



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.

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 of 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 that can take many years to develop.

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 edema and lung/nasal cancers.

CONTROL OPTIONS

Elimination/prevention

Asbestos:

- H.Y.UJa Jgfc Uj c]X YI dcg fY Wca d YH' m'...
 Wca Y Zca H.Y d fY g' bW' cZUgV Y gfc g'ci 'X'
 a UbU[Ya Ybhd Ub UbX UgV Y gfc g'fY [JgY P"
 : cf JZ fa Uhc b' c b' k cf_ HJg_g] b] c] Jb[UgV Y gfc g'
 UbX \ck 'tc gJZ' mWU ffmh Ya 'ci h' fY Z f'hc H.Y
 Ud d J WU V Y C </ G fY [i 'Uhc bg' fY [" "
 fYe i JfYa Ybfg Zc fYa d' cmY f'hc 'bc h' zmi h' Y '
 fY Yj Ubh fY [i 'Uhc fm Y b Zc fW] b ['U i h' c f] m z'
 XY g] b UH' U fY Ugk \Y fY H.Y k cf_ JgV Y] b ['Xcb Y Z'
 Ybg fY 'a YX] WU 'YI Ua Jb Uhc bg fU_Y d U W W z'
 a U] b H] b \Y U H' fY Wc fX g' Y H W E

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.

Welding fume

- Seek alternative joining methods such as cold jointing techniques, use of mechanical fasteners or newer adhesive technologies.
- Use LEV systems for welding such as an extraction booth or bench, a back-draught partial enclosure, or on-tool extraction.
- Locate the work away from draughts to avoid this interfering with the LEV.

PPE

- Where solder fume exposure cannot be controlled effectively using the methods above, respiratory protective equipment should be considered.
- 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. RPE should be selected in accordance with CSA Z94.4-11 *Selection, Use and Care of Respirators*.

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 an exposure risk assessment, as a periodic check on control effectiveness and to assess compliance with relevant occupational exposure limits, or where there has been a failure in a control (for example if a worker reports respiratory symptoms).

A qualified occupational hygienist or occupational hygiene technologist can ensure exposure monitoring if it is carried out in a way that provides meaningful and helpful results.