees who may work in the vicinity of, or who may remove, asbestos-containing materials (ACM) as part of their job duties. The University also recognizes that every effort must be made to minimize the exposure of building occupants and maintenance and custodial staff to airborne asbestos fibres. The University has taken the following steps:

- The University has adopted the Workplace Safety and Health Guideline “Guidelines for Working With Asbestos” and all work procedures must conform to this standard. Training of University staff and others who may come in contact, or work with ACM, will continue to be conducted and evaluated.

- The survey, inventory and periodic reassessment of all suspect and ACM will continue to be conducted. The University has an on-going program to audit University buildings to determine where ACM exist in the buildings. When repairs and maintenance work are undertaken in these buildings, proper precautions and procedures are taken to ensure there is no exposure to workers and others who may be affected by the work. Where maintenance work is conducted in buildings that have not yet been audited, bulk samples of potential ACM will be taken and sent to an accredited lab for analysis. If ACM is found and the material may become disturbed and friable due to the procedures, proper work protocols will be followed.

- The University has developed work practices and procedures that will allow renovation, construction or emergency maintenance to be performed safely without exposing employees, building occupants, or members of the public to airborne asbestos fibres. When major building modifications, additions, etc. are planned, comprehensive asbestos audits are undertaken prior to the work to determine the location of asbestos. If ACM is found, it will normally be removed by an asbestos abatement contractor prior to the construction activity.

- The University has an asbestos air monitoring program in place to determine if there is any asbestos exposures above the recognized provincial standard. Testing is conducted both in-house and by external asbestos consultants to ensure that there are no risks to staff and students from exposure to ACM’s. At no time, has the University found air monitoring results above the provincial occupational exposure limits.
• The University is in the process of consolidating all the elements already in place into a documented and comprehensive Asbestos Management Program, in cooperation with an external asbestos management consultant. The development of the AMP will include the participation of all interested members of the campus community.

WHAT SHOULD YOU DO IF YOU HAVE CONCERNS ABOUT ASBESTOS?
Should you have concerns regarding any potential exposure to asbestos, please discuss this with your supervisor or Department Head. The Environmental Health and Safety Office (EHSO) may be contacted at 474-6633 at any time for assistance and advice on this issue.

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