



Toolbox Talks

National Safe Digging Month Part 1

Pipeline Safety Guidelines:

→Call before you dig

Call 811 or your local One-Call System

→Wait the required time

Generally 24 to 72 hours, depending upon state requirements

→Respect the marks

Flags, paint or other markers (normally yellow for pipelines)

→Excavate with care

Pothole or hand dig to determine exact location of pipelines

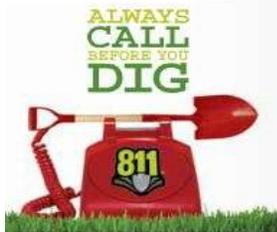
Damage prevention is a shared responsibility. Digging safely begins with a call to your One-Call System. Most state laws require this call, & it is normally free. Excavation information is then sent by the One-Call System to operators of underground facilities near your excavation. The operators will mark the location of their facilities in accordance with the applicable state requirements. Emergency contact information should be obtained directly from the operator or from nearby pipeline markers. Pipelines are an essential part of our transportation system. We depend on them every day to transport gas & liquid products to our homes & businesses. Pipeline companies perform ongoing maintenance to ensure the reliability of their systems. Following these guidelines will help prevent pipeline emergencies & keep pipelines the safest method for transporting gas & liquid products.

1. Know the hazards

- Natural gas & other petroleum products will ignite & burn.
- If exposed to the skin, serious irritations may occur.
- Escaping gases can displace oxygen.

2. Recognize unsafe conditions

- Pipelines that are: leaking, damaged, insufficiently supported, exposed to high heat, or threatened by natural forces are all unsafe conditions.
- Any damaged or weakened pipeline must always be checked by the pipeline company for remaining strength. Even very minor damages can cause future leaks or ruptures & must be investigated.
- Pools of liquid, blowing dirt, hissing sounds, vapor clouds, gaseous odors, bubbles in standing water, dead vegetation, & frozen soil or ice next to pipelines are all signs of a pipeline leak & should be treated as an emergency.



3. Respond immediately

- Immediately leave the area while avoiding any action that may cause sparks. Abandon all equipment & get a safe distance away.
- Call 911 & then immediately notify the pipeline company.
- Keep others away until emergency officials arrive. Stay upwind, do not attempt to operate pipeline valves or extinguish any pipeline fires.

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& Pipeline Association for Public Awareness

One-Call and State Law Directory

The following is presented for informational purposes only. One-call center information and laws are subject to change. Please consult the one-call center website for current information. Infrastructure Resources, LLC attempted to verify all information for accuracy as of the date of this publication, but is not responsible for incorrect or missing information.



You can reach your local one-call center in the United States by dialing 811.

NEW HAMPSHIRE

DIG SAFE 888-344-7233 • www.digsafe.com
Hours: 24 hours, 7 days
Advance Notice: 72 hours⁽¹⁾ Marks Valid: 30 days
Law Link: www.digsafe.com/laws_statelaws.htm

MAINE

DIG SAFE 888-344-7233 • www.digsafe.com
Hours: 24 hours, 7 days
Advance Notice: 72 hours⁽¹⁾ Marks Valid: 60 days
Law Link: www.digsafe.com/laws_statelaws.htm

MASSACHUSETTS

DIG SAFE 888-344-7233 • www.digsafe.com
Hours: 24 hours, 7 days
Advance Notice: 72 hours⁽¹⁾ Marks Valid: 30 days from ticket date
Law Link: www.digsafe.com/laws_statelaws.htm

VERMONT

VERMONT DIG SAFE 888-344-7233 • www.digsafe.com
Hours: 24 hours, 7 days
Advance Notice: 48 hours⁽¹⁾ Marks Valid: 30 days
Law Link: www.digsafe.com/laws_statelaws.htm

CONNECTICUT

CALL BEFORE YOU DIG 800-822-4455 • www.cbud.com
Hours: 7:00 AM - 5:00 PM, M-F; Emergencies: 24 Hours
Advance Notice: 2 full working days⁽¹⁾ up to 30 calendar days
Marks Valid: 30 days / Law Link: www.cbud.com/education_excavator.html

(1) including weekends and state/federal holidays
(2) & (3) excluding weekends and holidays

TICKETS	STATE LAWS & PROVISIONS										EXEMPTIONS			NOTIFICATIONS ACCEPTED			Tolerance Zone				
	RM Tickets Available	Online Tickets	Coverage Statewide	CVL Provisions	Emergency Clauses	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth		Damage	Design	Emergency	Overhead
N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	N	18"
N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	N	18"
N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	N	Y	Y	Y	N	N	18"
N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	N	18"
N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	N	18"





Toolbox Talks

National Safe Digging Month Part 2

OSHA Facts: Trenching & Excavation Safety

Two workers are killed every month in trench collapses. The employer must provide a workplace free of recognized hazards that may cause serious injury or death. The employer must comply with the trenching & excavation requirements of 29 CFR 1926.651 & 1926.652 or comparable OSHA-approved state plan requirements. An excavation is any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal. Trench (Trench excavation) means a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 meters).

→Dangers of Trenching & Excavation

Cave-ins pose the greatest risk & are much more likely than other excavation-related accidents to result in worker fatalities. Other potential hazards include falls, falling loads, hazardous atmospheres, & incidents involving mobile equipment. **One cubic yard of soil can weigh as much as a car.** An unprotected trench is an early grave. Do not enter an unprotected trench.

→Trench Safety Measures

- **Trenches 5 feet (1.5 meters) deep or greater** require a protective system unless the excavation is made entirely in stable rock.
- **If less than 5 feet deep**, a competent person may determine that a protective system is not required.
- **Trenches 20 feet (6.1 meters) deep or greater** require that the protective system be designed by a registered professional engineer or be based on tabulated data prepared &/or approved by a registered professional engineer in accordance with 1926.652(b) & (c).

→Competent Person

OSHA standards require that employers inspect trenches daily & as conditions change by a competent person before worker entry to ensure elimination of excavation hazards. A competent person is an individual who is capable of identifying existing & predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to workers, soil types & protective systems required, & who is authorized to take prompt corrective measures to eliminate these hazards & conditions.

→Access & Egress

OSHA standards require safe access & egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper.

These devices must be located within 25 feet (7.6 meters) of all workers.

→General Trenching & Excavation Rules

- Keep heavy equipment away from trench edges.
- Identify other sources that might affect trench stability.
- Keep excavated soil (spoils) & other materials at least 2 feet (0.6 meters) from trench edges.
- Know where underground utilities are located before digging.
- Test for atmospheric hazards such as low oxygen, hazardous fumes & toxic gases when > 4 feet deep.
- Inspect trenches at the start of each shift.
- Inspect trenches following a rainstorm or other water intrusion.
- Do not work under suspended or raised loads & materials.
- Inspect trenches after any occurrence that could have changed conditions in the trench.
- Ensure that personnel wear high visibility or other suitable clothing when exposed to vehicular traffic.

→Protective Systems

- **Benching** means a method of protecting workers from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or nearvertical surfaces between levels. *Benching cannot be done in Type C soil.*
- **Sloping** involves cutting back the trench wall at an angle inclined away from the excavation.
- **Shoring** requires installing aluminum hydraulic or other types of supports to prevent soil movement & cave-ins.
- **Shielding** protects workers by using trench boxes or other types of supports to prevent soil cave-ins. Designing a protective system can be complex because you must consider many factors: soil classification, depth of cut, water content of soil, changes caused by weather or climate, surcharge loads (e.g., spoil, other materials to be used in the trench) & other operations in the vicinity.

What's in a Ditch?

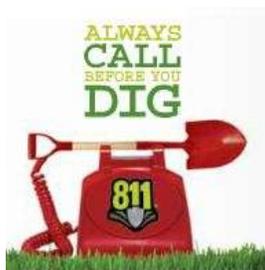
By Lee Travis, Health, Safety & Environment Coordinator, TransCanada Pipelines

Have you ever seen people enter an unsafe excavation? Have you ever entered an unsafe excavation yourself? If so, I ask *WHY?* Why did you take the risk?

Ditch digging or excavation work has been around since the need to irrigate crops or bury treasure. Ditches don't dig themselves, they require people! People to plan, people to control the hazards, people to classify soil, people to design the excavation, & people to do the work.

Planning

The 'getter dun' mentality has been the plan & failure of many excavation projects. Legislation, company policy, & safety requirements now drive the earth moving industry. Comprehensive excavation plans are foundational to the success of an excavation project, no matter how simple or complex. Variables such as schedule, resources, cost, location, permits, environment, equipment, worker responsibilities, & training must all be considered. All too often, a failure to plan effectively upfront increases the risk to the people in the ditch.



Toolbox Talks National Safe Digging Month Part 3

Hazards

Excavation hazards & risks need to be identified, understood, & mitigated to the lowest practicable level. A primary hazard in any excavation is collapse & subsequent injury or death, however, collapse is not the only hazard that needs to be mitigated.

Hazards such as:

- ⊗ Working around heavy machinery
- ⊗ Manual material handling
- ⊗ Close proximity to traffic
- ⊗ Overhead & buried facilities
- ⊗ Ground water
- ⊗ Unknown risk



Unknown risk or what has been referred to as 'surprises' can occur at anytime. In late February of 2009, one of our company construction *Lead Hands* called & stated, "We have poisonous H2S gas in our ditch." Surprise! How could this be? There were no sources in the area. Upon further investigation, natural occurring H2S was released during the excavation process from a drainage tile area where decaying material was trapped. The work stopped for two days until additional safety controls were implemented into the excavation plan.

Dirt

Classification of the soil is an integral part of an excavation plan. Determining the type of soil & the soil characteristics such as cemented, cohesive, dry, granular, moist, saturated, or submerged are all part of the equation. Determining soil type is not guess work, nor a one time event. It is a continual process as soil types can change throughout the excavation procedure. Soil can also be very dynamic when impacted by weather, ground water, & vibration. Even if the classification does not change, observation of changing soil conditions should be done daily by a competent person.

A Good Design

"I'll only be in there a minute...it should be OK." Have you heard that statement before? Perhaps just before someone enters an unsafe ditch? Most likely the person knows the excavation does not meet the legislative or company design requirements, however, they still take the risk.

There are many excavation design options available when planning an excavation that people will enter. Sloping, benching, timber shoring, trench jack, & trench box options are some of the design techniques available in legislation to the excavator. The excavation plan should outline the preferred design technique as well as when it is safe for people to make entry. When workers understand & follow the design plan, the opportunity for them to take the risk is reduced. If people still enter an unsafe excavation, you don't need them on your worksite.

Brought to you by



& Pipeline Association
for Public Awareness

People are in a Ditch!

What's in a ditch? PEOPLE! **Our** People! It is only through comprehensive planning, hazard identification, soil classification, & a good design plan that enables our most valuable resource, our people, to enter an excavation safely.

True Story

Toolbox Talks
National Safe Digging Month Part 4



You Never Think It Will Happen to You

By Nick Bruno, Safety Awareness Solutions

At 27 years old, **Eric Giguere** began to feel accomplished. Driving to work on the morning of October 4th, 2002, the wedding band on his finger was only six days old. He'd be leaving for his honeymoon in a few hours, but first there was the matter of a twelve-inch water main he had to install. Always a hard worker, Eric enjoyed being a Union Laborer. The money was good & every day led to a sense of completion as he got to see the progress that he helped to create with his own hands.

Despite no experience installing water lines, Eric helped his five man crew lay 1,000 feet of pipe daily. The project started simply enough with four foot trenches, but two months later the grade of the surrounding landscape meant the backhoe operators had to open up ditches six & a half feet deep. Minor setbacks weren't too uncommon. Just that morning an operator nicked a small drainage pipe, spilling 4-5 gallons of water into the bottom of the trench. Once the mud was cleaned off the bottom, Eric & a co-worker jumped in to see how they could repair the latest slow down. The other laborer returned to the truck for a piece of pipe. The two backhoe operators dug & backfilled other areas. The superintendent ran the loader down the road. All this while Eric was fighting to breathe under 2,000 pounds of dirt. Less than thirty seconds after being left alone the sides of the trench collapsed in, leaving Eric alone to fight through feelings of panic & desperation that would eventually subside to a sense of well-being as he began to die. On the surface, the rest of the crew were busy making a tough decision; use the backhoe & risk injuring Eric further or dig by hand knowing full well that every second mattered.

Since no one saw the trench collapse, they only heard the scream, two feet was as deep as anyone dared to go with machines. Ten minutes later, a Sheriff's Deputy was on hand to snap a photograph as the crew pulled Eric's now blue body from the trench.



It's customary to document workplace fatalities with pictures, but in this case the EMT's were able to shock Eric & get a pulse. A short helicopter ride later he was in *Strong Memorial Hospital* in Rochester, NY. About the time he should have been leaving for his honeymoon, Eric's family & friends began to file into a hospital waiting room to either hear his chances of survival or pay their last respects. Entering a six & a half foot deep ditch with no trench-box was a split second decision Eric made, in part, due to an "it won't happen to me" attitude, that was further enforced by the sense of complacency one develops after going in & out dozens of times with no close calls. Eight years after his accident, it's that split second that Eric likes to talk about as he travels across the county sharing his story with everyone from Fortune 500 manufacturers to small engineering firms for the company he founded, **Safety Awareness Solutions**. In a frank tone, familiar to those who've been on construction sites, Eric often explains that he used to be the guy sitting in the audience for these presentations, & he knows what every last person in the room is thinking as he begins to talk. Having the understanding that no one ever thinks they'll be the one to get hurt is what helps to make Eric's message so powerful. When you rationalize the split second decisions made on a daily basis & then offer consequences, such as your bride of less than a week sitting by your hospital bed, the whole room begins to listen. Eric demonstrates the variables in his story & shows how **decisions we make, no matter what industry we're in, ultimately decide if we go home safe or if we change the lives of our loved ones** like he did by climbing into a trench "just for a second".

COLOR CODE IDENTIFIERS	
WHITE	Proposed Excavation
PINK	Temporary Survey Markings
RED	Electric Power Lines, Cables, Conduit and Lighting Cables
YELLOW	Gas, Oil, Steam, Petroleum or Gaseous Materials
ORANGE	Communication, Alarm or Signal Lines, Cables or Conduits
BLUE	Potable Water
PURPLE	Reclaimed Water, Irrigation and Slurry Lines
GREEN	Sewers and Drain Lines

Most states use the American Public Works Association Uniform Color Codes, shown above, to identify underground utilities

General Pipeline Leak, Hazard and Emergency Response Information

	Odorized Natural Gas	Unodorized Natural Gas	Petroleum Liquids (gasoline, jet fuel, crude oil)	Highly Volatile Liquids (propane, butane, ethane)	Anhydrous Ammonia	Carbon Dioxide	Sour Natural Gas (H2S)	Sour Crude Oil (H2S)
INDICATIONS OF A LEAK								
An odor like rotten eggs or a burnt match	X						X	X
A loud roaring sound like a jet engine	X	X					X	
A white vapor cloud that may look like smoke				X	X			
A hissing or whistling noise	X	X		X	X	X	X	
The pooling of liquid on the ground			X					X
An odor like petroleum liquids or gasoline			X	X				X
Fire coming out of or on top of the ground	X	X		X			X	
Dirt blowing from a hole in the ground	X	X		X	X	X	X	
A sheen on the surface of water			X	X				X
An area of frozen ground in the summer	X	X		X		X	X	
An unusual area of melted snow in the winter	X	X		X		X	X	
An area of dead vegetation	X	X	X	X			X	X
Bubbling in pools of water	X	X		X		X	X	
An irritating and pungent odor					X		X	X
HAZARDS OF A RELEASE								
Highly flammable and easily ignited by heat or sparks	X	X	X	X			X	X
Will displace oxygen and can cause asphyxiation	X	X		X	X	X	X	
Vapors are heavier than air and will collect in low areas			X	X	X	X		X
Contact with skin may cause burns, injury, or frostbite			X	X	X	X	X	
Initial odor may be irritating and deaden the sense of smell							X	X
Toxic and may be fatal if inhaled or absorbed through skin					X		X	X
Vapors are extremely irritating and corrosive					X		X	X
Fire may produce irritating and/or toxic gases	X	X	X	X	X		X	X
Runoff may cause pollution			X		X			X
Vapors may form an explosive mixture with air			X	X				X
Vapors may cause dizziness or asphyxiation without warning	X	X				X	X	X
EMERGENCY RESPONSE								
Avoid any action that may create a spark	X	X	X	X			X	X
Do NOT start vehicles, switch lights, or hang up phones	X	X	X	X			X	X
Evacuate the area on foot in an upwind and uphill direction	X	X	X	X	X	X	X	X
Alert others to evacuate the area and keep people away	X	X	X	X	X	X	X	X
From a safe location, call 911 to report the emergency	X	X	X	X	X	X	X	X
Call the pipeline operator and report the event	X	X	X	X	X	X	X	X
Wait for emergency responders to arrive	X	X	X	X	X	X	X	X
Do NOT attempt to close any pipeline valves	X	X	X	X	X	X	X	X
Take shelter inside a building and close all windows					X		X	X

