Of all the Man Made Mineral Fibres (MMMF's), rock wool and slag wool are the most hazardous to our health. Rock wool and slag wool cause lung cancer.

**Health Effects**

Rock wool and slag wool are among the oldest MMMF's so there have been more studies of them than newer products such as fibreglass.

The good news is that studies to date have not uncovered any evidence of a scarring of lung tissue like asbestosis, nor of cancer of the gastro-intestinal tract nor lining of the lung.

The bad news is that there is a lot of evidence of increased incidence of lung cancer.

**Human Studies**

The International Agency for Research on Cancer (IARC) is an arm of the World Health Organization. In the mid-1980's, IARC co-ordinated an important study of 13 plants, 7 of them producing rock wool, in 7 European countries. A total of 21,967 workers were studied, of whom 2,719 had died at the time of analysis.

In the past, before binders or oil were added to rock wool, there were statistically significant increases in the incidence of lung cancer. In four of the rock wool factories which had not used these dust suppressants, among workers employed there for more than 30 years, 6 had died from lung cancer where less than 2 were expected. Of those employed from 20 to 29 years, 4 died from lung cancer where 1 was expected.

In the United States in 1984, 16,730 workers were studied at 17 plants. Because of a long follow-up period, 3,761 deaths were analyzed. For slag wool and rock wool workers, there were 14 deaths vs. 8 expected. In an earlier report in 1982, 30 deaths of U.S. rock wool workers were found due to lung cancer vs. 19 expected.

In the last 30 years the incidence of lung cancer has diminished because of dust suppressants and better dust control in the factories through local exhaust ventilation systems.

Among 40,000 MMMF's workers there was a 30% increased lung cancer incidence among workers exposed to rock or slag wool in the United States and a 40% increase among European workers exposed to rock or slag wool.
Animal Studies

A 1984 British study for the British Government’s Health and Safety Executive is quite disturbing. In laboratory studies with rats, rock wool was determined to produce three times the number of tumors as asbestos.

But Isn't Asbestos Worse?

Since the early part of the century, a natural occurring substance, asbestos, has been known to cause lung disease among workers exposed to it. It was not in the interest of the asbestos industry to publicize the dangers of asbestos to workers or to the general public. Not till the 1970's did the dangers of asbestos become widely known.

Exposure to large amounts of asbestos over time causes scarring of the lung. This disease is called asbestosis. Exposure to smaller amounts of asbestos over time causes various kinds of cancers: lung cancer, gastro-intestinal cancer and mesothelioma (cancer of the lining around the lung and abdomen).

Because the asbestos substitutes, Man Made Mineral Fibres are less widely used, there have not been as many studies of them as there have been of asbestos.

How Do Fibres Cause Cancer?

Fibres of particular sizes, shapes, and durability cause cancer. These fibres can be natural such as asbestos, or man-made such as rock wool or slag wool.

Our respiratory system (nose, mouth, windpipe, bronchial tubes and lungs) can deal with many fibres very well. Extremely tiny fibres can be breathed in and out with apparently little problem. They are too small to be trapped in the lungs. Large fibres are caught in the mucous membranes of the nose.

It is the small to medium sized fibres of a certain size and shape that are also durable that we are concerned about. Many of them are too small to be seen with the naked eye. They are small enough to get into the lungs but a bit too large to be easily exhaled. It’s when they get stuck in the lungs that the fibres begin to damage the cells in the lungs. These damaged cells begin to reproduce uncontrollably and the lung cancer tumor begins to grow. The most dangerous fibres seem to be greater than 5 microns in length with diameter of less than 2 microns (a micron is one-millionth of a meter).

Treatment

Unfortunately lung cancer is not one of the cancers that is easily successfully treatable. Surgery, radiation and chemotherapy are all used but the grim reality is this: once people have contracted lung cancer, 80% of them will be dead within five years. This statistic has remained unchanged despite medical efforts to improve survival rates.

Prevention

Prevention is thus the only "cure" for lung cancer. We must reduce exposure to cancer-causing substances to prevent lung cancer tumours from developing.
**Lower Exposure Means Lower Risk**

In the early years of European rock wool production, exposures were estimated at between 1 and 10 fibres per millilitre (f/ml). Today it is estimated that average concentrations in European factories are 0.1 f/ml, ranging as high as an 0.72 f/ml, average in some workplaces. Since the incidence of lung cancer among European rock wool workers today is less than it was 30 years ago, we know if we can reduce workplace exposure, we can reduce the risk of lung cancer.

**The Law**

Most Canadian occupational health and safety laws and regulations are completely inadequate to protect rock wool and slag wool workers from risk. The legal limit is far too lax. It treats MMMF's as though they were a nuisance dust instead of cancer causing substances.

Australia has a much more realistic level of 0.5 fibres per millilitre with an action level (that is, companies should take steps to reduce exposure even though the government might not prosecute for noncompliance) of 0.2 fibres per millilitre.

**Reducing Workplace Exposure**

Since rock wool is a fibre like asbestos, we can use the same prevention methods to reduce worker's exposure.

The first priority is ventilation. Local exhaust systems must be used at all times to reduce the amount of dust in the air (as well as reducing workers' exposure to other hazards such as resin fumes like phenol and formaldehyde).

To clean floors and machinery, vacuuming must be used, never sweeping. Sweeping rock wool raises dust into the workplace air where you can easily breathe in the hazardous fibres. Waste material should be collected and bagged as soon as possible.

Vacuuming must be used to remove rock wool dust from clothing. Compressed air must never be used to blow dust off clothing. When you use compressed air, you put millions of rock wool fibres into the air to be breathed in by you and your fellow workers. (Also, if you have a small cut and use compressed air to blow off your clothes, a tiny bubble of air can get into your bloodstream through the cut. The tiny air bubble can kill you).

Don't wear your work clothes home. Some members of asbestos workers' families died from various cancers as a result of being exposed to asbestos that the workers brought home on their work clothes. Chang clothes at work and don't launder the work clothes at home. The company should provide work clothes and a safe laundering facility. If they are reluctant to do so upon the recommendation of the union health and safety committee, then you should make it a bargaining proposal for your next set of negotiations.