

# Portable and Personal Gas Detectors

## Procedure

### 1. Purpose

This procedure describes the acceptable level of functionality, alarm points and testing requirements for portable and personal gas detectors.

### 2. Scope

This standard applies to all assets and premises owned, leased or occupied by Melbourne Water employees and contractors.

Contractors can use other branded detectors as long as they comply with all sections of this document (excluding all parts of Section 3.1).

### 3. Procedure

#### 3.1 Gas Detector Models

The Melbourne Water Standard comprises of the following Gas Detector Models:

Single Gas Detector			
Gas	Brand	Model	Part No.
Chlorine	Draeger	Pac 7000 CL2	83 18 978
Ammonia	Draeger	Pac 7000 NH3	83 18 9794

Multi Gas Detector – Confined Space Entry			
Gas	Brand	Model	Part No.
% LEL	Draeger	X-am 2500	35 03 959
Oxygen			
Hydrogen Sulphide			
Carbon Monoxide			

Multi Gas Detector – Ozone/Chlorine Work			
Gas	Brand	Model	Part No.
Ozone	Draeger	X-am 5000	350947
Chlorine			
Oxygen			

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Multi Gas Detector – Intrusive Ozone Generator Work			
Gas	Brand	Model	Part No.
Ozone	Draeger	X-am 5000	3503970
Nitrogen Dioxide			
Oxygen			

Multi Gas Detector – Sewer Access			
Gas	Brand	Model	Part No.
% LEL	Draeger	X-am 8000	TBA
Oxygen			
Hydrogen Sulphide			
Carbon Monoxide			
Ammonia			
VOC			

### 3.2 Alarm Points

All portable and personal gas detectors must comply with the following alarm points:

Gas	Low Level Alarm	High Level Alarm	TWA	STEL	Shift Length
Chlorine	1.0ppm	2.0ppm	1.0ppm	1.0ppm	8 hours
Ammonia	25ppm	50ppm	25ppm	35ppm	8 hours
Ozone	0.1ppm	0.3ppm	0.1ppm	0.1ppm	8 hours
Oxygen	19.5 Vol%	23.5 Vol%	N/A	N/A	N/A
% LEL	5%	10%	N/A	N/A	N/A
Hydrogen Sulphide	10ppm	20ppm	10ppm	15ppm	8 hours
Nitrogen Dioxide	3ppm	6ppm	3ppm	5ppm	8 hours
VOC	10ppm	20ppm	N/A	N/A	N/A

For alarm settings of any gases not listed above, refer to: ['Safe Work Australia: Workplace Exposure Standards for Airborne Contaminants'](#).

When a compatible Draeger Gas Detector is placed into a Melbourne Water X-Dock Bump Tester, the above settings will automatically be uploaded to the Gas Detector. This includes detectors that have not been purchased by Melbourne Water.

### 3.3 Calibration

All portable and personal gas detectors must be calibrated every six months as a minimum. It is preferred that this test is carried out by a third party; however a person who is competent in the calibration procedure may carry out this test.

After calibration, a documented record of the calibration must be retained in Maximo against the asset, and the detector must have a legible sticker showing the last date that the calibration was carried out.

### 3.4 Functionality

All portable and personal gas detectors must:

- have audible, visual and vibration alarms activated
- ensure the current gas readings are visible on a digital display
- ensure the battery can last at least eight hours before requiring a recharge

### 3.5 Bump testing

#### 3.5.1 Overview

*"Some gases or vapours can cause corrosion or other deterioration to certain types of sensors. Some types of sensors have specific lifetimes. The sensitivity can change over time. This applies to certain types of sensors for toxic gases and oxygen deficiency as well as for flammable gases and vapours. This is the major reason for requiring frequent functional checks [Bump Testing] of some of the more common types of flammable gas detectors."*

AS 60079.29.2:2016, Section 4.1.1

#### 3.5.2 Daily Bump Testing

Bump testing of personal and portable gas detectors should be carried out on the day of each use. It is recommended that it be carried out by the actual person who will be operating the equipment.

A Bump Test includes the following mandatory checks:

- Checking that the battery is adequately charged
- Verifying that Vibration, Audible and Visual Alarms activate correctly
- Ensuring the detector warms up successfully and enters a normal operating mode with no alarms
- Zero Checking – Ensuring that a Zero reading is displayed once the unit has warmed up in fresh air

- Complete a Bump Check with appropriate calibration gas and dock

### 3.5.3 Bump Testing Equipment

To ensure that the Bump Test has been carried out successfully the following items will be required:

- Calibration Gas Cylinder that will ensure that all gases within the detectors normal function will be tested
- A flow restrictor to maintain a flow of gas as determined by the manufacturer
- Fittings required to connect the calibration gas to the detector
- A book to maintain the records of the detector testing. Left at the Bump Tester.
- Instructions on how to complete the Bump Test for the Gas Detector

The test equipment needs to be maintained by trained personnel on a 12 monthly basis.

### 3.5.4 Bump Test Locations

Automated 'Bump Test' stations [Draeger X-Dock] are located at all major operational sites.

Portable 'Bump Test' stations are available for booking out from various Melbourne Water and Wood stores.

### 3.5.5 Documentation

Once all the above tests have been carried out on the gas detector, the results must be documented in a 'Gas Detector Bump Test' register which is to be kept with each testing device/calibration gas cylinder.

The documented entry must include the following information:

- Gas Detector Identification Number
- Tester's Name
- Test Date
- Signature
- Result of test. Pass/Fail

A detector that fails any of the mandatory tests must be tagged as 'out of service' and a supervisor shall be notified.

## 3.6 Training and Awareness

All individuals who are required to use portable and personal gas detectors should be made familiar with the requirement of daily Bump Testing and trained on how to complete the tests by a designated site representative at the relevant site.

Formal training for this procedure is not required.

## 4. Responsibilities

Role	Responsibility
Individual	<ul style="list-style-type: none"> <li>Perform the mandatory gas detector functional checks as described in this procedure every day before work is carried out</li> <li>Record the results of the test in the 'Gas Detector Functional Check' register</li> <li>Report any defects or failures to your supervisor and tag device out of service</li> </ul>
Managers/Team Leaders	<ul style="list-style-type: none"> <li>Ensure that all new staff are trained in accordance with this procedure</li> <li>Ensure that the equipment to carry out testing is made available to all employees</li> <li>Ensure any testing equipment is calibrated and records maintained</li> <li>Ensure that the register is maintained</li> <li>Ensure Safety Management Plans have an annual review of this procedure</li> <li>Ensure all works are undertaken by contractors in compliance with this procedure</li> </ul>

## 5. Definitions

Reference	Definition
Bump Test	A brief exposure of the detector to gas in order to verify that the sensors respond and the instrument alarms function accordingly.
Draeger	A gas detector manufacturing company
X-Dock	Draeger branded Bump Testing unit used by Melbourne Water
Functional Check	A method of obtaining a response from the sensor to check its function.

## 6. References

Document title
<a href="#">Safe Work Australia: Workplace Exposure Standards for Airborne Contaminants'</a>
AS/NZS 60079.29.2 - Part 29.2: Gas detectors—Selection, installation, use and maintenance of detectors for flammable gases and oxygen
AS/NZS 60079.29.1 - Part 29.2: Gas detectors—Selection, installation, use and maintenance of detectors for flammable gases and oxygen

## 7. Stakeholder Consultation

Stakeholders
HSE Team
Service Delivery

## 8. Document History

Date	Reviewed/ Actioned By	Version	Action
August 2025	Senior Systems & Assurance Advisor	13	Updated template, footer of the document and author / approver. Removed obsolete references.
August 2024	SHEQ Safety Advisor	10, 11	Scope updated for contractors to reference 1 not section 2.
January 2024	Information Management	8, 9	IM changes only
March 2020	Safety Manager, Technology and Innovation	7	Format change only.