

ASBESTOS



Know what it is
and how you
can protect
yourself



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

WHAT IS ASBESTOS?

The term asbestos designates a group of naturally occurring fibrous serpentine or amphibole minerals with historical commercial usefulness due to their extraordinary tensile strength, poor heat conduction and relative resistance to chemical attack. The principal types of asbestos are: Chrysotile, Crocidolite, Amosite, Anthophyllite, Tremolite and Actinolite.



An image of asbestos fibers



An image of asbestos rock

FORMS OF ASBESTOS FOUND IN SOUTH AFRICA

The three types of asbestos minerals: Amosite, Chrysotile & Crocidolite found in South Africa were mined in the following provinces Limpopo, Northern Cape and Mpumalanga.

- Amosite is also known as 'brown asbestos' and is like crocidolite, a member of the amphibole group. It has harsh spiky fibres that have good tensile strength and resistance to heat and was used frequently as a fire retardant in thermal insulation products and in ceiling tiles.

- Chrysotile is classified as a sheet silicate, that forms flat sheets of long, thin fibres. These fibres are the most flexible of all asbestos fibres as they can withstand the fiercest heat but are so soft and flexible that they can be spun and woven as easily as cotton. They had been in corrugated asbestos cement roof sheets typically used for outbuilding such as warehouses and garages.
- Crocidolite is also known colloquially as 'blue asbestos' and is a member of the amphibole group. They are needle like fibres that are the strongest of all asbestos fibres and have a high resistance to acids. They are known to be the most lethal of all asbestos types. They were commonly used to insulate steam engines, and were found in pipe insulation and cement products.

USES OF ASBESTOS FIBRES

- Asbestos has been used by man in cement building materials, pipework lagging, insulating mattresses and rope, fire resistant insulation boards, sprayed fire-proofing products, floor tiles and coverings, water and sewage pipes, gas masks, friction material for vehicle brakes and clutches, lifts and machinery. Boilers and pipework were lagged with asbestos products in hospitals, power stations and throughout heavy industry.



An image of asbestos wall sheeting corrugated



An image of cement-asbestos corrugated

EXPOSURE PATHWAYS

- Asbestos fibres can be released into the air by the disturbance of asbestos-containing material during product use, demolition work, building or home maintenance, repair and remodelling. In general, exposure may occur only when the asbestos-containing material is disturbed or damaged in some way to release particles and fibres into the air.



An image of broken asbestos ceiling tiles



An image of broken asbestos ceiling tiles



An image of asbestos used in pipe insulation

DISEASES ASSOCIATED WITH EXPOSURE TO ASBESTOS

- The people with the largest exposure to asbestos have the greatest risk of contracting an asbestos-related disease. The first wave of asbestos disease occurred in workers involved in the mining and milling of crude asbestos and in the manufacture of asbestos products. Adverse health effects from exposure to asbestos remains a serious concern to miners, mining community and residents of buildings that contain asbestos as well as in communities where the soil is contaminated with asbestos. Miners and mining communities are at the greatest risk of catching asbestos-related diseases, but are better prepared

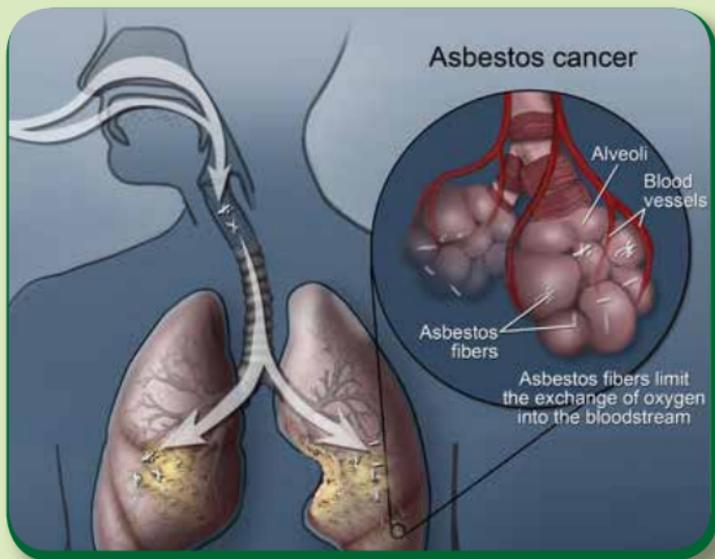
to limit their exposure to asbestos than home owners who are unknowingly inhaling asbestos.

- Asbestosis is a disease of the lungs that is caused by exposure to high levels of asbestos dust and is common in asbestos miners, mill workers, insulation workers and other occupations that use asbestos on a regular basis.

ASBESTOS DISEASE 2

Asbestosis

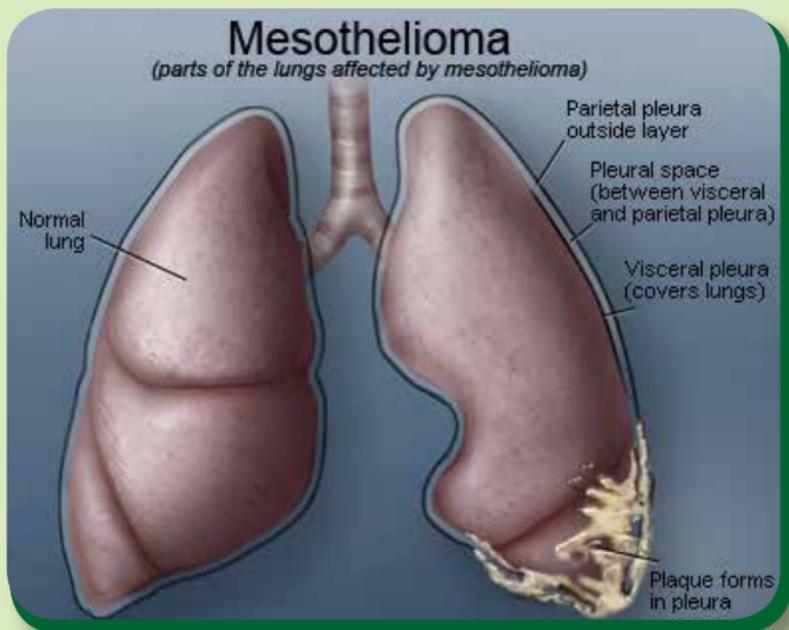
- Scarring of lung tissue reducing ability to take oxygen.
- Dose related disease repeated regular exposures.
- Debilitating disease and can be fatal.
- Latency period 10-20 years



- Lung cancer is also related to exposure to asbestos. It is fatal especially if not caught in its early stages. It can occur with low levels of exposure such as those that occur in the general environment. Higher lung cancer rates are linked to all three types of commercially mined asbestos.



- Malignant Mesothelioma develops after exposure to asbestos in the workplace – in industrial settings, shipyards, auto repair shops, old houses, schools and public buildings. While it usually takes long-term exposure to put someone at risk, short-term and one-time exposures are also known to cause mesothelioma cancer.



HOW BIG IS THE PROBLEM?

- The World Health Organization (WHO) estimates that worldwide there are more than 100 000 asbestos related deaths per year and that, currently, 125 million workers are exposed to the deadly fibre.
- In the United Kingdom, the death toll is estimated at approximately 3 500 per year and, in the USA, 10 000 per year.

- In South Africa about 200 mesothelioma cases are reported every year but this is most likely an underestimate considering the magnitude of mining and processing that took place in a country that was a leading global supplier of three types of asbestos.

HOW TO IDENTIFY MATERIAL THAT MAY CONTAIN ASBESTOS

- Generally, you can't tell whether a material contains asbestos simply by looking at it, unless it is labelled. Asbestos in buildings is present in either loose, friable form (such as loose insulation material) or more often, hidden within another material (such as asbestos cement products).
- Fibres might be visible in the friable form but are seldom seen in asbestos-cement and similar products. In both cases it is not possible to identify asbestos with certainty by visual examination alone and laboratory analysis is often required.
- Since March 2008 asbestos was effectively banned in South Africa, and it is unlikely to find ACMs in buildings constructed after that year. The golden rule is always: when in doubt assume the material contains asbestos



Labelled asbestos containing material

SOUTH AFRICAN LEGAL REQUIREMENTS RELATED TO ASBESTOS

- The South African Department of Labour Asbestos Regulation (No.155 of 2002) prohibits an employer or a self-employed individual from carrying out work that will put any person at risk from asbestos exposure
- The regulation also requires that, where asbestos forms part of a building, plant or premises steps are taken to ensure that the asbestos is identified and that potential exposure of any person to the fibres is prevented or adequately controlled.
- No work is allowed to take place on asbestos or Asbestos Containing Materials (ACMs) before a written work plan has been devised and the necessary precautionary measures have been taken.

- Demolition or removal of asbestos and ACMs can only be carried out by an approved asbestos contractor.

DANGER

**THIS AREA CONTAINS
MISCELLANEOUS
ASBESTOS MATERIALS**

CHECK PLANT OR SAFETY
ENGINEER'S OFFICE
FOR IDENTIFICATION
AND LOCATION OF
ASBESTOS MATERIAL

**AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD**

RISK PREVENTION

An employer or self-employed person shall ensure that the exposure of a person to asbestos is either prevented or where this is not reasonably practicable, adequately controlled:

Provided that the control of the exposure shall be regarded as adequate if the level of exposure is:

1) reasonably practicable to lower exposure by means other than respiratory protective equipment, so that it does not exceed the 0% for asbestos.

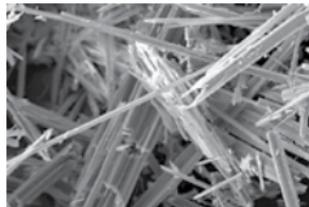
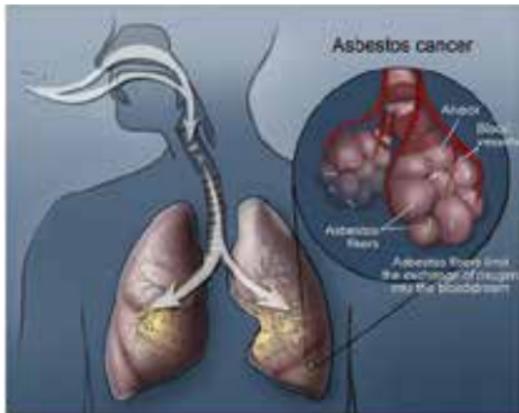
2) where reasonably practicable, an employer or self-employed person shall control the exposure of a person by:

- Using a substitute for asbestos
- Limiting the number of persons who will be exposed or may be exposed
- Limiting the period during which persons will be exposed or may be exposed
- By limiting the amount of asbestos dust that may contaminate the working environment.



Professional workers in their protective personal equipment handling asbestos waste

THE DEADLY AIR THEY BREATHE



Inhalation of **asbestos** fibres is the primary cause of asbestos related disease.

Inhaled **asbestos** is associated with three major diseases:

Asbestosis - **Asbestos** causes scarring of lung tissue that eventually restricts one's ability to inhale.

Lung Cancer - **Asbestos** increases the risk of lung cancer, especially in combination with exposure to tobacco smoke.

Mesothelioma - **Asbestos** is thought to be the primary cause of this rare and deadly type of cancer of the lung lining and chest wall.

ASBESTOS THE SILENT KILLER



**WARNING
ASBESTOS**

ASBESTOS FIBERS FOUND ON COMMUNITY SOIL



Fibers of asbestos on the soil



Fibers of asbestos found on the soil



Rocks with asbestos fibers

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