

Health and Safety Standard

PERSONAL AND PORTABLE GAS MONITOR

1 PURPOSE

This standard establishes the requirements for the use, care and training of personal and portable gas monitors at SaskPower.

2 SCOPE

This standard identifies the requirements for toxic and combustible gas and vapor monitors that are to be used by a competent employee to assess a known or suspected hazardous atmosphere.

These requirements apply to all types of personal and portable gas monitors/detectors utilized at SaskPower.

This standard outlines the minimum requirements that shall be met or exceeded by SaskPower workers and contractors. Failure to comply may result in injuries, damage to equipment and property, performance management or any combination thereof.

The use of the word “shall” within this standard denotes a mandatory action, whereas the use of the word “should” or “may” denotes a recommended action.

3 DEFINITIONS

The following definitions apply to this standard:

Bump Test - a bump test is used to test a monitor, by using a test gas to “bump” the sensors into alarm states.

Calibration - is used to test a monitor at regular intervals as determined by the manufacturer’s recommendation. Calibration includes electronic testing of monitor components including sensors to ensure accuracy and proper function.

Personal Gas Monitor - a device worn by a person that measures airborne gases and provides a warning when alarm levels of hazardous gases are reached.

Portable Gas Monitor - is equipment used to test the condition of air prior to entering an area that could have a hazardous atmosphere. It will alarm when the alarm levels set on the equipment are reached.

Note: A personal gas monitor is more compact and designed to be worn by a person while in an area where there's a potential for the accumulation of hazardous gases. Portable gas monitors can be used as a personal gas monitor if the employee wears the equipment while in the area of concern. There are also accessory kits for personal gas monitors to be able to test air conditions prior to entering an area that could have a hazardous atmosphere.

15 Minute Contamination Limit / Short Term Exposure Limit (STEL) - the average concentration of a chemical to which a person can be exposed for 15 minutes without experiencing irreversible tissue damage or health effects. STEL exposure is limited to four times per 24-hour period with at least one hour between exposures.

8 Hour Contamination Limit / Threshold Limit Value (TLV) - the concentration of a chemical in air to which, for a normal eight-hour workday and 40-hour work week, nearly all people may be exposed day after day without harmful effects.

Time-Weighted Average (TWA) - the average concentration calculated using the duration of exposure to different concentrations of the chemical during a specific time period. In this way, higher and lower exposures are averaged over the day or week.

4 REQUIREMENTS

4.1 HAZARD IDENTIFICATION

A documented hazard/aspect and risk assessment shall be performed by competent employees or contractors prior to entering a known or suspected hazardous atmosphere, to identify the potential for exposure to a hazardous atmosphere and the type of hazardous gases that may be present.

Where a potential hazardous or IDLH atmosphere has been identified, the atmosphere shall be tested for:

- Oxygen enrichment or deficiency;
- Presences of flammable or explosive substances; and
- Presence of hazardous concentration of airborne chemical substances.

4.2 PROVISIONING

Personal and portable gas monitors shall be supplied through SaskPower Central Stores or through the Division's purchasing process.

4.3 USE

Personal and portable gas monitors shall be used/worn where hazard/aspect identification and risk assessment identifies the requirement for a monitor or when required by contractual or customer requirements.

Employees using a personal or portable gas monitor shall be trained and competent in its use.

Personal and portable gas monitors shall be used as per the manufacturer specifications.

When monitors are not in use, the device should be stored in a dry place with preference given to the device's testing/charging station.

After storage, the device is to be inspected and the device calibration is to be rechecked before use.

4.3.1 ALARMS

Alarm settings shall be set as per manufacturer's instructions and:

- Whenever possible, changes should be locked out and only performed by authorized personnel;
- Settings shall be in accordance with legislated exposure levels; and
- Low alarm set points will be at the eight-hour contamination limit (TLV-TWA) and high set points will be at the 15-minute exposure limit (TLV-STEL) where applicable. Refer to Table 18 in *The Occupational Health and Safety, 2020*, for exposure levels.

When a monitor goes into alarm, it is indicating there may be a dangerous environment present and:

- The worker shall ensure the work area is evacuated immediately and in a safe manner, using the Division's Emergency Response Plan. If exposure time has not exceeded the regulatory requirement, evacuation may not be required;
- Work shall not continue in the area until the source of the alarm has been identified and controlled;

- If the alarm condition persists and the source of the alarm cannot be identified, the employee shall contact their direct supervisor and/or their safety representative; and
- The alarm and any corrective actions shall be documented in the hazard/aspect and risk assessment or job plan.

4.3.2 BUMP TESTING

Personal and portable gas monitors shall be bump tested before each use.

Personal and portable gas monitors that are used only occasionally can be bump tested monthly to ensure they continue to remain functional and before each use.

Bump testing shall be tracked and verified using a log containing the monitor model, serial number, date tested and test passed or failed.

For monitors not in regular use, the bump test record must clearly show the days in use (bump tested). Days when the monitor is not in use should be lined out, annotated “not in use” and initialed by the person responsible for the monitor.

Monitor systems with automatic bump test stations that self-record and track the test do not require the use of the bump test record log.

4.3.3 CALIBRATION

Personal and portable gas monitors which have a sensor that fails the bump test and/or calibration, shall be removed from service and sent for repair or calibration.

A monitor shall be calibrated:

- When a bump test fails;
- Every 6 months at minimum; and/or
- When a monitor has been exposed to extreme conditions (e.g., dropped, electrical shock, high gas concentrations, or extreme temperatures)

Calibrations can be considered to be a replacement for a bump test and therefore a bump test is not required if the monitor is to be used the same day it was calibrated.

4.4 CARE AND MAINTENANCE

Personal and portable gas monitors shall be cleaned, stored, maintained and calibrated according to the manufacturer specifications.

4.5 TRAINING

All users of the monitors shall be trained and competent in:

- Care and use of the monitor which includes but is not limited to:
 - Appropriate sampling procedures;
 - Interpretation of readings;
 - Interpretation of the date code on the meter and sensors;
 - Types of alarms;
 - Diagnosing error messages; and
 - Replacement of sensors if applicable.
- Bump testing methods, intervals and requirements
- Calibration intervals

5 IMPLEMENTATION

The requirements of this standard takes effect immediately.

6 RESOURCES

6.1 INTERNAL RESOURCES

Related Policies:	Hazard/Aspect and Risk Assessment (HARA) Policy
Related Standards:	Hazard/Aspect Risk Assessment Standard Confined Space Standard
Additional Information:	Safety Briefing #14: Personal and Portable Gas Monitor Standard Confined Space Hazard Identification Worksheet

6.2 EXTERNAL RESOURCES

Related Legislation:	<i>The Occupational Health and Safety Regulations, 2020</i>
Related Standards:	CSA C22.2 No. 152-M1984 (R2016) "Combustible Gas Detection Instruments" CSA Z1006-16 "Management of work in confined spaces"
Additional Information:	Industrial Scientific MX6 iBrid Operation Guide MSA Altair 4X Operating Manual MSA Altair 4XR Operating Manual MSA Altair 5X Operating Manual MSA Galaxy GX2 Operating Manual

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