WORKSAFE VICTORIA
SAFETY ALERT

Roof Tile Cutting - Silica Dust Exposure

Purpose

The purpose of this document is to assist in managing the risks associated with exposure to crystalline silica dust and quartz during roof tile cutting operations.

Background

Silica is found naturally in sand, sandstone, granite, clay, shale, slate and various rocks and soils. Typical products which contain silica include concrete, mortar, clay bricks, calcium silicate bricks, and both concrete and terracotta roof tiles.

It has become an increasingly common practice for roof tiling subcontractors to cut the edge of valley tiles using hand held power grinders in order to obtain acceptably straight edges. Often excess dust is then 'blown' off the surrounding roof.

The use of power tools for cutting roof tiles can generate high concentrations of very fine crystalline silica dust in the working environment.

Health Effects of Silica Dust

Exposure to silica dust can cause irritation to the eyes, nose and throat like most other dusts, resulting in tearing, sneezing or coughing. However, inhalation of very fine (respirable) crystalline silica dust can also cause irreversible scarring of the lungs—a disease called **silicosis**.

Silicosis usually develops after inhalation exposure to relatively low concentrations of crystalline silica dust or quartz over a long period of time. Victims are likely to suffer severe shortness of breath and will find it difficult or impossible to walk even short distances.

There is no medical treatment for silicosis. Once the disease has begun, it will continue to progress even if the worker is removed from further exposure. People with silicosis are also at greater risk of developing bronchitis and lung cancer.

The risk of developing silicosis depends on many factors including the crystalline silica content of the material being worked with, particle size and concentration of silica in the dust, and the duration of exposure. The recommended national exposure standard for respirable crystalline silica or quartz is an 8 hour average of 0.1 mg/m^3.

Silicosis is difficult to detect in its early stages because of the absence of symptoms. Frequent dry coughing, shortness of breath, wheezing and increasing tiredness are possible early indicators. Chest x-rays and lung function tests together with a detailed work history are the main methods of diagnosis.

Responsibilities

All employers have an obligation to ensure employees are protected, so far as is practicable, from the risks of airborne dusts and, in particular, respirable dusts containing silica. This obligation extends to any other workers or members of the public in the vicinity of the work.

In respect of roof tiling works, these obligations are imposed on all employers who are able to exercise control over the manner in which the works are carried out.

In addition to the subcontract roof tiler, these obligations apply to the builder and the company engaged to supply and erect the roof tiles.

Prevention and Control

The best and preferred way to eliminate dust is to adopt alternative work practices which do not require the use of power grinders. The use of mechanical tile cutters by well-trained workers may produce acceptable valley cuts.

If it is not practicable to avoid the use of use power tools, then the exposure to airborne dust must be eliminated or reduced to acceptable levels.

Priority should be given to controls that will remove dust at the source. A most effective way of reducing exposure to dust generated by power tools is by using wet methods. Tools fitted with a water supply for dust suppression are widely available and should be considered for use where practicable. Where water

suppression techniques are not practicable, the use of tools fitted with dust extraction can reduce exposure at the source but often are not as effective as wet methods.

Where it is not practicable to use wet methods or tools fitted with dust extraction, or where the use of such tools does not reduce exposure sufficiently, respiratory protective equipment should be used. Respiratory protective equipment must be used in accordance with the following Australian/New Zealand Standards:

- *AS/NZS 1716 Respiratory protective devices*
- *AS/NZS 1715 Selection, use and maintenance of respiratory protective devices*.

Employers should seek advice from their supplier to ensure they purchase appropriate equipment. As a minimum, a P1 dust mask would be suitable. Dust masks must fit properly to provide the required protection. Dust masks that rely on achieving a good facial fit are unsuitable for use by workers with beards. In these cases, an airline respirator or a powered air purifying respirator fitted with a hood or helmet and visor should be used.

Employers are responsible for ensuring appropriate respiratory protective equipment is provided. Those who need to wear respiratory protective equipment should be trained in its proper use, care, maintenance and in its limitations.

	
Use of hand cutting equipment eliminates the generation of dust.	***Use of personal protective equipment reduces exposure to dust.***

General Recommendations

Work Procedures

A safe work method statement (SWMS), also referred to as a Job Safety Analysis (JSA), should be developed for the cutting of roof tiles which eliminates, or reduces so far as is practicable, the exposure of workers to silica dust. The SWMS should be developed having regard to the preferred measures outlined above.

Where a generic SWMS is to be used, employers should ensure any site-specific factors which may impact on the safety of workers have been assessed. Such factors may include roof pitch, weather conditions, site and roof access, or the presence of power lines.

Employers should also ensure workers are trained in the SWMS and the use of any associated equipment.

- Put warning signs near the working area.
- Assess the need to limit access to the work zone.
- Wet down dusty work areas.
- Clean up every day by wetting and then sweeping up or dry vacuuming all dust and putting it into a covered container.
- Clean tools and equipment as often as required.
- Hygiene, Monitoring and Surveillance

Provide on-site facilities for washing.

Standards Australia

- *AS 2985 Workplace Atmospheres – Method for sampling and gravimetric determination of respirable dust.*
- AS 1715 *Selection, use and maintenance of respirators.*

Copies of standards can be obtained by contacting Standards Australia on 1300 654 646 or online at www.standards.com.au.