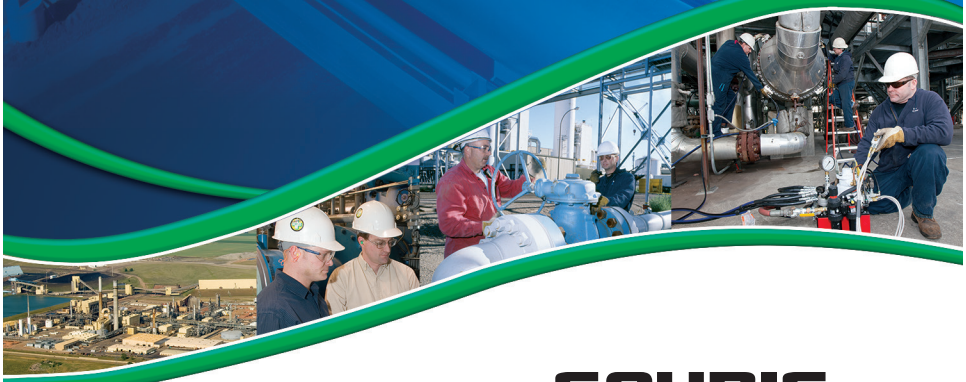
Living and Working Near CO_2 Pipelines



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Weyburn, SK Canada
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SOURIS VALLEY PIPELINE

A message for you about pipeline safety

What is in Souris Valley's pipelines?

Souris Valley is using a 205-mile pipeline to deliver oil-field-grade carbon dioxide (CO_2). The pipeline consists of a 14" carbon steel line that runs from DGC to Tioga, ND, with a maximum allowable operating pressure (MAOP) of 2,700 PSI. From Tioga, ND pump station to Goodwater, Canada, the pipeline is 12" carbon steel with a MAOP of 2,964 PSI. The CO_2 contains small amounts of impurities such as hydrogen sulfide, hydrocarbons and methyl mercaptan.

What is carbon dioxide?

CO_2 is a naturally occurring, inert, odorless, nonflammable gas. When injected into oil wells, it mixes with crude oil, reducing its viscosity making extraction or recovery of the crude oil easier.

CO_2 is normally present in the atmosphere. Gaseous carbon dioxide is an asphyxiate. Concentrations of 10 percent or more can produce unconsciousness or death. Lower concentrations may cause headache, sweating, rapid breathing, increased heartbeat, shortness of breath, dizziness, mental depression, visual disturbances and shaking. The seriousness of these symptoms is dependent on concentrations and length of time the individual is exposed. Skin, eye, or mouth contact with dry ice or compressed CO_2 can cause tissue damage, burns or frostbite. CO_2 is heavier than air and when released from a storage container or pipeline it tends to stay along the ground and settle into low spots. However, being a gas it is also rapidly diluted and dispersed by wind.

What is hydrogen sulfide?

Hydrogen sulfide (H_2S) is a colorless, flammable and poisonous gas with an offensive odor and irritant properties. Very low concentrations of H_2S may be detected by the characteristic "rotten egg" odor. However, even low concentrations of H_2S can rapidly deaden your sense of smell and rising concentrations may not be detected. For this reason, do not depend on your sense of smell to recognize dangerous concentrations. H_2S is only slightly heavier than air, and for this reason it will be rapidly diluted and dispersed by wind. However, on calm days it may linger in low spots or at ground level. Effects of overexposure to H_2S include irritation of the eyes and throat at low concentrations, which become painful at higher concentrations. H_2S will also cause weariness, headaches and dizziness. Acute exposure may cause death.

What is methyl mercaptan?

Methyl mercaptan contains sulfur. That is what makes it smell. It has a disagreeable odor, similar to garlic or rotten cabbage. Its disagreeable odor is the reason it is added to natural gas, which is colorless and odorless. The odor of methyl mercaptan can be detected at an extremely low level of 0.0016 ppm (parts per million).

It occurs naturally in some foods such as filbert nuts and Beaufort cheese, and has many uses in industry. Methyl mercaptan is used in pesticides, as a jet fuel additive, in the plastics industry, and as a nutrient in poultry feed. It is also released naturally as a decay product in marshes and wood pulp.

Methyl mercaptan at low concentrations can irritate the eyes and skin, breathing it can irritate the lungs causing coughing and shortness of breath. Higher exposures cause build up of fluids in the lungs, vomiting, dizziness, muscle weakness and loss of co-ordination. Higher levels can cause loss of consciousness and death. Repeated or long-term exposure may damage the red blood cells causing anemia.

The National Institute of Occupational Safety and Health (NIOSH) has set the Immediately Dangerous to Life and Health (IDLH) limits for methyl mercaptan at 150 ppm and the IDLH for hydrogen sulfide at 100 ppm.

How does the CO_2 pipeline help the environment?

Many research studies have identified CO_2 as a potential greenhouse gas that may be a contributor to global warming. Before this project

was implemented, Dakota Gasification's CO_2 was combusted in a boiler to recover the fuel value of any non-CO_2 components. Then it went up a stack. Now it is injected into the ground by the customer to help recover more oil from their fields than would have otherwise been possible. Over 99% of the CO_2 remains permanently underground in the oil fields. This is called "CO_2 sequestration." Industry and governments around the world are recognizing this method as an excellent way to reduce overall emissions of CO_2.

How can I tell if I live or work near a CO_2 pipeline?

CO_2 pipelines are buried underground. Pipeline markers like the one shown are used to mark the pipeline's route and are placed at each side of public roads, railroad crossings, fence lines, water crossings, and in sufficient numbers along the buried pipeline. Markers cannot be relied upon to indicate the exact location of the pipeline. Remember to call **SASK 1ST CALL** at **1-866-828-4888** to have the pipeline located.

What if there is a CO_2 pipeline on my property?

Your property plat or title report will tell you if there is a pipeline easement on your property. Easements are written agreements that provide "right-of-way" to the pipeline company. The right-of-way enables Souris Valley workers to gain access to the pipeline for inspections, maintenance, testing, or emergencies.

Please remember:

1. Keep the right-of-way free of buildings, structures or other encroachments.
2. If you would like to use the right-of-way for any purpose, please contact us.
3. We may periodically prune trees and vegetation on or near the pipeline easement.

Can agricultural activities be performed around the pipeline?

Normal agricultural activities can be safely preformed around pipelines. For the following activities, however, please contact **SASK 1ST CALL** at **1-866-828-4888** before the work commences:

- Deep tillage or plowing (in excess of 12 inches or 30 centimeters)
- Trenching
- Adding or removing soil
- Fence post or pile installation
- Building construction
- Drainage work
- Any excavation deeper than 12 inches or 30 centimeters

Agriculture equipment can safely cross the pipeline right of way as long as the loaded axle weight and tire pressures of the vehicle or mobile equipment are within the manufacture's approved limits and operating guidelines. Contact Sask 1st Call if you're unsure if specific agricultural activity can be safely performed around the pipeline.

What should I do if I'm planning excavation work on my property?

Souris Valley requires that you give the pipeline company a two working day notice, not including your notification date, before you begin excavation work. So, if your company does excavation work, or if you are a homeowner or farmer who digs on your property, help us prevent pipeline emergencies by contacting the pipeline company.

Damage from excavation activities and digging equipment is the number-one cause of pipeline accidents. Without proper coordination, excavation activities near underground pipelines can result in very dangerous situations.

Before you dig:

1. Determine if there are pipelines or other utilities in the area where you are planning excavation.

2. Call the pipeline company's toll-free number shown on the pipeline marker. The pipeline company will send a representative to mark the exact location, route and depth of the pipeline at no charge.
3. Don't try to guess the route or location of the pipeline, even if you see the markers.
4. Damage from excavating equipment is the number-one cause of pipeline accidents.

What should I do if I disturb a CO_2 pipeline?

Immediately call Souris Valley Pipeline. Any gouge, scrape, dent or crease to the pipe or coating may cause a future leak or break.
We'll need to immediately inspect and repair any damage to the pipeline.

How do I recognize a pipeline leak?

While leaks on pipelines are rare, it is important to know how to recognize the signs of a leak if one were to occur in your area.

LOOK:

- For frozen liquid around the pipe at the leak area, or a vapor cloud similar to that produced by dry ice.

LISTEN:

- For a blowing, hissing sound or any unusual sounds or noises.

SMELL:

- For any unusual odors.

What to do if you suspect a pipeline leak:

- Turn off and abandon any equipment you may be operating. Don't light a match, start an engine, etc. that could cause heat or sparks.
- Leave the area quickly, moving up-wind if possible and warn others to stay away.
- Call Souris Valley Pipeline Limited immediately toll free **1-866-PIPELINE**, **1-866-747-3546**.
- Notify local authorities.
- Do not attempt to extinguish a fire.
- Do not attempt to operate any of the valves on the pipeline.

I'm a public safety official, what do I need to know?

CO_2 is nonflammable, but it's wise to observe the following precautions for any public emergency:

- Turn off and abandon equipment and leave area quickly.
- Move up-wind (do not attempt to investigate the situation).
- Contact Souris Valley Pipeline Limited as quickly as possible using the information on the pipeline marker or by calling toll-free **1-866-747-3546**.
- Call your local authorities.
- Secure the area around the leak to a safe distance, including evacuating homes, businesses, schools and other locations, erecting barricades and taking other similar precautions.
- Prohibit smoking, reroute traffic and shut off electricity and gas.
- Do not attempt to operate any of the valves on the pipeline. This could make the situation worse or cause other accidents.

How will Souris Valley respond to a pipeline emergency?

We will immediately dispatch personnel to the site to help handle the emergency and assist public safety officials. We will also take necessary operating action to minimize the impact of the leak. Public Safety personnel and others unfamiliar with the pipeline should not attempt to operate any of the

valves of the pipeline. Souris Valley trained personnel will operate pumps and valves and take similar steps to minimize the impact of the leak.

Souris Valley will notify those residents living or working within the pipeline corridor that a pipeline emergency has occurred with the potential to affect them. In Canada the pipeline corridor is two kilometers in width on each side of the pipeline or four kilometers total, while in the United States the pipeline corridor is two miles in width, one mile on either side of the pipeline

Souris Valley will make these notifications through a Reverse 911 computerized call out system. A prerecorded message will be delivered to residents living or working within the pipeline corridor.

The Emergency message may differ depending on the situation at the time of the emergency and what pipeline and product may be involved in the emergency.

Souris Valley emergency response officials will decide which action is best suited to protect residents living or working in the area of a pipeline leak.

Residents may be requested to either "shelter in place" or "evacuate" at the time of the pipeline emergency.

Here are some tips on how to protect yourself in either situation.

How to Shelter-in-Place

- Close and lock all windows and exterior doors.
- If you are told there is danger of explosion, close the window shades, blinds, or curtains.
- Turn off all fans, heating and air conditioning systems.
- Close the fireplace damper.
- Get your family disaster supplies kit and make sure the radio is working.
- Go to an interior room without windows that's above ground level. In the case of a chemical threat, an above ground location is preferable because some chemicals are heavier than air, and may seep into basements even if the windows are closed.
- Bring your pets with you, and be sure to bring additional food and water supplies for them.
- It is ideal to have a hard-wired telephone in the room you select. Call your emergency contact and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.
- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door and any vents into the room.
- Keep listening to your radio or television until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

How to Evacuate

If you are asked to evacuate because of a hazardous materials emergency, do so immediately. Before leaving your home or office, close your windows and shut all vents to minimize contamination. If time permits, place a sign on your door or front window to notify emergency responders that your building has been evacuated and no one remains inside. It is also a good idea to provide a telephone number where you can be reached.

In the event of a gas or vapor release, DO NOT try to outrun the cloud by going down wind. Eventually the vapors will catch up with you.

Always move cross-wind (90 degrees to the wind) from the leak. This is the quickest way to get out of the vapor cloud.

Pay particular attention to the wind direction and source of the leak.

How does Souris Valley help ensure pipeline safety?

Maintaining the safe operation of our pipeline is just as important to us as it is to you. We help ensure pipeline safety by:

- Adhering to regulations defined by the National Energy Board.
- Pressure testing beyond expected use BEFORE any pipeline is placed into operation.
- Monitoring ALL PIPELINES through air patrols and computerized control centers.
- Marking all pipelines with above ground warning signs.
- Communicating with all persons near our right-of-way.
- Encouraging you to be our eyes and ears and communicating with all persons near our pipeline right-of-way.

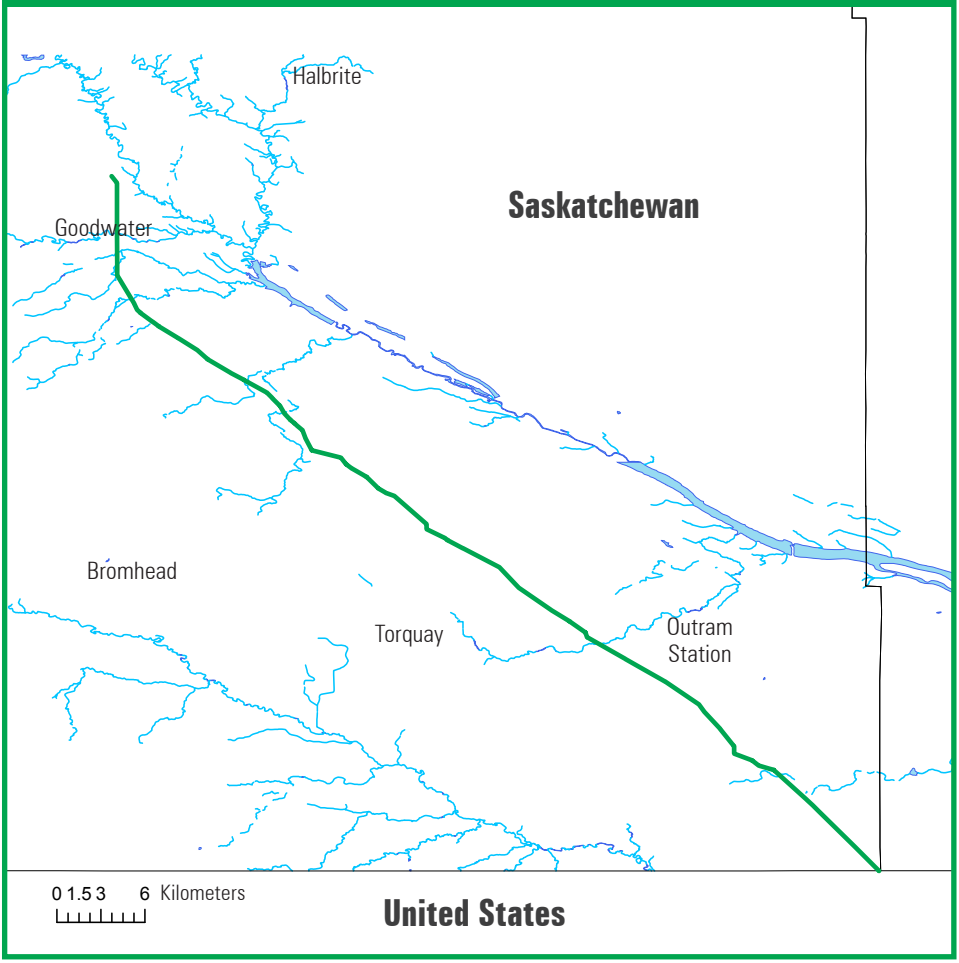
For additional information please call:

SOURIS VALLEY PIPELINE

1-866-PIPELINE
1-866-747-3546

1. **At least 48 hours before you dig, call SASK 1st CALL Toll Free: 1-866-828-4888 Fax: (306) 525-2356 1-866-455-5559 Cell #4888 on the SaskTel Mobility Network**
2. **Wait for the site to be marked.**
3. **Respect all markings.**
4. **Dig with care.**

Souris Valley Pipeline



IN AN EMERGENCY, or to report a suspected leak, please call:

Souris Valley Pipeline Limited

1-866-PIPELINE • 1-866-747-3546

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