Chapter 18

Respiratory protection

The Regulation

The law requires the PCBU/employer to provide personal protective equipment (PPE) as a method of controlling risks to workers. However, the PPE cannot be the sole method of control and the PCBU/employer must not charge the worker for the PPE. There are no regulations about the type of PPE or its selection.

Using respiratory protective equipment

Choosing respiratory protection is not a matter of just grabbing the nearest mask or using a general respirator. Expert advice is often required, especially for processes such as spray painting, or confined space entry.

The Safety Data Sheet (SDS) should provide information on the Respiratory Protection Equipment (RPE).

When choosing the RPE, decisions need to be made about the protection factor that is required. This cannot be done without measuring the contaminants or knowing the exposure standards for the substances.

These are just a few things to consider.

The RPE must:

- Protect the wearer from a variety of hazards
- Suit a variety of work situations
- Match the specific requirements of the wearer.

The RPE must be both adequate and suitable:

- Adequate – Is it right for the hazard and does it reduce exposure to the level required to protect the wearer's health? For example: dust masks are not suitable for fumes or vapours.
- Suitable – Is it right for the wearer, task and environment, such that the wearer can work freely and without additional risks due to the RPE?
- An RPE is available in different sizes to allow for the facial differences of workers. Gender, ethnicity, build and many other factors mean that one size of face-piece will not fit everyone.

Respirators (filtering devices) use filters to remove contaminants from the air being breathed in. They can be either:

- Non-powered respirators – relies on the wearer's breathing to draw air through the filter
- Powered respirators – uses a motor to pass air through the filter to give a supply of clean air.

Warning

Respirators must not be used in oxygen-deficient atmospheres. These situations require suitable breathing apparatus and professional advice is essential.

Breathing apparatus (BA) needs a supply of breathing-quality air from an independent source (e.g. air cylinder or air compressor).

There are also a range of styles:

- Tight-fitting face pieces (often referred to as masks) rely on having a good seal with the wearer's face. These are available as both non-powered and powered respirators and BAs. A face fit test should be carried out to ensure the RPE can protect the wearer.
- Loose-fitting face pieces rely on enough clean air being provided to the wearer to prevent contaminant leaking-in (only available as powered respirators or BAs). Examples are hoods, helmets, visors, blouses and suits.

There are various types of respirator and they all rely on filter material to remove the hazard. The filter material will be different depending on the hazardous substance and its form. There are two basic filter types available:

- Particle filters
- Gas/vapour filters.

Remember:

- Particle filters do not protect against gas or vapour
- Gas/vapour filters do not protect against particles
- Neither filter type can be used in oxygen-deficient atmospheres.

18. Respiratory protection

For hazardous substances that are classed as carcinogens or mutagens, or are a potential cause of occupational asthma, exposure needs to be reduced to as low a level as is possible.

The following table is an example of what decision need to be made when selecting the correct RPE.

Beware

Any decision about the type of respiratory protection to be worn requires expert advice. See reference to Required Minimum Protection Factor below.

Type	Effective for particles	Effective for gas/vapour	Continuous wear time
Disposable half mask particle filter	Yes	No	Less than 1 hour
Reusable half mask particle filter	Yes	No	Less than 1 hour
Reusable half mask gas/vapour filter	No	Yes	Less than 1 hour
Full Face mask particle filter	Yes	No	Less than 1 hour
Full face mask gas/vapour filter	No	Yes	Less than 1 hour
Powered mask with appropriate filter	Yes	Yes	More than 1 hour
Powered Hood/helmet, with appropriate filter	Yes	Yes	More than 1 hour

Required Minimum Protection Factor (RMPF)

Australian Standard AS/NZS1715 rates respirators based on the level of protection provided by the respiratory protection. As a guide:

- Powered Air Purifying Respirators supply air a minimum 50 times cleaner than the air in the surrounding environment
- Supplied air respirators provide air that is at least 100 times cleaner than the air in the surrounding environment
- Disposable and reusable respirators have a RMPF of 10 times cleaner if properly fitted and worn.

Therefore, disposable and reusable half face respirators provide 1/5th of the protection of a powered air respirator and 1/10th of the protection of a supplied air respirator.

Refer to:

- Australian Standards 1715 and 1716
- http://www.hse.gov.uk/pubns/priced/hsg53.pdf