

Fire & Respiratory Protection

Fire decomposes or breaks down materials. The composition of these breakdown products will vary depending on:

- The composition of the burning materials— this can be from many sources.
- The ventilation conditions - poor ventilation reduces the available oxygen and changes the makeup of the decomposition products.
- The temperature of the fire.

Burning produces particles as well as some gases & vapors.

What is Smoke?

Smoke is defined in AS/NZS1715: “Smoke consists of carbon or soot particles or tarry droplets less than 0.1 micrometer in size, and suspended in air, which results from the incomplete combustion of materials. Normally, the combustion process producing smoke also produces gases”.

How smoke from fires can affect health

Overexposure to heavy smoke or proximity to a fire can cause occupational diseases resulting from inhaling very fine particles of smoke and health threats. Particles so small that cannot be seen can penetrate deep into the lungs and cause a variety of health problems ranging from burning eyes and running noses to serious chronic heart problems and lung diseases. Aggravated cases of high exposure to particle pollution can even lead to premature death.

Dust, mists and fumes from fires can enter the lungs and can then cause scar tissue, decreasing the lung's capacity to absorb oxygen as well as causing inflammation of the lungs, shortness of breath, coughing and is linked to kidney disease.

Are some people at more risk than others?

Those who are at greatest risk of harm include:

- People already affected with heart or lung diseases (emphysema, asthma, COPD, heart fatigue), affected with diabetes or underlying cardiovascular diseases
- Smokers
- Children

- Elderly
- Pregnant women

What are the symptoms high concentrations of smoke can trigger?

Coughing, wheezing and difficulty in breathing, chest pain /tightness/ discomfort, palpitations, shortness of breath, fatigue especially for those with heart or lung diseases

How can protect myself from respiratory hazards during a fire?

There is a clear potential for the creation of airborne smoke particles in the breathing zone during a fire. It is important to limit your exposure to smoke.

- Pay attention to local air quality and media reports to be aware of the concentration of particles as smoke increases
- Pay attention to the symptoms to guide your activities and reduce your exposure - stay indoors with doors closed when smoke is thick and use your air conditioner, switched to 'recirculate', avoid adding air pollution from wood fires/vacuuming/ unfuelled gas appliances/ smoking/ candles etc
- Be aware that dust masks are not enough for respiratory protection. So called non-compliant “Dust masks” or surgical masks do not tightly seal on to your face and cannot adequately protect your lungs from fine particles generated during a fire. Scarves or bandanas cannot provide the required level of respiratory protection either. Particulate respirators commonly known as P2 respirators or N95 respirators will help if they fit well and are used correctly.

The required level of protection depends on the proximity to the fire/smoke sources. For use on the ground and away from smoke: a particulate P2 respirator like the 3M™ Aura™ Particulate Respirator 9322A+ 3M™ Comfort Cupped Particulate Respirator 8322 or 3M™ Classic Cupped Particulate Respirator 8822 can be used to reduce irritation from smoke and provide comfort.

To remove nuisance levels of organic vapour/odour, a P2 respirator that contains a layer of activated carbon to remove nuisance levels of organic vapours can be used. Examples: 3M™ Flat Fold Particulate Respirator 9542A, P2, with Nuisance Level* Organic Vapour Relief or 3M™ Cupped Particulate Respirator 9923V, P2, with Nuisance Level* Organic Vapour Relief. These disposable respirators incorporate an added activated carbon layer and can help reduce exposure to low levels of organic vapours.

Note: Respirators with particle filters will remove some but not all the fire products from the air. There is no simple filter capable of filtering every substance that can be released from a large fire. Selection should consider the wearer's face shape. Correct fitting of the respirator is of paramount importance. To obtain a good seal to the face the wearer should be clean shaven. For higher risk situations, please seek advice.

Where do I find information about respiratory protection?

Use of respirators in Australia and New Zealand is commonly under the guidance of Australian/New Zealand Standard AS/NZS 1715:2009 which provides information and guidance on selection, use and maintenance of respiratory protective equipment in the workplace.

In AS/NZS1715, different types of respirators are rated to provide a stated level of protection to a trained, fitted user. The specific types of respirators selected will depend on the magnitude of the airborne silica concentrations, the specific working conditions, other controls in place and consideration of other PPE involved and personal factors like comfort.

3M™ Aura™ Particulate Respirator 9322A+



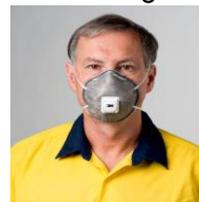
3M™ Comfort Cupped Particulate Respirator 8322



3M™ Classic Cupped Particulate Respirator 8822



3M™ Cupped Particulate Respirator 9923V, P2, with Nuisance Level* Organic Vapour Relief



3M™ Flat Fold Particulate Respirator 9542A, P2, with Nuisance Level* Organic Vapour Relief



NOTE: Products indicated are rated for protection against certain substances only - each application will be different and an assessment of each is required. The user/PCBU is responsible for determining the suitability of the product for its intended use. Contact 3M for specific advice.



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