

FUME MINIMISATION GUIDELINES

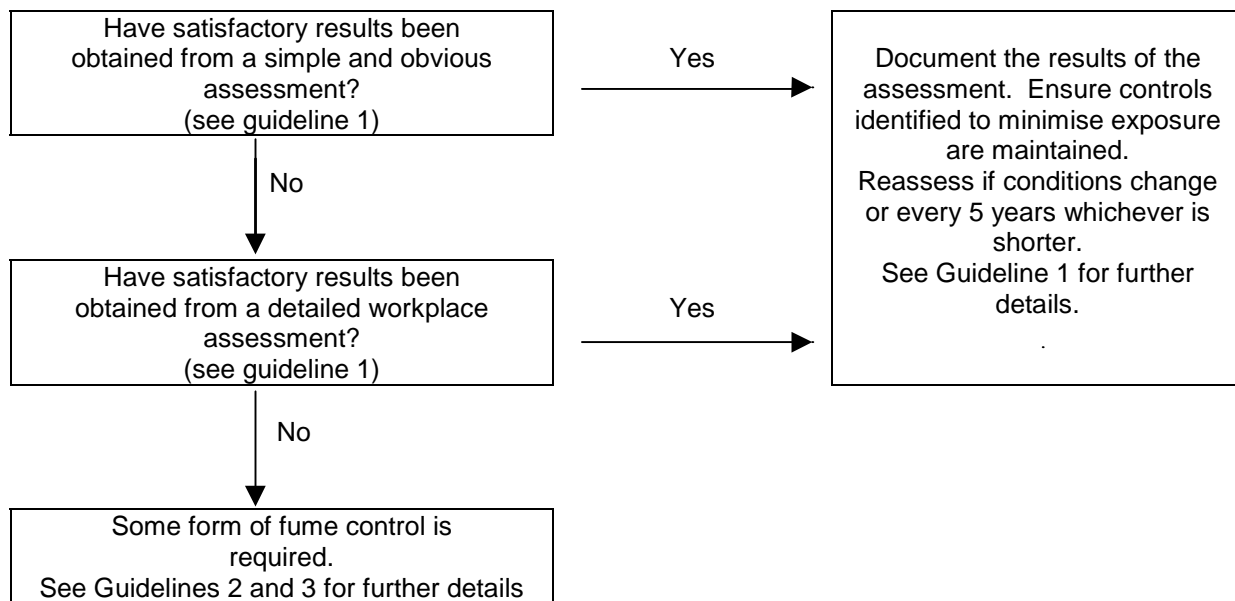
GUIDELINE 8:

HARDFACING

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, fume from FCAW hardfacing operations 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). Due to the high levels of fume generated, there is a greater likelihood of co-workers exposure exceeding the relevant exposure standards unless good general ventilation is implemented.

Hardfacing consumables are often highly alloyed and fumes may contain significant levels of manganese and chromium. See Guideline 3 for relevant exposure standards.



Steps To Reduce The Effect Of Fumes And Gases

• Process Alternatives

- 1) Consider using wearplate or alternate processes such as submerged arc surfacing. Gas Metal Arc and Gas Tungsten Arc surfacing both produce less fume than "open arc" processes.

• Process Modifications

- 1) Arrange welding to reduce welders exposure as shown in Figure 3. This also reduces fatigue and back problems.
- 2) Mechanise the process using simple tractors, turntables or robots.

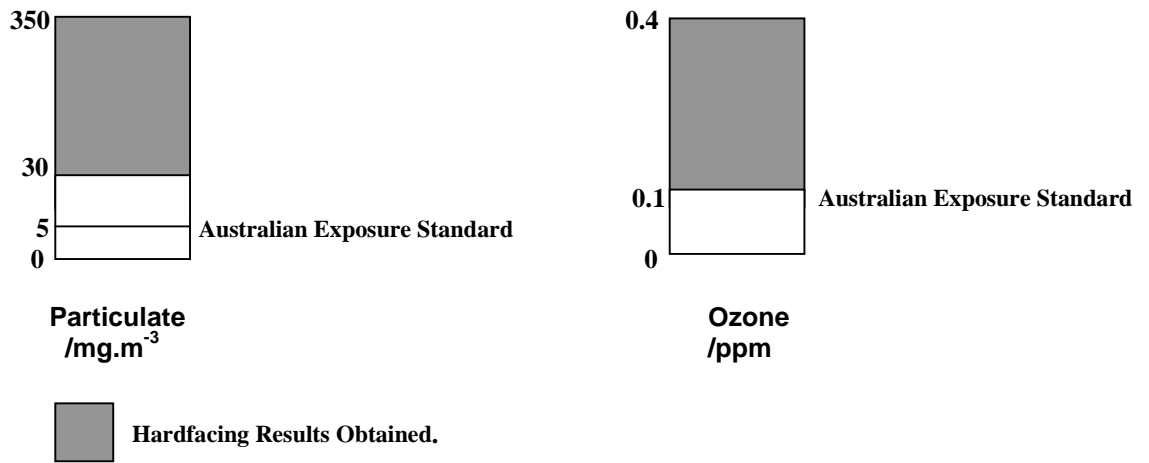


Figure 1. Hardfacing fume production at the breathing zone under still air conditions compared to the regulations (not to scale).

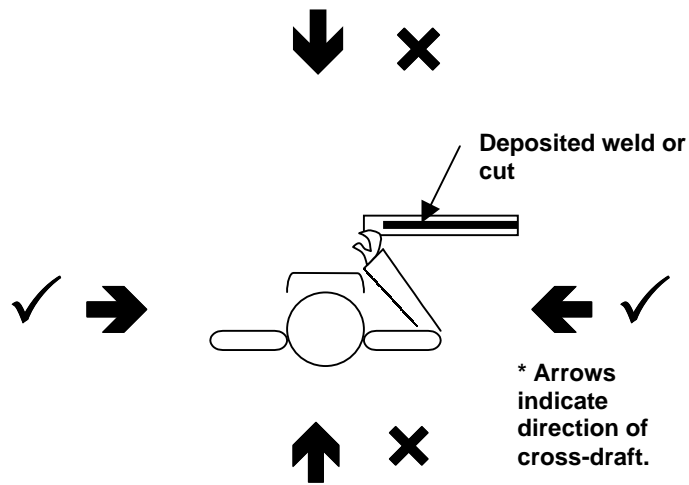


Figure 2. Preferred and non – preferred direction of cross draft for breathing zone ventilation.

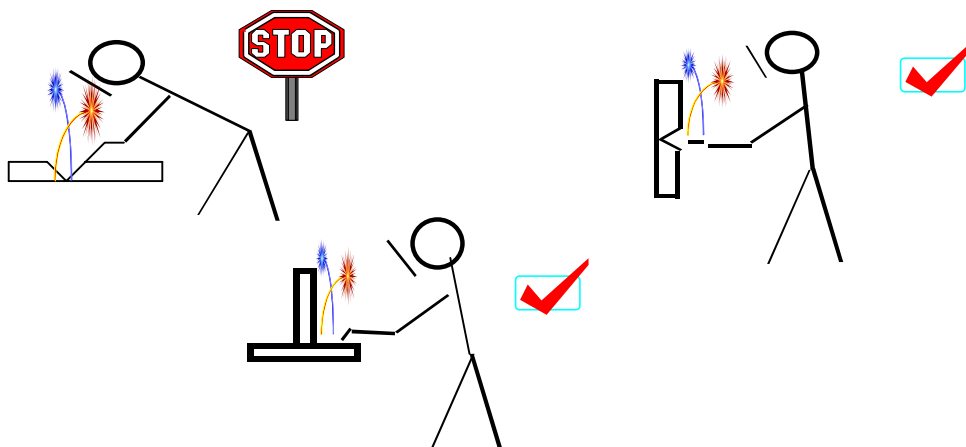


Figure 3. The welder's head should not enter the visible fume plume.