

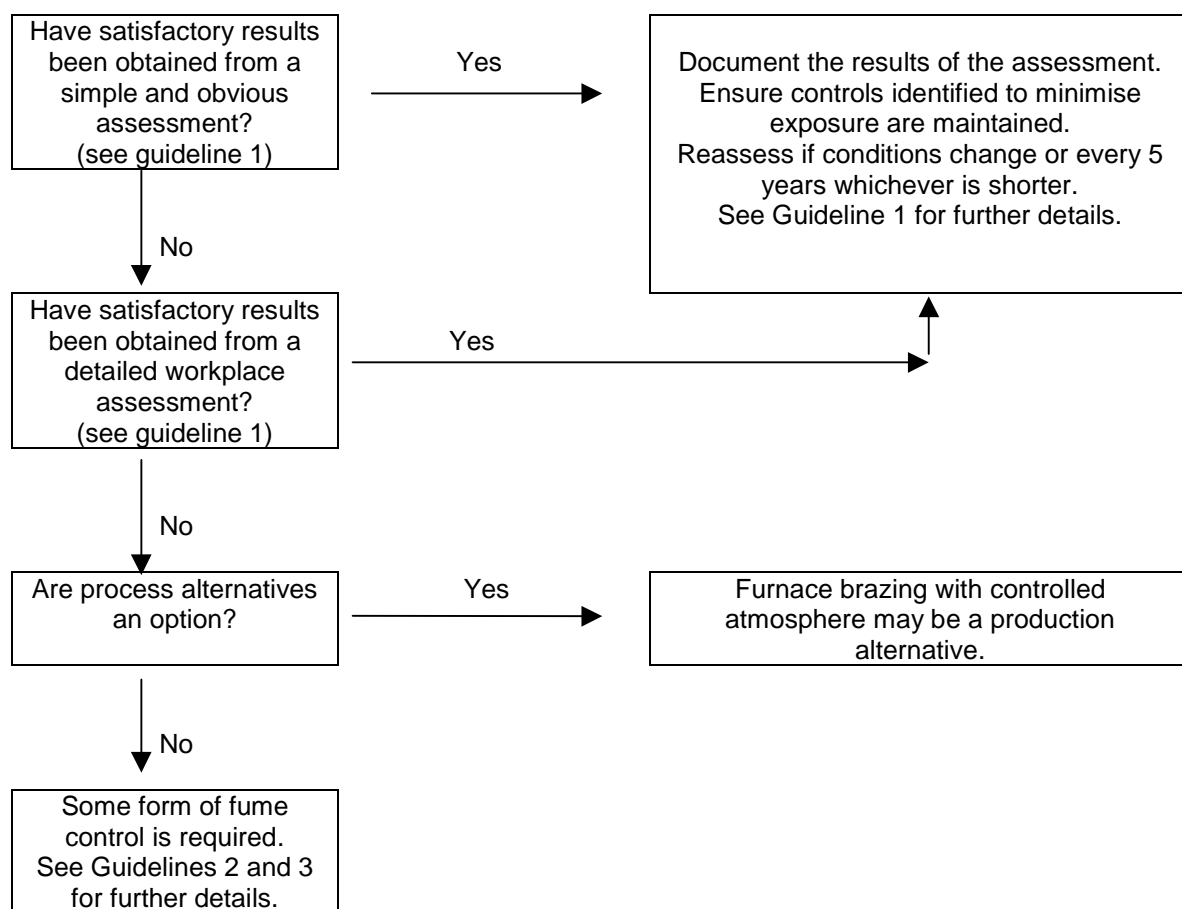
# FUME MINIMISATION GUIDELINES

## GUIDELINE 16:

### ***HIGH TEMPERATURE BRAZE WELDING (APPROXIMATE MELTING POINTS 890-900°C)***

An employer has a duty to ensure that a suitable and sufficient assessment is made where there is potential for exposure to hazardous substances.

For intermittent maintenance work, no special measures may be necessary. For continuous work, clean air movement greater than 0.5 m/s across the operators breathing zone may be required. Accumulation of fumes in the workshop must be prevented by general ventilation.



#### **Notes:**

1. Ventilation by local exhaust will usually be required. For work performed in a limited or crowded space, supplementary respiratory protection may be needed.
2. Under normal circumstances it should be possible to satisfy the regulatory requirements by process and work practice modifications. Known exceptions are still air, confined spaces (see AS 2865 "Safe Working in a Confined Space") or where particular hazards are identified in Material Safety Data Sheets.

## SCOPE

<u>Process</u>	<u>Typical Application</u>	<u>Typical Filler Metal (rod)</u>
Gas Braze Welding	Maintenance brazing of cast iron and steel.	Manganese bronze (AS1167, RCuZn-C)
Gas (Braze and Fusion) Welding	Braze welding of mild steel for low stress applications and welding of high melting point brass and bronze alloys.	Tobin bronze (AS1167, RCuZn-A)

Fluxes either as rod coating or separately applied, are typically boric acid/sodium metaborate mixtures but some eg. those used for tinning dirty cast iron also contain alkali fluorides.

## FUME SPECIES

### Filler metal (rod)

Copper, copper oxide, zinc oxide, tin oxide (negligible).

### Flux

Boric acid dust, sodium metaborate.

## HEALTH EFFECTS

### Metal Fume

Prolonged exposure can cause irritation to eyes and nose, and/or metal fume fever. Tin oxide has low toxicity.

### Flux Fume

High temperature boric acid fluxes are not significantly absorbed through intact skin or mucosa. With fluorides present, fumes are highly irritating to respiratory tract. Over exposure can cause nose bleeds and fluorosis (fluorine poisoning).

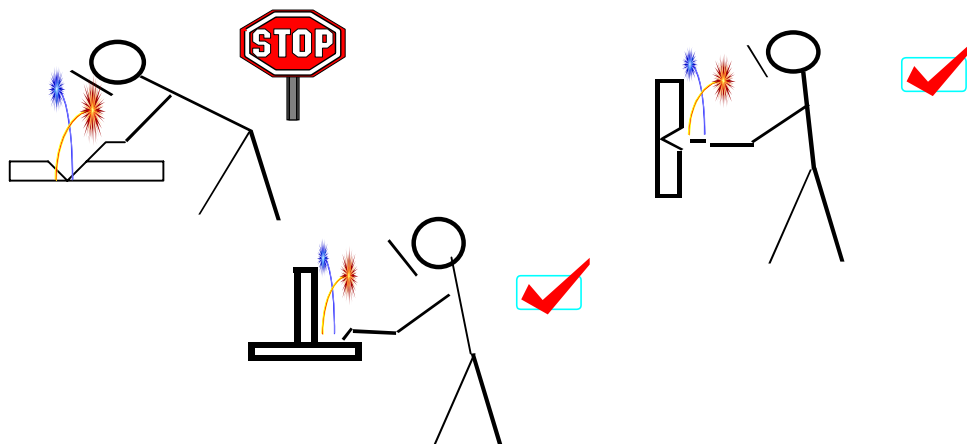


Figure 1. The welder's head should not enter the visible fume plume.