

Safety Advisory

Portable Gas Detection

Purpose: Summarize and clarify existing requirements in the [Portable Gas Detection Standard](#) and the [Portable Gas Detection of the Atmosphere Standard](#). The requirements of this advisory are specific to carbon monoxide (CO), hydrogen sulphide (H₂S), lower explosive limits (LEL), and oxygen (O₂) hazards.

Highlight of Requirements

- In September 2025, the PPE Standard was published. TC Energy now classifies personal gas detectors as PPE.
- All personnel working on Canada Gas Projects sites where TC Energy retains prime contractor status are required to adhere to the requirements of this advisory effective January 1, 2025.
- Personal gas monitors required for all workers on brownfield sites or when fire resistant clothing is required.
- For **personal gas monitors**, workers may use any personal gas monitor that complies with [section 5 and 6](#) of the Portable Gas Detection Standard. For CM&I workers, Personal gas detectors are to be provided at no additional cost to TC Energy, a requirement in the Small Tools & Consumables list of the supplier MSA's.
- Pumped gas detection requirements will be established by the TC Energy CM&I representative(s).
- For pumped gas detectors, anticipate at least 1 monitor per work site.
- Pumped gas detectors will be provided by TC Energy or rented through the Construction Contractor in accordance with the approved models listed in the Portable Gas Detector Standard.
- Follow the [Gas Detector Flow Chart](#) to assist in determining gas monitoring and detection equipment requirements. For additional information on the selection and context to determining gas detector requirements, refer to the information below and the [FAQ section](#).
- Gas detectors must be capable of detecting carbon monoxide (CO), hydrogen sulphide (H₂S), lower explosive limits (% LEL), and oxygen (O₂).

Hazardous Atmosphere

Gas detectors are required anytime there is a potential for the work area to evolve a hazardous atmosphere due to an existing process, any new/changed/adjacent process/equipment, materials, and or the environment. The following conditions are parameters of a hazardous atmosphere, and require gas detectors to protect workers:

1. Oxygen level below 19.5%
 2. H₂S concentrations greater than 1 ppm
 3. CO concentration greater than 25 ppm
 4. Where hot work is occurring within 11m of pressurized assets (15m in British Columbia).
 5. Airborne concentrations of flammable or explosive materials/substances including gases, vapours mists, aerosols, dusts, etc. and could exceed 10% of the LEL for the materials/substances.
 6. Compressor, meter stations, valve yards, or any above ground facility where there are fittings including valves, flanges, any external location within 5 meters (16 feet) of the above ground fitting, close to / in proximity of underground pipeline leaks, flammable liquids spills or accumulations or excavations contaminated with flammable liquids.
 7. Within fenced facilities, within open excavations, live gas processing equipment, or within a confined space.
 8. Performing work adjacent to an exposed third party line or facilities.
 9. Any known or suspected leaks or features in an asset, or the integrity of the asset is unknown.
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Gas Monitoring Requirements

Once a hazardous atmosphere has been identified for your work area, adhere to the gas monitoring requirements for each of the work conditions outlined below. For conditions that contain multiple work conditions discussed below, apply the more stringent gas monitoring requirements. Alternatively, follow the [Gas Detector Flow Chart](#) to determine gas detection requirements for your work condition.

Site Entry

- Adhere to any pumped gas detector and/or personal gas monitor requirements required to access the worksite, or dictated by the site specific orientation.

Hot Work Requirements

- Pumped gas detectors required for initial sweep of work area.
- Pumped gas detector placement should be placed where gas or dangerous vapour are most likely to be present as determined by Table 2A, Hot Work Pre-Start Work Area Inspection of the [Hot Work Permit Form](#).
 - At least 1 pumped gas detector for continuous monitoring (within 3m of hot work activity).
 - Pumped gas detector should be placed at the height of the source.
- All workers must have personal gas monitors worn in their breathing zone.

Confined Space Requirements

- Pumped gas detectors are required for pre-entry, and during occupancy.
- Personal gas monitors are required for all entrants and must be placed inside the breathing zone.
- See confined space entry procedure for more information on gas detector selection and requirements.

Excavation Requirements

- Pumped gas detectors are required for initial and periodic sweeps of an excavation.
- If an excavation has a source, a pumped gas detector is required during occupancy. Use a risk-based approach to determine where pumped gas detector(s) must be located to alert workers of a hazardous atmosphere.
 - Sources include features, known or potential point of hazardous gas emission.
- All workers in the excavation must have a personal gas monitor worn in their breathing zone.

All Other Work Conditions

When a potential or know hazardous atmosphere has been identified, but is not classified as any of the preceding work conditions:

- All workers are required to wear personal gas monitors.
- A hazard assessment is required to confirm if, when, and where pumped gas detectors are required.

Gas Detector Selection

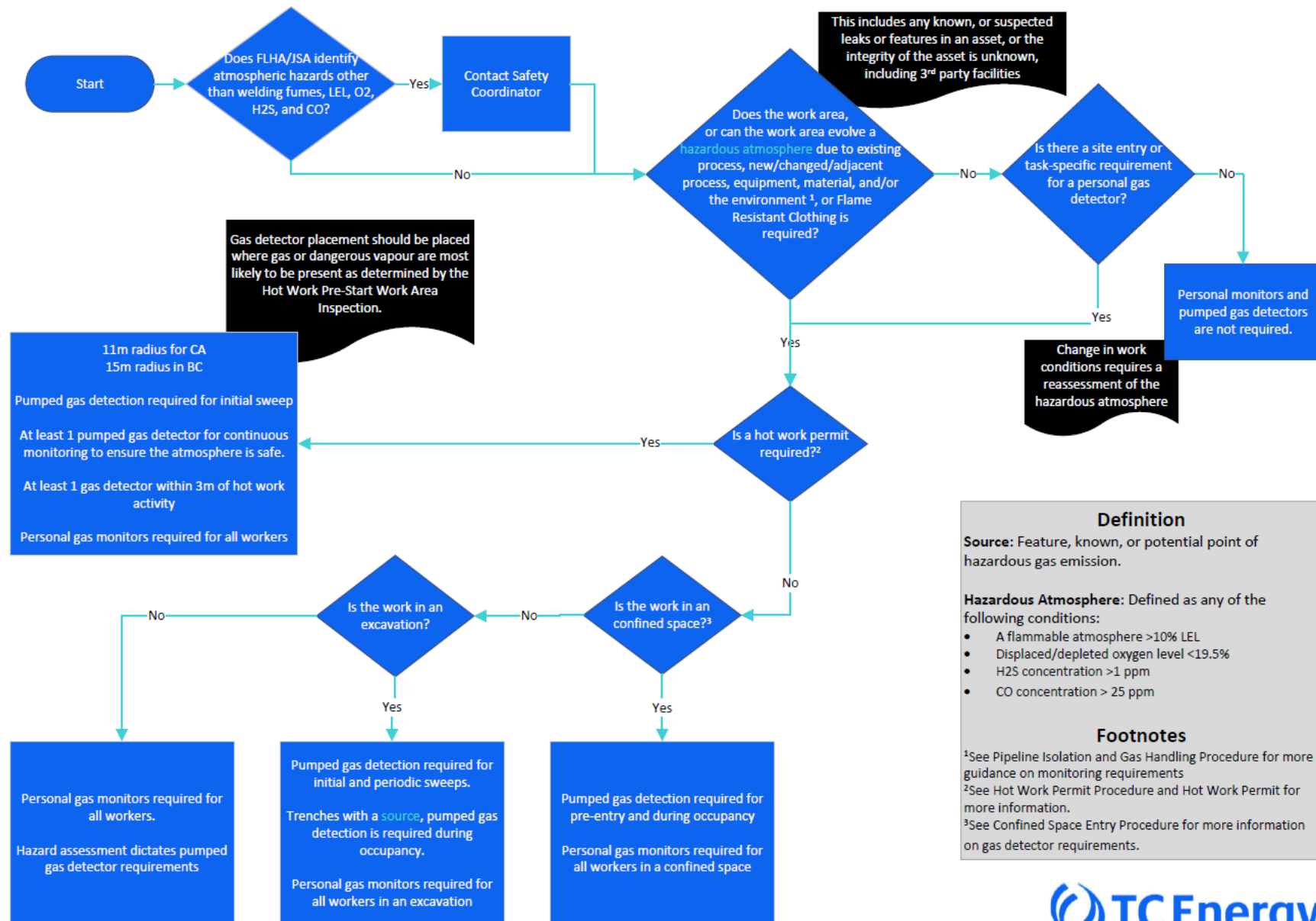
Use the following guidance to understand how to select and plan for gas detector requirements:

- For [personal gas monitors](#), workers may use any personal gas monitor that complies with [section 5 and 6](#) of the Portable Gas Detection Standard. For CM&I workers, Personal gas detectors are to be provided at no additional cost to TC Energy, a requirement in the Small Tools & Consumables list of the supplier MSA's.
- Everyone using a personal gas monitor must be competent and have completed training specific to that device.
- Pumped gas detectors will be provided by TC Energy or rented through the Construction Contractor in accordance with the approved models listed in the Portable Gas Detector Standard.
- Pumped gas detector training for the approve models will be made available through TC Energy to CM&I personnel and must be completed.
- All pumped gas detectors and personal gas monitors must be bumped & calibrated as per manufacturer requirements.

Gas Detection: CO, LEL, H2S, O2

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Frequently Asked Questions

When do I require a personal gas monitor?

A personal gas monitor is required anytime a known or potential hazardous atmosphere may be present, or anytime flame resistant clothing is required. See the [hazardous atmosphere definition](#) for more information. In some locations, a site entry or task-specific requirement may also dictate if personal gas monitors are required.

What is a personal gas monitor (diffusive) vs pumped gas detection?

Personal gas monitors are intended to alert workers about inhalational hazards or a dangerous atmosphere and must be worn in the workers breathing zone <9" (nose and mouth).

A pumped style gas detector is an area monitor that screens a work area for the presence of a hazardous gas within a certain radius of the monitor. The unit draws in air with an internal pump and can be supplemented with a wand or hose for extended reach.

Are there exceptions to when a portable gas monitor may be required?

The following are exceptions to when portable gas monitors may not be required:

- The personal gas monitor requirement for sandblasting activities may be replaced with the completion of a pre-blast assessment and periodic pumped gas detection on a frequency set by the HWP.
- Personal gas monitors requirements for Welders and Welder Helpers may be modified only during welding activities, and if within 3m of another gas monitor/detector.
- Office buildings or warehouse buildings within fenced facilities (including walkways to and from the buildings)
- While performing work on an energized right-of-way that has been assessed in your site-specific hazard assessment, is completely covered, and there is no known leak source resulting in limited potential for a hazardous atmosphere (e.g., surveying, visitor walkthrough).

Always apply a risk-based approach and documented assessment to manage hazards and risks.

When is pumped gas detection in an excavation no longer required?

Gas detection can be arrested once known or potential atmospheric hazards are no longer present. This can be supported with the following:

1. There are no third party lines exposed, and
2. Safe Excavation Pressures (SEPs) are lifted by Tech Support, or the repair is completed

This reduction in gas monitoring/detection must be supported by updating the hazard assessment to reflect that atmospheric hazards no longer exist.

What is continuous monitoring?

Continuous monitoring is the use of pumped gas detectors to measure and alert workers when atmospheric conditions may change for the duration of potential worker exposure.

How can gas testing frequency for hot work permits be reduced?

For most circumstances, continuous gas monitoring will be required for hot work permits. Under the hot work permit, gas monitoring can be reduced to a maximum interval of 20 minutes if the risk of fire or explosion within the 11m radius (15m in British Columbia) has been demonstrated to be negligible.

Both the Permit Authorizing Individual and Hot Work Operator must demonstrate the risk is minimal by performing all of the following:

1. Examining the work area and determine if flammable or combustible vapour could, or may be present.
2. Refer to section 4.1 of the HWP Procedure – *Determine if Hot Work Permit is Required* to determine if the task could be classified low risk
3. Refer to section 4.3 of the HWP Procedure – *Pre-Start Work Area Inspection* to determine if the task can be classified as low risk
4. Assessing the risk via a JSA or FLHA.

The adjusted monitoring frequency must be documented on the hot work permit.

Can CM&I workers bring their own monitors that are not approved in the Portable Gas Detection Standard?

CM&I are permitted to bring personal gas monitors that meet [section 5 and 6](#) of the Portable Gas Detection Standard. These devices do not need to be listed in the Portable Gas Detection Standard.

CM&I workers must use pumped gas detectors that have been approved and listed in Table 9 of the Portable Gas Detector Standard.

What do section 5 (Requirements) and section 6 (Training Requirements) of the Portable Gas Detection Standard entail?

[Section 5 \(Requirements\)](#) of the standard outlines the following technical requirements to use a portable gas detector:

- Technical certifications of the monitors (eg. CSA, UL certifications)
- technical specifications of the sensors permitted
- Monitoring application and gas monitor type is consistent with TC Energy
- Alarm limits
- Calibration and maintenance schedule
- Calibration gas selection

[Section 6 \(Training Requirements\)](#) of the standard outlines the following:

- Training must be provided on a minimum 3-year basis.
- Workers must complete a training that provides a theoretical overview on how gas monitors operate.
 - Training must provide an overview of acceptable ways to use gas detectors/monitors (personal, area, fixed, etc), types of gases and sensors, calibration and maintenance, alarm limits and response protocol, common limitations of gas detectors/monitors, and an overview of common gas detector/monitor features.
- Workers must complete training specific to the gas monitor.
 - Training must review basic operation of the monitor, basic care and maintenance of the device, how to perform calibration and bump testing, limitations specific to the monitor.
- Workers must be able to demonstrate understanding and competency of the gas detection equipment they are using.
- Workers performing sensor replacement must be trained and competent on the replacement by the manufacturer.