

FUGITIVE EMISSIONS MANAGEMENT

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CANADA HSE GUIDELINE

Purpose: The purpose of the Fugitive Emissions Management Program (FEMP) is to:

- Prevent the release of fugitive emissions
- Reduce gas shrinkage
- Reduce greenhouse gas (GHG) emissions
- Reduce exposure potential to personnel
- Meet regulatory requirements (AER Directive 60 and EPEA Approval).

Leaks and Vents

Leaks may result from failure of the following components:

- valves
- meters
- open-ended lines
- instrument fittings
- piping connections
- regulators

Emissions from the following are considered intentional vents if not tied to the flare system:

- pressure controllers
- level controllers
- tank vents
- valve controllers
- chemical pumps

Informal Leak Detection

Informal leak detection:

- Occurs during operator rounds.
- Relies on:
 - readings from personal monitors worn by operators
 - operators hearing or seeing indications of a leak.

Formal Leak Detection

Formal leak detection uses an Optical Gas Imaging Infrared Camera to screen for and quantify leaks on all equipment components with:

- Natural gas
- Hydrocarbon vapour
- Propane service




NOTE: While not part of the FEMP, to help identify sources of excessive vents ultrasonic leak detection can be used on valves that are closed in normal operation.

Formal leak detection surveys are completed by a third party one to three times per calendar year, depending on the location of the asset and the equipment on site. The third party used must appropriately calibrate and

maintain the survey equipment as per regulatory guidelines. Using a third party:

- Minimizes effort and training required for CPC
- Ensures consistency
- Ensures data is acceptable for audits.
- Meet regulatory requirements.



NOTE: While the surveys can be conducted at any time, consider the ambient temperature operating limits of the testing equipment.

Roles and Responsibilities for Formal Leak Detection are:

	Mainten.	Enviro. Coordin.	Leak Detection Contractor
Scheduling Leak Surveys		X	
Performing Leak Surveys			X
Economic Evaluation			X
Reviewing Leak Detection Report	X	X	
Scheduling Repairs	X		
Reporting		X	

The Environmental Operations team Coordinators are accountable for the FEMP.

Role	Contact Information
Coordinator, Environmental Reporting	403-260-1145
Environmental Coordinator	403-260-1899

Leak Response

Respond to leaks as follows:

This is the complete leak response as per regulatory guidelines.


Issue	Response
Sweet Gas Leak (>1L/min)	Must be tagged for identification or repaired immediately. See below table tagging, reporting and repairs guidance.
Sour Gas Leak or HSE Concern	Must be repaired immediately.
Not negligible- Easy to Fix	Repair within 45 days.

Not negligible- More complicated, no turnaround required	Repair within 90 days.
Uneconomical- No HSE concerns	To be tracked and evaluated during the next survey.

Leak tagging, reporting and repairs are completed as follows:

Leak Tagging

All fields on the tag must be populated. Example tag:



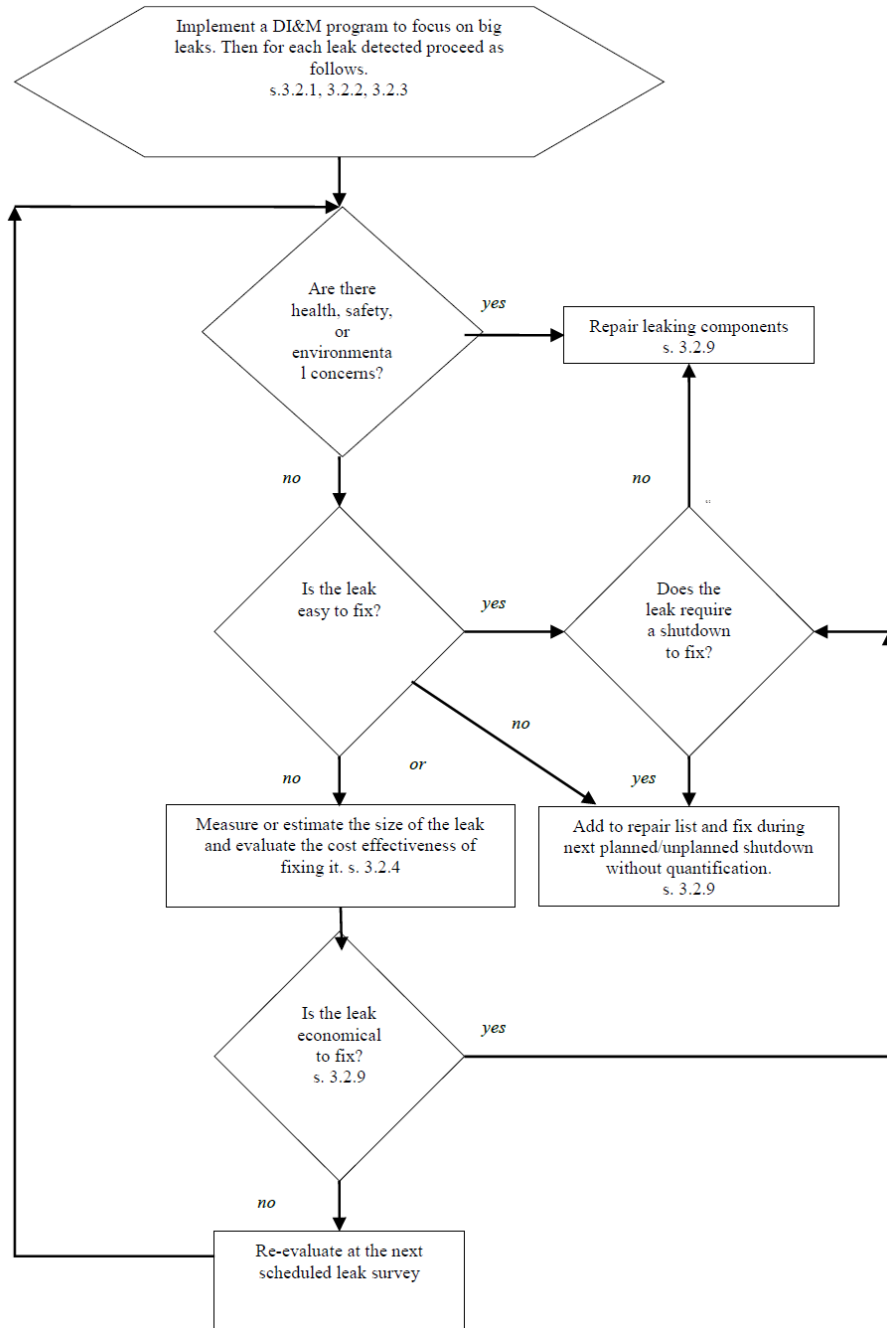
NOTE: In the Leak Source field, also include component type, process stream and notable observations.

NOTE: Tags can only be removed once repairs are complete.

Leak Reporting	<p>The leak detection tester must keep a record sheet including:</p> <ul style="list-style-type: none">• Tag no.• Equipment type (e.g. compressor, separator)• Process stream (fuel, inlet, sales, propane, etc.)• Emission description• Estimated yearly rate in e3m3/yr• Approximate annual gas value (if applicable)• Date tested• Testing company• Tester initials <p>The above record sheet guidelines are correct.</p>
Leak Repairs	<p>Maintenance Supervisors will use this Directed Inspection and Maintenance (DI&M) Decision Tree to guide repair decisions:</p>



NOTE: The testers will provide the initial hard and electronic copies of their report to the local environmental coordinator



References

1. Alberta Energy Regulator (AER). Directive 060 Upstream Petroleum Industry Flaring, Incinerating, and Venting (2014).
2. Canadian Association of Petroleum Producers. Management of Fugitive Emissions at Upstream Oil and Gas (UOG) Facilities (2007).
3. US Environmental Protection Agency (EPA). Proposed Rules: Part 98 – Mandatory Greenhouse Gas Reporting.
4. AER Manual 016: How to develop a Fugitive Emissions Management Program