

Pipe Fitter

HAZARDS AND RISKS

The assembly, installation and maintenance of pipe systems and related hydraulic and pneumatic equipment can expose pipe fitters to many different harmful substances through activities such as welding and soldering, using hand and power tools during pipe installation and cleaning and maintenance of pipe systems. The biggest respiratory health risks to pipe fitters are likely to be from inhaling silica and general construction dust and soldering fume. In certain situations these workers may also be at risk of exposure to asbestos fibres* and welding fume**.

Construction dust

Construction dust is a general term and includes dust from soil and building materials. Breathing in any dust over time can cause serious lung diseases such as chronic obstructive pulmonary disease (COPD), which includes conditions such as chronic bronchitis and emphysema.

Silica dust - respirable crystalline silica (RCS)

Silica occurs naturally in many types of stone and in concrete. It will be released as airborne dust during cutting or drilling. Inhaling fine silica dust (RCS) can lead to serious lung diseases, including fibrosis, silicosis, chronic obstructive pulmonary disease (COPD) and lung cancer: it is estimated in Australia that over 230 workers will die every year from exposure to silica dust. .

Solder rosin fume (colophony)

During soldering, the heating of the flux containing rosin (or derivatives) produces fume, which is one of the most significant causes of occupational asthma. Once the asthma has developed, even small exposures to fume can lead to asthma attacks, and the condition is irreversible. The fumes can also act as an irritant to the upper respiratory tract.

Asbestos

Pipe fitters may come into contact with or disturb a number asbestos containing materials (ACMs) particularly if the premises were built before 2000. Asbestos is classified as a category 1 carcinogen. Inhalation of asbestos fibres can cause mesothelioma, asbestos-related lung cancer, asbestosis, and pleural thickening - all fatal or serious and incurable diseases which take many years to manifest.

Welding fume

The fume given off by welding is a mixture of airborne gases and very fine particles which can cause pneumonia, asthma, metal fume fever, throat and lung irritation and reduced lung function if inhaled. Certain metal gases can cause pulmonary oedema and lung/nasal cancers.

CONTROL OPTIONS

Elimination/prevention

Asbestos:

The aim is to avoid exposure completely. Information on the presence of asbestos should come from the premises' asbestos management plan and asbestos register.

Solder fume

- Use mechanical jointing, rosin-free or rosin reduced solder whenever possible.
- Use local exhaust ventilation (LEV) systems for soldering, such as an extraction booth or cabinet, or tip extraction on the soldering iron; a qualified occupational hygienist can advise on the best solution.
- Use soldering irons at the lowest temperature possible for an acceptable joint.
- Locate the work away from draughts to avoid them interfering with any extraction.

Dust

- Choose work methods that avoid or limit drilling and cutting of stone or concrete.
- Use water spray to damp down dust in the work area.
- Use vacuuming or wet cleaning techniques; avoid dry sweeping or compressed air to remove dust from clothes or work areas.

PPE

- Risk assess the tasks and also refer to the Australian Standard AS/NZ 1715 for RPE guidance.
- Where solder fume exposure cannot be controlled effectively using the methods above, disposable respiratory protective equipment (RPE), with protection rating P2 or re-usable half mask RPE with P2 filter.
- All staff required to use RPE should be subject to face fit testing to ensure the RPE selected provides each individual with the anticipated level of protection.

MANAGING THE RISK

Training & communication, supervision, maintenance & testing of controls and air monitoring* are all vital aspects of managing the risk, in addition to health surveillance which can be a requirement in certain circumstances.

See our introductory [Respiratory Health Hazards in Construction Fact Sheet Series: Overview](#) for more information about what things to consider and implement.

Air monitoring*

Air monitoring is a specialist activity. It may be needed as part of a risk assessment, as a periodic check on control effectiveness and to assess compliance with relevant WES, or where there has been a failure in a control (for example if a worker reports respiratory symptoms). A qualified Occupational Hygienist can ensure it is carried out in a way that provides meaningful and helpful results.

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WORKPLACE EXPOSURE STANDARDS (WES) & EXPOSURE LEVELS

Agent or substance	Control/Exposure Limit	Exposure Levels
Asbestos (all types)*	0.1 fibres/ml (8 hr TWA)	The aim should be to avoid any exposure.
Silica - RCS	0.05 mg/m ³ (8 hr TWA).	Dry work with high silica-content materials – such as sandstone - causes the highest risks.
Welding fume	WES are in place for individual metals used in filler wires. Refer to SDS for the metals present and to Safe Work Australia website for exposure limits, http://hcis.safeworkaustralia.gov.au/	The risk to health depends on the composition of the fume as well as the 'arcing time'. Much of the welding work carried out by pipe fitters is likely to be sporadic, and lower arcing time means lower fume exposure. Where a possible high exposure to welding fume has been identified, there is a separate BOHS respiratory health hazards fact sheet, the ' Welder fact sheet '

Further information

- Silica dust: www.hse.gov.uk/construction/healthrisks/cancer-and-construction/silica-dust.htm
- Controlling health risks from rosin based solder fluxes: www.hse.gov.uk/pubns/indg249.pdf