



Personal Gas Detection for Hazardous Atmospheres

Document Number:

RGS0008A

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Revision: **0**

Standard – Administrative

General

Facility:

Regional Wood Buffalo

FLOC:

Purpose

To drive continuous improvement of workplace and process safety.

To assist in the creation of a safe working environment in locations where oxygen deficient atmospheres or hazardous substances such as flammable gases or ignitable vapours exist or could exist.

To establish the minimum requirements for the acquisition, use, care, calibration and repair of personal gas detection equipment.

References

Risk Assessment Tool

FLRA [LMS0082A](#)

Permit to Work [LMS0038A](#) (for MacKay River, Extraction & Tailings please see [RGP0004A](#))

Confined Space [LMS0037A](#)

Hydrogen Sulphide (H₂S) [LMS0075A](#)

Suncor Standard for Area Classification [No 0503](#)

OSIS Contractor Safety Regional General Manual [RGM0001A](#)

MSA Altair 4X Personal Gas Monitor Operational Procedure RGP0010A (applicable only to In Situ)

Management of Change Procedure [RGP0009A](#)

Responsibilities

The following individuals and groups have the defined responsibilities:

Business Area Management

- Ensure all aspects of this standard are implemented and followed.
- All managers, supervisors, and employees (both Suncor and contractor) affected by this standard fully understand the requirements of this standard and are competent and qualified to perform the tasks they are assigned.
- Gas detection facilities and services are maintained as required by this standard.
- Records of Recordable Gas Test results are documented and retained as required by this and other applicable Suncor business processes/standards.
- Areas are rated according to Suncor Area Classifications and will be taken into consideration when placing bumping stations.

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Approved By: Jim Chuey, GM EH&S OSIS

Responsibilities *Continued***Business Area Management (cont'd)**

- Before a turnaround or outage activity, the need for personal gas detection is to be assessed by turnaround/outage management. Decisions made to forego or provide alternate means of personal gas detection during turnaround must be documented as a deviation to this standard (Appendix 1).
- Determine whether to provide the personal gas detection equipment to the contractor or have the contractor provide their personal gas detection equipment which must meet or exceed this standard.
- Before allowing a contractor to use their own personal gas detection equipment, the business area management team controlling the work will ensure:
 - Risk assessment is conducted to identify risks and controls.
 - There is written permission to use the contractor's personal gas detection equipment.
 - Contractor has completed training.

Workers

- Use Risk Assessments to assist in the pre-work identification of hazards associated with chemical, flammable, toxic, combustible hazards and oxygen content.
- Notify their Supervisor of identified chemical, flammable, toxic, combustible hazards and oxygen content.
- Maintain personal knowledge of and follow all standards, work practices, and procedures applicable to personal gas detection in the Wood Buffalo Region (WBR).
- Exchange faulty personal gas detection equipment for proper working equipment.
- Each person who has received a personal gas detector is responsible to:
 - Review and understand the overview on gas detector use and care.
 - Perform and record the required gas detector bump test and calibration when in use as per Suncor schedule (See Appendix 3).
 - Take proper care and maintain the detectors.
 - Return the detectors to their Supervisor if vacating their current role.

Supervisors

- Maintain personal knowledge of and follow all standards, work practices, and procedures applicable to personal gas detection in the Wood Buffalo Region (WBR).
- If responsible for the work activities, ensure a pre-work hazard assessment is conducted for all work activities where there is the potential for hazardous atmospheres to exist.
- Ensure employees are trained and competent in the use and care of personal gas detectors.
- Ensure personal detectors from vacating employees are collected and returned.

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Responsibilities *Continued***Contractors and Subcontractors**

All contractors and subcontractors working in the Wood Buffalo Region (WBR) locations are responsible for ensuring the workers in their employment or supervision follow safe work practices and procedures that meet or exceed all requirements of this standard, including:

- Responsible for all duties in Workers responsibilities section.
- Contractor personnel are aware of and comply with their company rules and Suncor's practices and procedures applicable to this standard.
- Contractor personnel apply the Risk Assessment methods to assist in the pre-work identification of hazards associated with chemical, flammable, toxic, combustible hazards and oxygen content.
- Any personal gas detection equipment used or owned by the contractor is operated in a safe and reliable manner according to manufacturer's recommended practices, this standard and legislation.

Gas Detection System Administrator

- Assigned as additional responsibilities to an existing role. MacKay River and Firebag will use EH&S specialists; Oil Sands will use Central Shop Services.
- Competent on the personal gas detection system used in the Area.
- Maintain a system to verify all equipment is bump tested and calibrated as required per Suncor schedule.
- Report status of instruments (bumps, calibrations, failed bumps and failed calibrations) and any alarms which have occurred to the various business areas.
- Maintain a system to ensure availability and access to calibration gas. This task is performed by E&I at Mackay River, Shop Steward at Firebag and Central Shop Services at Oil Sands.

Tool Crib Worker

- Ensure all personal gas detectors are fully charged and have appropriate settings as defined in the operating procedure prior to being issued.
- Issue and assign personal gas detectors to Suncor personnel and contractors, as required.
- Confirm proof of training before issuing a personal gas detector to workers (also applicable to contractors as required).
- Maintain a system to ensure the faulty personal gas detection equipment can be exchanged for working equipment. Ensure all personal gas detectors with deficiencies are reported to area management.
- Maintain a reporting system on detector issuing, returns and out for repair frequencies to Business Area.
- Receive and return broken personal gas detectors to the vendor.
- Ensure warranty replacement exists.

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Responsibilities *Continued*

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| Equipment Contact | <ul style="list-style-type: none"> • Assigned by the business area as additional responsibilities to an existing role. MacKay River will use EH&S, Firebag will use Shop Steward, and Oil Sands will use Central Shop Services. • Contact the vendor to ensure trouble shooting of the equipment can occur as required. • Ensure replacement equipment received is installed as soon as possible after arrival. • Maintain bump stations. • Perform emergency calibration for users if required. |
| IT Department | <ul style="list-style-type: none"> • Make the gas detection software available to all potential users (intranet access, system requirements, additional software or hardware if required) • Maintain and update the personal gas detection software system. |
| Safety Specialists | <ul style="list-style-type: none"> • Provide a level of expertise for questions and concerns regarding personal gas detection. |
| Industrial Hygienists | <ul style="list-style-type: none"> • Provide a level of expertise for questions and concerns regarding occupational exposure limits and alarm limits (Appendix 2) of the personal gas detectors. |

Definitions

The following terms and acronyms are used in this standard:

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| Bump Test | <p>A field test conducted as per Suncor schedule. The test ensures the detector is working properly.</p> <p>During a bump test, the detector is exposed to a known concentration of calibration gas. If the detector responds within predetermined limits, the instrument is ready for use.</p> |
| Calibration | <p>An instrument's measuring accuracy relative to a known concentration of gas. The instrument's response to the calibration gas serves as the measurement scale or reference point.</p> |
| Ceiling Occupational Exposure Limit (Ceiling) | <p>The concentration of a substance that must not be exceeded at any time. The limit is indicated by a "C" in the column entitled "15 minute or ceiling occupational exposure limit" in Schedule 1, Table 2 of the Alberta Occupational Health & Safety Code.</p> |
| Combustible | <p>Any vapour, liquid or solid that is capable of catching fire and burning.</p> |

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Definitions *Continued*

Competent	In relation to a person, means adequately qualified, suitably trained with sufficient experience to safely perform work without supervision or with only a minimal degree of supervision.
Immediately Dangerous to Life or Health (IDLH)	<p>Circumstances in which the atmosphere is deficient in oxygen or the concentration of a harmful substance in the atmosphere:</p> <ul style="list-style-type: none"> • Is an immediate threat to life. • May affect health irreversibly. • May have future adverse effects on health. • May interfere with a worker's ability to escape from a dangerous atmosphere.
Lower Explosive Limit (LEL)	The lower value of the range of concentrations of a substance at which, in a mixture with air, may ignite.
Occupational Exposure Limit (OEL)	An upper limit of airborne concentrations of various contaminants in the workplace. Typically, Occupational Exposure Limits are airborne concentrations averaged over an 8 hour work day and are reported as time weighted average concentrations.
15-Minute Occupational Exposure Limit or Short Term Exposure Limit (STEL)	A 15-minute time weighed average of airborne concentration of a contaminant to which it is believed that workers can be continuously exposed for a short period of time without suffering from irritation, chronic or irreversible tissue damage, dose-rate dependent toxic effects, or narcosis of sufficient degree to increase the likelihood of accidental injury, impaired self-rescue or materially reduced work efficiency.
Time Weighted Average Exposure (TWA)	The average exposure to a contaminant or condition to which workers may be exposed without adverse effect over a period of time.

Standard**1. Competency & Qualifications**

The minimum personal gas detection qualifications and competency requirements for workers at the Wood Buffalo Region (WBR)

Description**1.1 Qualifications to use Personal Gas Detectors**

Prior to using a personal gas detector a worker must be trained on the specific equipment including but not limited to the equipment's use, bump test and calibration requirements and the required response to alarm or pre-alarm conditions.

1.2 Recertification

Workers who use personal gas detectors must be recertified as competent at least every three years or when new equipment is introduced.

2. Hazard Identification and Mitigation

Hazards can be due to equipment design, process failure or upset, the work environment, the work itself, hazard migration from a nearby source or work location.

Description

- 2.1 ***Pre-Work Hazard Assessments (Formal Risk Assessment, FLRA)***
Fixed/permanent area monitoring systems are not to be relied upon to meet personal gas detection requirements for work, These systems are not capable of warning workers when conditions are changing (e.g. when the Short Term Exposure Limit (STEL) is exceeded).
- 2.2 The Supervisor responsible for the work activities will ensure a pre-work hazard assessment is conducted for all work activities where there is the potential for hazardous atmospheres to exist:
 - For high-risk activities in these areas a risk assessment process is to be followed.
 - Personnel performing any activity, task or work where there could be an exposure to one or more hazardous substances.
- 2.3 Hazardous Area Classification maps and the area classification descriptions are to be used to determine adequate hazard controls.

3. Post Incident Response

Description

- 3.1 A personal gas detector alarm (vibrates, blinking red light and audible beeping tone), is an indication that gas in the air has been detected at a level equal to or above the prescribed alarm level for that gas. For the MSA Altair 4X Personal Gas Monitors procedure refer to RGP0010A.

4. Care And Maintenance Of Equipment

Description

- 4.1 Each worker is responsible for the care and maintenance of the assigned personal gas detector equipment as per the manufacturer's recommendations and training. Bump testing and calibration is to occur as per Suncor schedule.

5. Approved Gas Detection Equipment

Description

- 5.1 To ensure equipment integrity, the acquisition of all new types or brands of personal gas detection equipment and accessories is to be approved by the Oil Sands and In Situ EHS Group.

End of Standard

**General
Responsibilities**

The following individuals and groups have the following defined responsibilities:

Directors, EH&S Oil Sands & In Situ	<ul style="list-style-type: none">• Ensures this document is reviewed according to the required revision cycle.• Ensures the document is updated to accommodate changes to Suncor, provincial, and federal regulation.• Ensures the document is updated to mitigate risks found as the result of an incident.• Ensures the proper use of this document.
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Approved by:

Jim Chuey
GM EH&S
Oil Sands and In Situ

Appendix 2 – Low and High Alarm Settings For Personal Gas Detectors

Sensor	Low Alarm	High Alarm	Alarm TWA	Alarm STEL
Oxygen (% Vol)	19.5	23	NA	NA
Combustible LEL Sensor (%LEL)	10	20	NA	NA
Carbon Monoxide (ppm)	25	25	25	100
Hydrogen Sulphide (ppm)	10	15	10	15
Sulphur Dioxide (ppm)	2	4	2	4

Appendix 3 – Suncor Bump Test and Calibration Schedule

Suncor BU	Bump Test	Calibration	Detector
In Situ	Daily	Monthly	MSA Altair 4 Four Head
Oil Sands	As per manufacturer recommendations	As per manufacturer recommendations	BW Single Head

Summary of Changes

Location **Changes**

Revision Record

Rev	Date (yyyy/mm/dd)	Revision Notes	Approver
0	2013/06/13	New document	

<p>Feedback:</p> <p>Please submit your feedback for this standard to your Supervisor.</p> <p>Supervisor: Submit an MOC for this change and attach a marked up copy of this standard to the MOC.</p>	<p>Comments on this standard (Is this standard up to date?):</p>

Suggested Improvements:

Is an MOC Required? Yes No Sign: _____ Date: _____

Print: _____ yyyy/mm/dd