9.4.4 Atmospheric Testing and Monitoring

Atmospheric monitoring shall be conducted using gas monitor model “MSA Altair 4XR” supplied by BHP. Gas monitors can be obtained through the tool store located in the Maintenance workshop and from the CHPP maintenance supervisors. If the BHP supplied monitors are not available and a different model is available the Management of Change process needs to be followed prior to using.

Before any person is permitted to enter or work in a confined space, an initial test of the atmosphere in the confined space must be completed using suitably registered and calibrated gas monitoring equipment. The results of this test must prove that the atmosphere is safe for entry before any person enters the confined space.

The initial atmosphere test must:

- be conducted from outside the confined space;
- be conducted using a wand capable of reaching the extremes of the space;
- include tests at different levels and all parts of the confined space;
- be conducted using a calibrated portable gas detector that complies with Section 8.1 of this standard; and,
- be recorded on the Confined Space Permit in the space provided.

Further guidance for completing the initial atmospheric test are provided in the NSW Code of Practice – Confined Spaces.

If the initial gas test results are outside the acceptable values (Refer to Table 1 – Atmospheric Hazard Management), no work can be conducted until purging or ventilation of any contaminant in the atmosphere of the space is carried out and the atmospheric test results are within acceptable ranges. Pure oxygen or gas mixtures containing oxygen in a concentration exceeding 21% by volume, must not be used for purging or ventilation of any airborne contaminant in the space.

The standby person / atmospheric test person must indicate on the Confined Space Work Permit the required ventilation for the confined space. Any changes made to the original Confined Space Work Permit must be approved and initialled by the Permit Authoriser.

Where it is likely that a contaminant exists, that is not listed in the table below, a suitable gas detector calibrated to the required exposure levels must be acquired to conduct the testing.

If the monitoring results are within the acceptable ranges (Refer to Table 10 1: Atmospheric hazard management (from Safe Work Australia)), work can commence in accordance with the requirements detailed on the Confined Space Work Permit and the JHA.

Table 10 1: Atmospheric hazard management (from Safe Work Australia)

Contaminant	Abbreviation	Entry	Work	Action
Lower Explosive Limit	**LEL**	<5%	<10% (With Continuous Monitoring)	Entry or Work not permitted unless gas measurement is below the Entry or Work value (or within the specified range). Ventilation required before entry or during work where values are deemed unacceptable.
Oxygen	O_2	19.5 to 23.5%	19.5 to 23.5%	
Carbon Monoxide	**CO**	30 ppm	30 ppm	
Hydrogen Sulphide	**H_2S**	10 ppm	10 ppm	

Follow the initial test, continuous monitoring from inside the confined space is required for entry to a potential explosive / flammable atmosphere or where there is a potential for atmospheric change due to other work groups, environmental or task based effects (such as welding or use of chemicals inside a confined space).

Continuous monitoring requires the monitoring of the atmosphere at the worker’s location and is generally performed by the person entering the confined space. The work group must determine the safest and most practical way to perform continuous monitoring as part of the risk assessment (JHA).

Depending on the design, size and work being performed, the standby person may perform the continuous monitoring if they are safely able to get an accurate reading of the atmosphere at the location of workers inside the space. If practicable, the standby person should position themselves to enable them to observe the work in a safe manner. Depending on the nature of the task, this may not always be possible however, there must be a means of communication between the standby person and the worker at all times. Refer to section 9.4.5 for further details of the standby person responsibilities and obligations.

Recording of the monitoring results must be detailed on the confined space permit. The frequency of recording atmospheric monitoring results shall be determined by risk assessment (or JHA), taking into consideration the hazard identified, the nature of the work, and the duration of the work. The frequency of recording should not be greater than 15 minutes. The frequency shall be recorded on the Confined Space Permit.

If the confined space work being performed has no risk to personnel from an explosive or flammable atmosphere or potential for atmospheric change due to the work being performed then the permit holder and permit authoriser can elect that only Periodic Monitoring is required on the permit. Periodic monitoring does not require the worker inside the confined space to have the gas monitor on them or near them continuously and instead the monitor can take a reading inside the space periodically by the worker or the Standby person (if safely able to do so without entering the space). The JHA for the task must detail the risk and controls to support this decision.

Document Reference - MAC-STE-STD-147