

Blog: Is There a Difference Between Pipeline and Environmental Monitoring?

With a great deal of discussion online and in the media about pipeline monitoring and the promotion of greater involvement with Indigenous communities, it is important to understand that there are several specializations in the industry that involve many different skill sets. Engineers, technologists, scientists, biologists, geoscientists and tradespeople all possess a diverse range of technical skills and specialties. In the professions governed by professional regulatory bodies such as APEGA (The Association of Professional Engineers and Geoscientists of Alberta) and ASET (The Association of Science and Engineering Technology Professionals of Alberta), there are commitments that these professionals make to the public to only work within their scope of training and expertise. Pipeline operators who carry an APEGA Permit to Practice have additional Guidelines and Codes of Ethics that must be followed to keep the safety of the public paramount in all their operations. Competency development and training becomes imperative to ensure that those conducting the work in these fields can do so safely to minimize risk to the public and the environment. There is occasionally a misconception that pipeline monitoring and environmental monitoring are the same thing and the terms are often used interchangeably. It has been our experience in industry that there are multiple different skillsets involved in these areas. Environmental monitoring is extremely important throughout the lifecycle of any pipeline, oil and gas facility or installation. This includes testing and observation of soils, water, air, and the biodiversity around the area. This includes wildlife monitoring and the study and recording of changes in plants and animals in the area. This is commonly referred to as the “bugs and bunnies” aspect of the oil and gas industry. There are long time initiatives such as the Peace Athabasca Delta Ecological Monitoring (PADEMP) which measures, evaluates and communicates the state of the Peace Athabasca Delta ecosystem, including any changes to this ecosystem that result from cumulative regional development and climate change. (www.pademp.com) The program was established in 2008 in response to growing concerns about the cumulative impact of expanding regional development including that of oil and gas and oil sands development. This initiative works collaboratively with Indigenous community based monitoring (CBM) programs such as that developed with the Athabasca Chipewyan First Nation and Mikisew Cree First Nation. This work includes Traditional Ecological Knowledge (TEK) which involves connecting with Elders, scientists and traditional knowledge keepers of Indigenous communities to capture the observations and understanding they have from their many generations on the land. This will be discussed in future articles.

Pipeline Monitoring as it relates to leak detection and spill response is a slightly different field and skill set. These requirements are outlined in the Canadian Standards Association standards on oil and gas pipeline systems, CSA Z662. CSA Z662 was updated in 2015 and is the 7th edition of the standard. The standard is reviewed and updated every four years. There are 12 Technical Subcommittees with multiple technical professionals from industry, government and consulting firms that review various aspects of the standard such as coatings, materials, construction, design, distribution, operations, systems integrity and management systems. This document is 859 pages in length and contains the minimum technical guidelines required to design, build and operate oil and gas pipelines safely. Provincial and National regulators such as the NEB (National Energy Board), the AER (Alberta Energy Regulator) and Saskatchewan Ministry of the Economy all enforce regulations based on these codes and standards.

Section 10.5.3 of CSA Z662 outlines pipeline identification requirements (ie: signage). Proper and easy to see identification of underground pipeline locations is imperative as an overwhelming number of pipeline incidents are caused by third party line strikes. Signage with the proper information is very important and, even if properly placed at first, can be impacted by fading over time, theft or vandalism which can reduce visibility of important information. Section 10.6 covers the requirements for Right-of-Way inspection and maintenance. These requirements require pipeline operating companies to periodically patrol their pipelines to observe conditions and activities on and adjacent to their rights-of-way that can affect the safety and operation of the pipelines. This section indicates that attention shall be given to the following; construction activity, dredging operations, erosion, ice effects, scour, seismic activity, soil slides, subsidence, loss of cover, evidence of leaks and unauthorized activities. Frequency is directed to be determined based on risk factors such as operating pressure, pipeline size, population density, service fluid, terrain, weather and agricultural and other land use. Vegetation must be controlled and surface facilities properly maintained and protected. Crossings must be inspected and special considerations given to the inspection and maintenance of pipeline crossings of; major utilities, other pipelines, railways, roads and water.

The NEB and provincial regulators have audit protocol that guides pipeline operators on expectations for compliance around right-of-way inspections and monitoring. One key aspect to be aware of is that regulators are looking more to the industry to not only comply with the standards but to have management systems in place to manage the coordination, record keeping and follow up of workflow around these standards. With respect to pipeline monitoring, this means not only having a variety of right-of-way surveillance practices, but an effective way to track, follow up and document them.

One way to monitor a pipeline right-of-way is through what is commonly referred to as “Boots-on-the-ground” or simply ground monitoring or right-of-way inspection. This involves a physical inspection while walking the right-of-way and may include the use of All Terrain Vehicles (ATVs) or snowmobiles in remote, difficult to access locations. There are additional specialties and certifications required for various types of inspectors such as welding, coating, trench and trenchless and Right-of-Way. The levels of training and certification required depend on the specialty and the expectations of employers. These expectations may vary but, as with all roles in safety sensitive areas, a pipeline operating company is expected to ensure competency in employees and contractors working on their projects. Baseline minimum safety certification will be expected, usually WHMIS (Workplace Hazardous Materials Information System), First Aid, H2S Alive and may include requirements for Ground Disturbance, Wildlife Awareness, Defensive Driving and company specific orientation. The main purpose of this training is to protect the safety of the public, workers and the environment. Pipeline inspectors/monitors will walk the right-of-way to inspect the criteria that they are trained in and the scope that they are directed to inspect. This activity may also include using hand held equipment called “sniffers” to detect gas. The workers will also visually look for issues such as discoloration in the vegetation, a sheen on puddles or water bodies, or erosion issues near water crossings.

Certifications and competencies around pipeline inspection are continuously developing and it is important for any training or employee development program to ensure it is current and compliant with the standards. The development of programs to train workers in Indigenous communities to

support pipeline operators, their suppliers and as contractors in their pipeline monitoring efforts should involve due diligence to ensure alignment as these standards continue to evolve.