

## Welding Fume Respiratory Risk factsheet

Welding is major part of fabrication. It includes using a molten filler to bond the material together and when cool, forms a strong joint.

There are lots of different welding techniques but the two most common types of welding undertaken are Mig & Tig.

Different welding methods produce differing concentrations of hazardous substances. Elements may include zinc, hexavalent chromium, ozone, manganese, nickel and lead. The fumes produced often consist of very fine particulate which are easy to inhale deep into the lungs.

### Health Effects:

Exposure to Welding fume can result in harm to health. This may include:



- **Irritation of the respiratory system.**  
This is caused by gases or particles entering the throat & chest, causing coughing, tightness of the chest and breathing difficulties.
  - **Chronic obstructive pulmonary disease (COPD).**  
This is the name for a collection of lung diseases including chronic bronchitis, emphysema and chronic obstructive airways disease. People with COPD have difficulties breathing, primarily due to the narrowing of their airways, this is called airflow obstruction. Typical symptoms of COPD include: breathlessness when active, a persistent cough with phlegm & frequent chest infections
  - **Metal Fume Fever.**  
Inhaling metal fumes & particulates such as zinc, cadmium and nickel etc. can lead to flu-like symptoms. This is a condition known as metal fume fever. The symptoms can appear up to 12 hours after exposure and usually disappear within 24 hours of exposure. Welding or flame cutting of galvanised steel is thought to be the most common cause.
  - **Systemic poisoning.**  
This is caused by inhaling or accidentally ingesting substances which are contained within the welding fume. Hazardous materials can include fluorides, hexavalent chromium, lead, barium and cadmium.
  - **Respiratory Cancer.**  
Inhaling significant levels of welding fume is widely speculated to increase the Welders risk of developing Respiratory cancer as certain elements of welding fume are carcinogenic.
- Visit: <http://www.hse.gov.uk/mvr/resources/videos/video8.htm>  
Watch the video of an interview with Phil the Welder. A victim of exposure to welding fumes.

## Some of the ways we can control exposure:

Firstly we recommend that the process is risk assessed and the hierarchy of control is followed. There are lots of commercially available controls to help lower exposure:



### Optimising the gas.

Gas suppliers offer welding gas that can lower the concentrations of some of the harmful contaminants in the fume produced.

Ask the supplier for information.



### Fume Extraction.

These are a semi rigid arm that can be positioned and hold itself up. Can be portable or wall mounted systems. If properly used and maintained then these systems are very effective at removing the fume at source.

*Cons. Operators need training and encouragement to continually position the hood as required. Often have misconception of the hoods capabilities.*



### Air fed Masks.

These are Welding masks designed to be connected to an airline fed or a belt power pack. These blow air over the welders face, keeping the operators cool and stops the fumes entering inside the mask.

*Cons. Does not control the fumes at source, fumes released into workplace air.*



### On Torch Extraction.

On torch extraction is designed to remove the fumes at the source.

*Cons. Makes the welding torch heavy and cumbersome. Doesn't remove fugitive fumes. Easily effected by draughts.*