



TECHNICAL SAFETY BC

Incident Investigation

BC Construction Safety Conference Oct 2023



**TECHNICAL
SAFETY BC**

Safe technical systems. Everywhere.



PURPOSE

Why does Technical Safety BC investigate incidents?

We conduct investigations to find learnings and prevention opportunities to fuel safety initiatives.



INCIDENT FINDINGS

Findings from two underground gas line strike investigations



COMOX EXPLOSION

Natural gas barracks explosion

- Gas line identified and exposed by hand.
- Contractor planned to keep mechanical excavation away from line.
- Mechanical room door was removed for construction.
- Building was occupied during groundwork.
- 28 people injured

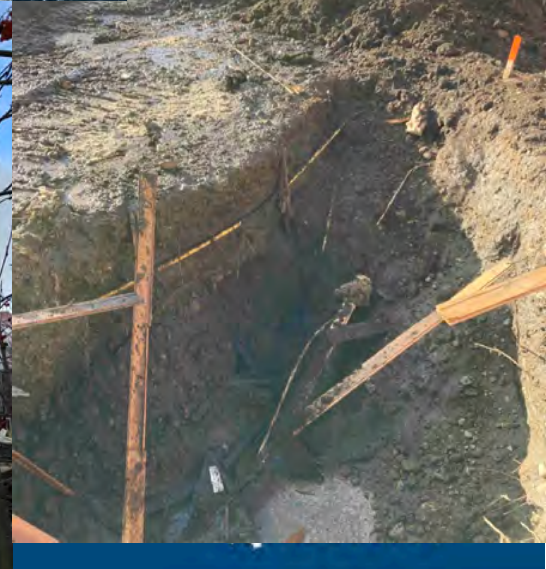




FERNIE EXPLOSION

Natural gas house explosion

- Gas line identified and exposed by hand.
- Excavation for water line struck exposed gas line.
- Line separated underground by the house.
- Gas migrated indoors causing an explosion
- 2 people in the house were injured





SAFETY STANDARDS ACT AND GAS SAFETY REGULATION



- They are legal obligations.
- Those disturbing ground should be aware of them.
- Procedures for excavations near gas installations

*A person must not excavate or cause any excavating to be done in the vicinity of a gas installation that is or could be in any way **damaging** or **dangerous** to a gas installation.*

CALL BEFORE YOU DIG...THEN WHAT?

Knowing where a line is located is just the **start** to working safely around it

About 40% gas line strikes in 2017-19 were found to happen even after BC One Call was used.



AN EXPOSED LINE IS A VULNERABLE LINE

The protection of ground cover has been removed.

More susceptible to mechanical damage

- Consider adding physical protection
- Increase visibility
- Maintain distance after exposed
- What else?

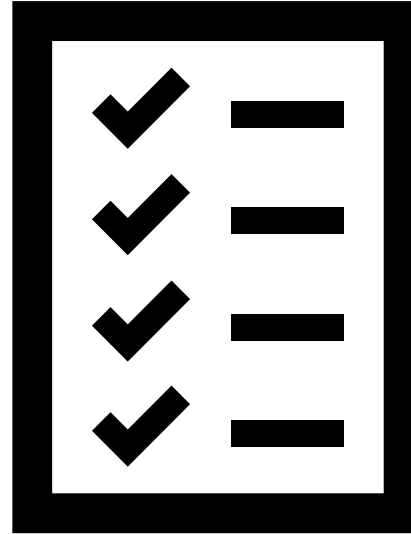




ANTICIPATE A LINE HIT

Site hazard assessments

- Proximity to buildings
- Migration paths
- Areas of containment
- Occupancy of buildings
- Sources of ignition
- What else?

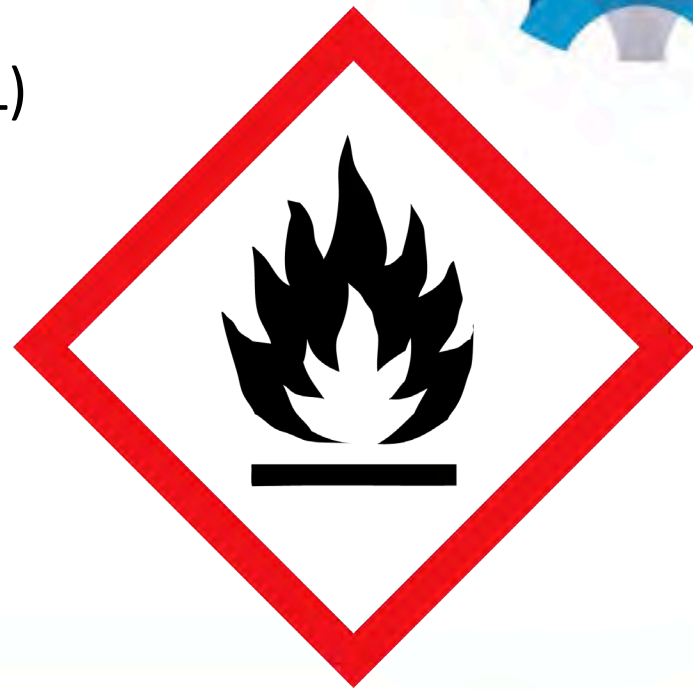




UNDERSTAND THE HAZARDS OF GAS

Upper and lower explosive limits (UEL)(LEL)
Flammability range
Specific Gravity

Understand how it works to help prevent a failure



REVIEW /SUMMARY OF FINDINGS

- Most current digging guidance stops after a line is exposed.
- Exposed gas lines are more vulnerable to damage.
- Hazard assessments are not commonly done anticipating accidental gas releases.
- Excavating operators sometimes work closer than 1 meter to gas lines that are exposed and visible.





DISCUSSION & QUESTIONS



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<https://www.technicalsafetybc.ca/>

Explosion due to underground gas line damaged by excavator. Comox (Nov 2021). Link: <https://www.technicalsafetybc.ca/alerts/explosion-due-underground-gas-line-damaged-excavator> (published Sept 22, 2022).

House explosion due to damaged gas line. Fernie (Feb 2022). Link: <https://www.technicalsafetybc.ca/regulatory-resources/incident-investigations/house-explosion-due-damaged-gas-line> (published July 29, 2022).

