

Safety Warning to Surveyors Regarding Underground Fuel Supply Lines

By Mike Scarland, BSc, CET, CFEI

Back in the early 80's I worked for the Ministry of Transportation as a survey party chief to assist in laying out the new highway 427 extension. I later worked for Consumers Gas as a survey technologist to help lay out new pipelines in relation to property lines. My career has taken many twists, and I now work for the Ontario provincial pipeline regulator, the Technical Standards and Safety Authority (TSSA).

Surveying has changed substantially since I was working in the industry. However, there is one aspect that has not changed – the need to establish permanent survey reference points. This is mostly accomplished by driving long iron bars into the ground. In my present role, it is apparent that there is a hazard in this process that many surveyors may not be aware of.

TSSA would like to advise those who excavate, or disturb the ground, to look for any potential source of fuel usage on the property prior to disturbing the soil. The depth of underground fuel lines may change over time due to erosion or changes in the landscape, so do not take *any* chances even if your activity is relatively shallow.

If a leak occurs, even through what may seem to be a minor scrape from an iron bar, it can spread long distances, and ignite, if near a flame or spark, causing a fire or deadly explosion. Underground fuel supply lines are designed to keep the gas or fuel oil safely inside. In order to stay that way, there are certain rules for digging.

It is important to understand that

there are two potential sources for underground lines, and that the fuel could be fuel oil, propane or natural gas. The lines can be owned by utilities, or privately owned lines.

Firstly, let's examine privately owned lines. Two recent incidents of damage to privately-owned underground fuel supply lines resulted in the unfortunate deaths of two people, and injuries to two others.

On July 30, 2008, a residential gas explosion in Niagara Falls killed one occupant and injured another when a landscaper drove a support bar into the ground while installing a 'rail tie' wall. The bar punctured a propane service line, which ran from the home to a pool heater, and the escaping gas migrated to the residence. The gas built up to an explosive level, and was ignited. More recently, another residential explosion in Georgian Bluffs killed one occupant and injured another when a propane supply line was severed during a construction activity.

In trying to determine if there are private fuel lines, look for equipment or appliances that use fuel such as a barbeques, pool heaters, gas fire pits, or infrared heaters. Ascertain the fuel type and source. If the fuel source is not apparent (such as a cylinder at the appliance), investigate further prior to excavating or driving any bars. As per TSSA's gaseous fuels regulations, all underground piping for propane and natural gas must be locatable. While a homeowner should be asked for locations on private property, they may not have accurate and complete information. If unsure of any underground

line, contact a private locator (under 'Cable Detection, Installation and Splicing' in the Yellow Pages or Google 'Private Locates' in your area).

In addition to these examples of incidents related to private fuel lines, there are over 3,000 damages each year to utility pipelines, which result in the release of natural gas.

To ensure that you have located all utility lines, contact your local utility for the location of all nearby pipelines. Most pipeline companies and some electric utilities in Ontario belong to Ontario One Call, and can be reached by calling 1-800-400-2255. A simple call for a locate will quickly and easily get the existing underground utility lines marked. Check the paperwork left by the locator to ensure it covers your work area, and make sure you understand all the markings. If not, discuss it with the locator.

As a final note on locates; markers in the field only indicate the presence of a pipeline. They should not be used or relied upon to determine the exact location of a pipeline. With that in mind, you must carefully hand dig within three feet (or one metre) of those markings as required by law under TSSA's Guidelines for Excavations (downloadable from www.safetyinfo.ca).

Even if you happen to cause what seems to be only minor damage to a buried utility pipeline, notify the utility company (or homeowner for privately-owned lines) immediately. A gouge, scrape, dent or crease to the pipe or pipe coating may cause a

future break or leak, so don't cover it up. Do not attempt to squeeze off the break or control the flow of gas — you could cause an explosion and be responsible for an injury or even a death. Applying pressure to the pipe could potentially cause a static spark, ignite the gas and create a catastrophic explosion.

It is imperative that only those qualified to do so, inspect and repair any damage to the line — for everyone's safety. If you become aware of such an incident or potential incident, please contact your local utility and fire department immediately.


Pipeline hits as a whole have decreased for the fifth year in a row in Ontario, thanks to the efforts of TSSA, the Ontario Regional Common Ground Alliance and various industry stakeholders, but there is still a way to go yet.

Remember that it is not just good sense to contact the pipeline companies for a locate prior to driving bars in the ground — it is the law. Under

TSSA O. Reg 210/01, those who "break ground" must first ascertain the location of any pipelines from the license holder. Further, and separate, no person can damage a pipeline without authority to do so. TSSA Inspectors conduct inspections into reported pipeline damages, and may choose one of several different enforcement actions depending upon circumstances.

Those found to be in non-compliance, if prosecuted, could face fines of up to \$50,000 and/or one year in jail for a person, or \$1M for a corporate body. In 2006, TSSA obtained a fine of \$225,000 + 25% victim surcharge for a pipeline hit in 2003, which resulted in the deaths of 7 people.

Given my prior experience in the surveying industry, I do understand the operational challenges that obtaining locates, and hand digging within 3' of marked gas line, will add to the scope of your business. As a regulator, TSSA cannot develop your company policies

and procedures. They will be unique, depending on the type of work and geographical area. However, the laws are clear, and the safety issue is real. You must make sure that your company has the proper due diligence built into its policies and procedures to ensure compliance. 

Mike Scarland, BSc, CET, CFEI is the Manager of Operations, Fuels Safety at TSSA. He can be reached by email at: mscarland@tssa.org.

About Technical Standards and Safety Authority (TSSA)

TSSA is an innovative, self-funded, non-government organization focused on delivering public safety services. It provides not-for-profit regulatory safety services in industry sectors such as fuels, amusement devices, elevating devices, boilers and pressure vessels, operating engineers, and upholstered and stuffed articles. The organization's vision is to be the world leader in public safety services. If you have any questions about this or other fuel safety issues, feel free to contact TSSA at **1-877-682-8772**.