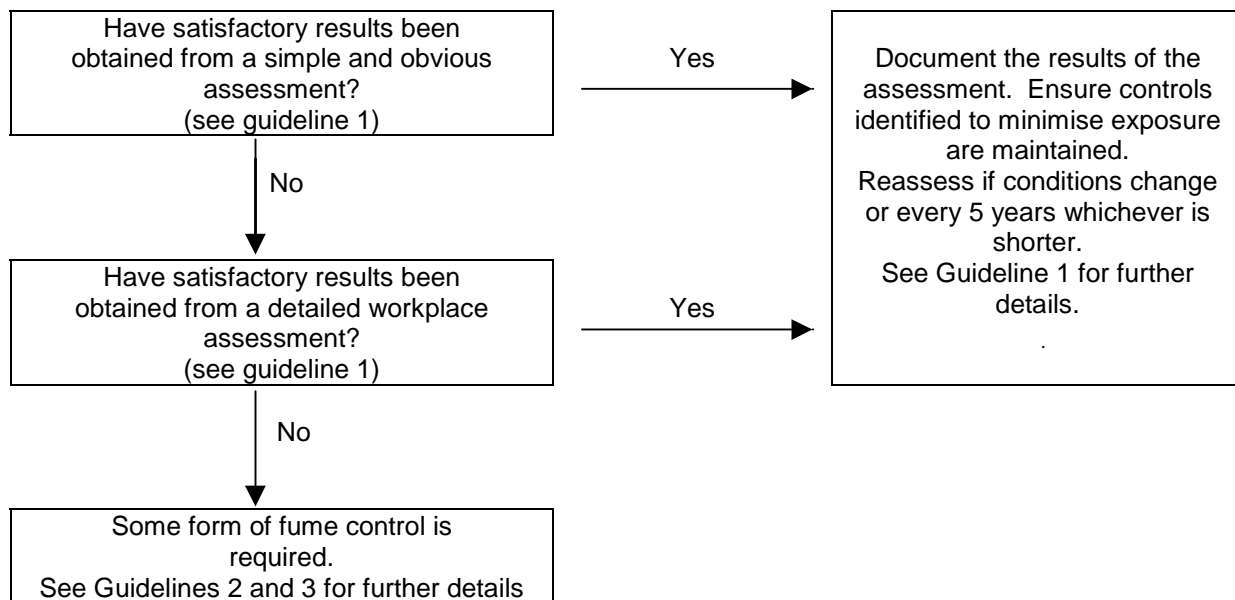


FUME MINIMISATION GUIDELINES

GUIDELINE 6:

GAS TUNGSTEN ARC WELDING (GTAW)

An employer has a duty to ensure that a suitable and sufficient assessment is made where there is potential for exposure to hazardous substances. It should be noted that in tests conducted under still air conditions, breathing zone fume from GTAW usually exceeds the recommended levels (see Figure 1). No special measures may be necessary to protect the operator provided clean air movement is greater than 0.5 m/s across the welders breathing zone (see Figure 2). Accumulation of fumes in the workshop must be prevented by general ventilation.



Steps To Reduce The Effect Of Fumes And Gases

- **Process Alternatives**

- 1) Laser and electron beam welding may be viable but higher capital costs must be offset by higher productivity.

- **Process Modifications**

- 1) Arrange welding to reduce welders exposure as shown in Figure 3. This also reduces fatigue and back problems.
- 2) Consider using alternative shielding gases (Argon/Helium mixtures reduce ozone in aluminium welding and Argon/Hydrogen may be used to reduce ozone levels with austenitic stainless steel).
- 3) Mechanise or automate the process.

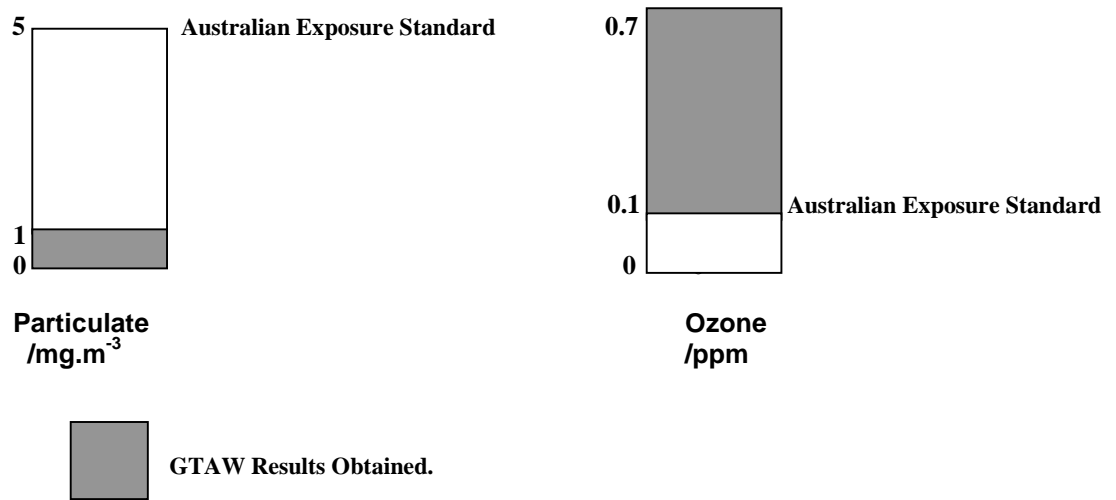


Figure 1. GTAW fume production at the breathing zone under still air conditions compared to the regulations (not to scale).

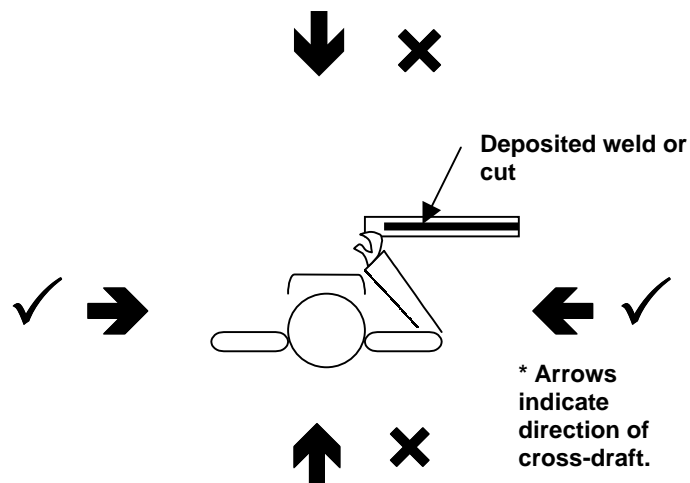


Figure 2. Preferred and non – preferred direction of cross draft for breathing zone ventilation.

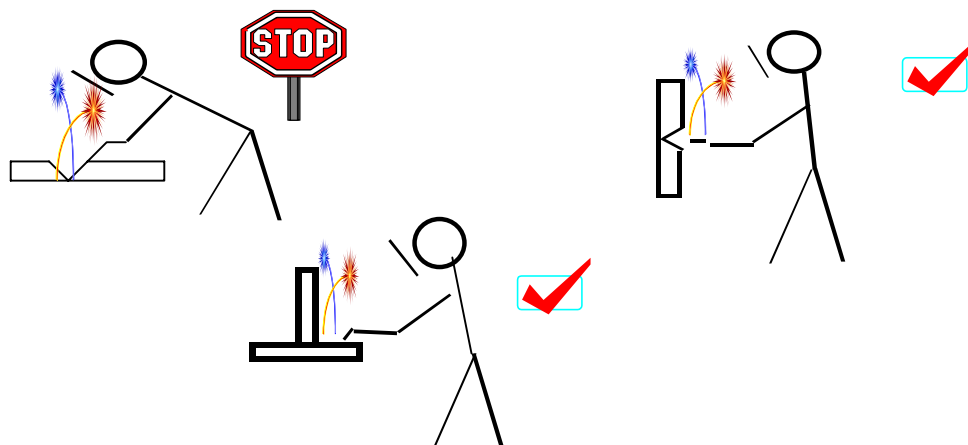


Figure 3. The welder's head should not enter the visible fume plume.