

ATLANTIC PILOTAGE AUTHORITY OHS SYSTEM

Confined Space Entry Program **Appendix B: - ATMOSPHERIC TESTING & MONITORING**

Atmospheric testing is necessary to assess the hazards of a confined space, and to verify that conditions within a space are safe for entry.

Before entering any confined space, the atmosphere within the space must be tested for oxygen levels, combustibles, and carbon monoxide. The M40 multi-gas monitor used by the APA analyzes for:

- **Oxygen** (must be between 18.0% and 23.0%)
- **Combustibles** (must be less than 10% LEL)
- **Carbon Monoxide, or CO** (must be less than 25 ppm)

Note: The M40 multi-gas monitor does not test for other toxic gases that could be present in confined spaces. The conditions of the space and the materials that may be in it, or taken into it, must be carefully considered when doing the initial hazard assessment. If other toxic gases or vapours are expected to be present, the space must not be entered until it is proven to be safe.

Procedures For Atmospheric Testing And Monitoring:

1. Check the calibration sticker on the instrument to verify that the gas monitor has been calibrated within the past 30 days. If not, ensure that it is calibrated before beginning the job.
2. Turn the gas monitor on (press the  button and hold it down for a couple of seconds). It will automatically perform a diagnostic test as it warms-up.
3. Once the gas monitor has finished its warm-up and displays sensor readings, make sure that a low battery message is not shown on the display. If it is, the monitor must be re-charged before use (re-charging may take approx 5 hrs).
4. Next, the gas monitor needs to be "zeroed". Zeroing must be done in a clean air environment. This should be outdoors, away from any possible sources of contamination (way from engine exhaust, etc).
5. To zero the instrument, press the  button, then press . A clock symbol will flash for a few seconds, indicating that the gas monitor is zeroing. Once the zeroing is complete, the gas monitor will beep and display a gas cylinder icon. This is a prompt to calibrate. **Disregard this**

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prompt. Simply allow the gas monitor to time out and return to the sensing mode (approx 30 seconds).

6. Once the gas monitor is zeroed, testing of the atmosphere can begin. The sampling pump can be attached to the monitor using the 2 captive screws. The pump turns on automatically when it is attached (there is no on/off switch). The sampling probe should be attached to the pump for testing most spaces. Make sure that you use an in-line filter.
7. Testing should be done at the **top and bottom** of the confined space. This is done because most gasses and vapours have a density different than that of air, and may accumulate at different levels within a space. **Take care not to pick water or other liquids up in the sampling probe.** It may damage the sensors.
8. Record the readings from the gas monitor on the Confined Space Entry Permit.
9. For most entries, the atmosphere in the confined space should be continuously monitored while the space is occupied. The pump may be removed and the monitor securely placed near the entrant(s). Another option is to have the attendant monitor the atmosphere from outside, using the sampling pump and probe.
10. If the monitor's alarm sounds and lights flash, the confined space must be exited immediately.

Calibration of M40 Multi-Gas Monitor

1. At each port location where an M40 multi-gas monitor is located, the APA shall assign calibration responsibilities to two persons (likely Launchmasters). It is essential that two persons be identified to share the calibration responsibilities, so that leave periods are covered.
2. Each M40 multi-gas monitor shall be calibrated at least monthly, following the instructions provided in the Industrial Scientific user's guide.
3. Calibration records, including sensor span values, shall be recorded on the Monthly Calibration Record form (Appendix D of this Confined Space Entry Program). When values are recorded, the expiry date of the calibration gas should be checked so that the OHS Coordinator can be advised when it is necessary to order a new bottle. Two month's lead time should be allowed for delivery.
4. Each time an M40 is calibrated, the old calibration sticker must be removed and replaced with a new one. The new sticker shall indicate the date calibration is next due.

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5. At least annually, in December, the persons assigned calibration responsibilities shall ensure that a copy of the Monthly Calibration Record form is submitted to the OHS Coordinator.