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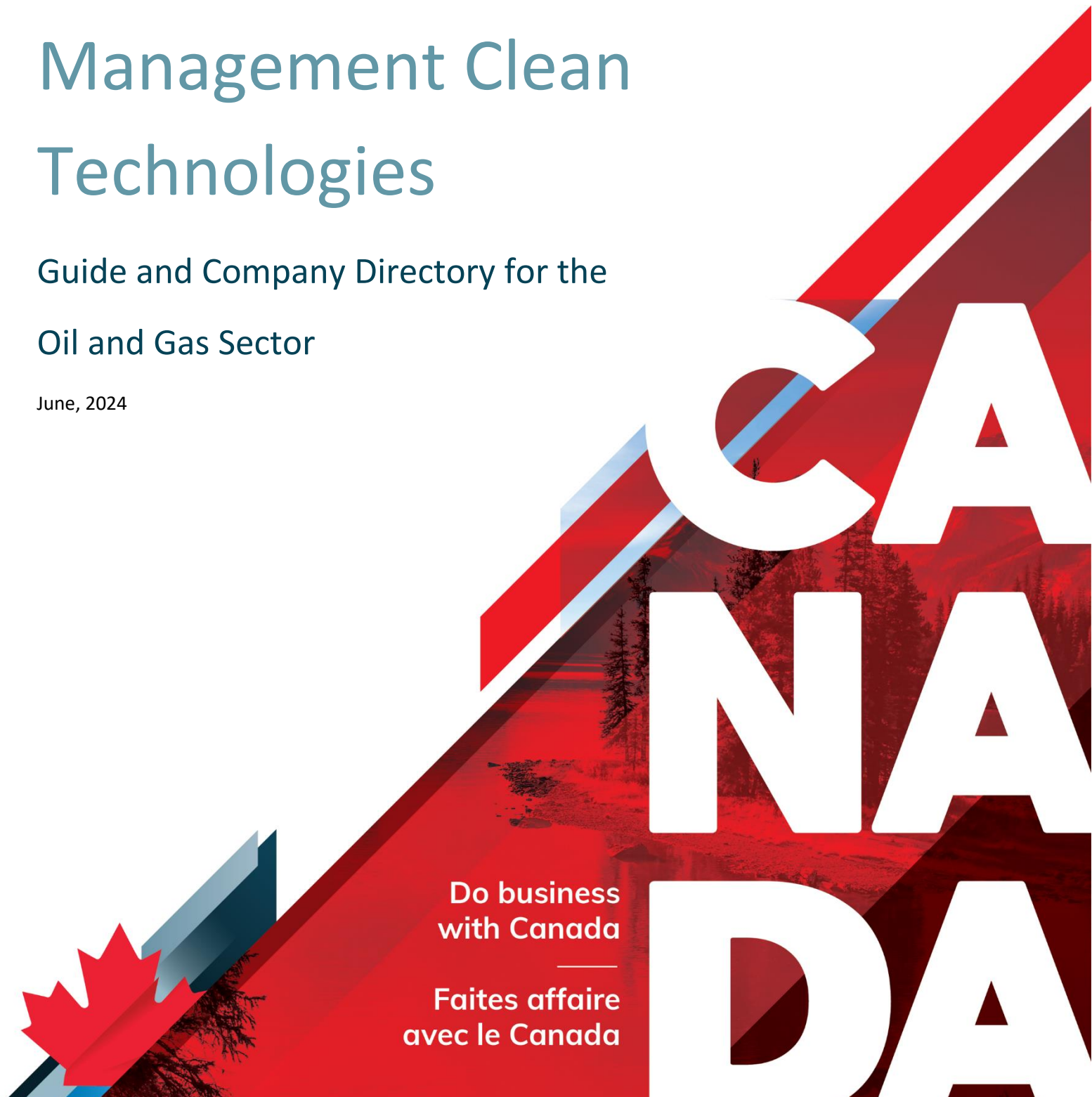
Canada

Canadian Capabilities in Environmental Management Clean Technologies

Guide and Company Directory for the Oil and Gas Sector

June, 2024



Canadian Capabilities in Environmental Management

Guide and Company Directory for the Oil and Gas Sector

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This document has been prepared by Petroleum Technology Alliance Canada (PTAC) for the Trade Commissioner Service, Global Affairs Canada.

Introduction

Increasingly the global focus on energy production and supporting industries has expanded to include greater focus on life cycle, or cradle to grave, environmental impacts of energy related technologies. Unlike many other industries the oil and gas industry's use of land and other resources in any given area is ultimately transient, even though wells and facilities may be in operation for many decades they will eventually be abandoned when the oil and gas resources are depleted. Oil and gas resource developments progress in stages from exploration to resource development, followed by production operations and eventual resource depletion, ending with repurposing, abandonment, and reclamation. At any point in the process there are environmental impacts which must be managed, which differ in intensity and scale depending on the resource being developed, stage of development progress and location which may range from urban areas, farmland, wetlands or offshore.

The objective of this guide and company directory is to share Canada's experience and expertise in managing environmental issues involving land, water, ecosystem, and general minimization of the impacts of oil and gas developments on communities and local ecosystems. The guide highlights Canadian capabilities with the purpose of assisting both Canadian producers and other oil and gas producing countries in managing environmental impacts, primarily from upstream and midstream operations.

The clean technologies covered include a wide range of challenges which require cost effective and efficient technology solutions. Some of the general areas of concern relate to: Oilfield recycling, drilling waste management, water treatment, site remediation and reclamation, monitoring equipment, environmental protection services, equipment, and training. They exclude management of greenhouse gas emissions, carbon capture and storage, fuel switching, offshore and end of well producing life technologies which are covered in other Directories.

Environmental Waste Management in Canada

Canada has a global reputation of having a well regulated and environmentally conscious oil and gas industry which is continually looking for new improvements in environmental performance. Since oil and gas development first started in southern Ontario near the community of Oil Springs in 1858[1], oil and gas developments have become widespread and oil and gas resources can be found in every province and territory, even though not all jurisdictions currently have active oil and gas production. As the industry expanded, it moved into new jurisdictions including a wide range of geographies from farming areas in the southern parts of the country, offshore oil and gas, and even into the Arctic for both development (Norman Wells, NWT saw oil development in 1920) and exploration in the Arctic Ocean and Arctic Islands. Many of the developments were preceded by programs undertaken by the Canadian Geological Survey which was founded in 1842, and similar organizations in the provinces, which identified natural resources through drilling as well as mapping surface signs of underlying resources. Some resources, such as the oil sands, naturally occurred on riverbanks and were impacting the environment long before they were actively developed for commercial production, with many rural water supplies coming from wells drilled into coal seams which naturally produce methane as water is withdrawn and pressures are reduced in the seams. These extensive resources found in so many different environments have forced the industry to development new environmental management technologies covering a wide range of challenges so that the industry operations can co-exist with other industries and local communities.

Policy and Regulation

In Canada, Confederation spilt responsibilities for various resources and regulatory responsibilities between the central Federal government and strong regionally powerful Provinces. In part, this is a recognition that in a country as large as Canada – the second largest by landmass in the world after Russia – there is an extremely diverse range of geography including coastal areas, mountains, prairies, shield, lakes, wetlands, and arctic tundra. In fact, Canada has more lake area than any other country in the world[2], and the third largest supply of renewable fresh water in the world, after Brazil and Russia. Provinces control their own natural resources; however, the Federal Government retains responsibility for cross-border issues and fisheries, can influence developments which impact fresh surface water, and ensure that Indigenous peoples are able to provide input to new developments and the impacts of operations. Governments at both the federal and provincial levels ensure the responsible development of hydrocarbon resources by taking the results of scientific studies and using the information to govern the industry. In Canada, regulators and governments work with industry stakeholders to create a regulatory environment that supports the development of resources with smart policies and regulations that reduce costs and improve outcomes. These policies encourage companies to improve their environmental and social performance in areas such as land use, water use, air quality, well abandonment, land reclamation and rehabilitation as well as community and stakeholder engagement and consultation.

[1] Parks Canada https://www.pc.gc.ca/apps/dfhd/page_nhs_eng.aspx?id=442#:~:text=In%201858%2C%20near%20Oil%20Springs,established%20a%20refinery%20at%20Hamilton

[2] Environment and Climate Change Canada https://www.canada.ca/en/environment-climate-change/services/water-overview/sources/lakes.html

Access to Financing and Financial Incentives

Federal and Provincial governments in Canada invest heavily in developing environmental management expertise. This is most evident through the provision of capital in the form of grants and loans that help accelerate research and development efforts and encourage market uptake of environmentally sound technologies and solutions. Federal funding is provided to government research organizations through departments like Environment and Climate Change Canada and Natural Resources Canada, as well as supporting industry focused organizations such as the Petroleum Technology Alliance Canada (PTAC) and the Petroleum Technology Research Center. More general support funding for technology demonstrations is available through Sustainable Technology Development Canada and fundamental and applied research at Canadian Universities funded through the National Research Council.

Canada also has a strong entrepreneurial ecosystem and a reputation for developing new technologies which migrate to other countries.

Investment in Research and Development

The Canadian petroleum industry is heavily involved in collaborative research and development of new ideas and technologies to make industry development more sustainable, with oil and gas producers providing substantial investments in clean technology development and, critically, supporting field trials of new clean technologies. This includes projects organized through a range of associations, including PTAC, Canada's Oil Sands Industry Alliance (COSIA), and the Clean Resource Innovation Network (CRIN) which provide a collaborative framework for developing appropriate technologies. The Canadian Association of Petroleum Producers (CAPP) and the Explorers and Producers Association (EPAC) also lead in providing support for environmentally focused, science-based studies through the Alberta Upstream Petroleum Research Fund (AUPRF) which "is a unique collaborative platform between the Government of Alberta, the Alberta Energy Regulator, and industry" and is managed by PTAC. AUPRF has significantly improved the industry's understanding of environmental and social impacts of oil and gas development and demonstrated that businesses can increase profits through solving these problems.

These organizations assist entrepreneurs and companies at various stages of development, from start-up to testing and proving new technologies. A hurdle that many entrepreneurs face is in gaining access to field sites to test their technologies. Through these collaborative associations, technology developers have access to the producers to develop and test their technologies and the producers support sharing of test results with other producers to raise the performance of the entire industry.

Environmental, Social, and Corporate Governance

Canada has a long tradition of responsible development within its oil and gas fields. Local leaders and company executives are committed to land restoration and conservation. Companies are active in consulting with local communities and stakeholders and, in most areas, support Producer Operating Groups or Community Advisory Committees where communities, Indigenous groups, and other stakeholders directly affected by local operations can bring their issues or concerns to industry people whom they know and deal with on a regular basis. Issues dealt with in these forums could relate to emergency response preparedness, ongoing environmental issues, or changes in daily operations at facilities in their local area. Companies and their executives are continuously striving to improve their strong environmental, social, and governance (ESG) performance and are held to account by local residents.

Availability of Capital and Operating Expenditures

Canada and the Provinces allow private corporations to lease and develop natural resources on Crown leases. These private and public companies are driven by their shareholders to invest capital and provide a rate of return while meeting ESG commitments. While oil and gas prices have improved since the last downturn in world oil and gas prices in 2014, there continues to be a great deal of uncertainty related to future oil and gas demands because of the energy transition and changing energy supplies as a result of international conflicts and on-going tensions in other parts of the world.

Summary

Canada is contributing to the global goal of moving towards more sustainable energy systems to meet societal needs while minimizing impacts on other stakeholders. Canada has the capability and opportunity to export these innovations and expertise to the world, working together to reduce environmental impacts in a cost-effective manner.

Environmental Management Issues

The size, impact, and potential solutions to reduce environmental impacts vary with the stage of resource development and the type of oil and gas resources being developed. This Directory will focus on a wide range of environmental management issues and solutions but will exclude direct GHG related issues, offshore developments, and well integrity or end of producing life issues as they are covered in other volumes of this series of Clean Technology Directories. As with the Canadian Energy Export Guide this section also excludes the Oil Sands Mining and Extraction Sector as those operations and resources are relatively unique to Canada.

Some stages of development such as Exploration and Development tend to have similar issues independent of the type of resource that is ultimately produced. However, the production or operational stage is greatly impacted by the type of resource being developed while looking at a common set of environmental management issues and how they impact the regional environments in which they are found.

Impact Area	Environmental Management Issues
Air Emissions	**Exploration** Short-term emissions from mobile seismic equipment, transportation, and rigs **Development** Longer-term emissions from intense well drilling and completion rigs and transportation of materials/modules and workers to development sites. **Production** *Conventional Oil and Gas* Decadal emissions of small volumes of rich solution gases containing methane and often odourous heavier hydrocarbons, usually flared if gas gathering is not available. *Oil Sands and Heavy Oil* Decadal emissions of large volumes of flue gases containing nitrous and sulfur oxides and potentially much smaller volumes of produced gas containing low concentrations of hydrogen sulphide. *Shale Resources* Initial potentially large emissions of gas (flared if possible) during flowback after fracturing followed by decadal emissions similar to equivalent volume conventional oil and gas wells. **Pipelines and Transmission** Mainly combustion emissions for gas turbines and compressors, periodic venting during line depressuring events.

Ecological	**Exploration** Short-term seasonal cutting of seismic lines and isolated drill sites through a range of ecosystems overlying oil and gas resources, effects of seismic activities (blasting/vibrations) and low-level drilling activities on wildlife behaviour. **Development** Intense activity over 1-3 years during initial development of wells, clearing and construction of gathering lines, power lines and roads, surface facilities location impacts, and high level of construction activities on wildlife. **Production** *Conventional Oil* Chronic small leaks of oil and salt water on leases, larger during workovers, sites may be subjected to herbicides to control noxious weeds. *Conventional Gas* Chronic small leaks of natural gas liquids, glycols and salt water on leases, sites may be subjected to herbicides to control noxious weeds. *Oil Sands and Heavy Oil* Chronic leaks of bitumen with pumped wells. Extremely close spacing of well pads with 10-30 wells or well pairs per pad. Vent gas recovery systems and high temperatures. Above ground steam and production lines. Sites may be subjected to herbicides to control noxious weeds. *Shale Resources* Lower than for conventional oil and gas sites as wells are drilled horizontally from multi-well pads which reduces footprint compared to conventional vertical oil and gas wells. **Pipelines and Transmission** Relatively linear features crossing hundreds of kilometers of all types of terrain and pass near urban areas.
Remediation and Reclamation	**Exploration** Replanting and restoring cutlines, low-levels of drilling waste management, drill site reclamation in stages until wells are abandoned. **Development** Removal of oily solids, soil treatment to return to original biological productivity leveling sites and access roads. **Production** Replanting and restoring drill site and plant sites areas which are not needed for operations. E.g. camps, laydown areas, drilling waste disposal. Removal of any contaminated solids, soil treatment to return to original biological productivity leveling sites and access roads. **Pipelines and Transmission** Generally, pipelines are abandoned in place filled with inhibited water. Compressor sites are dismantled and returned to previous biological productivity.

Water	**Exploration** Minimizing impacts on water flows and fisheries due to temporary access crossings. **Development** Construction of bridges over streams, gathering line and power line crossings, provision of water for drilling and completion activities dependent on resources type. **Production** Rainwater contained on site, saline produced water hauled or gathered to send to treatment and deep well disposal. *Conventional Oil* Water reinjection for pressure maintenance. *Conventional Gas* Water in production must be removed with dehydrators or prevented from freezing by injecting methanol. *Oil Sands* Large volumes of water required for steam generation often 2-4 m^3 of liquid water per m^3 of bitumen produced. Almost all of the water returns to surface contaminated with oil, salt and other minerals. Regulations require produced water reuse so produced water deoiling and softening is required. Make-up water to replace what remains in the reservoir is fresh from surface or fresh/brackish from ground water sources. *Shale Resources* Extremely large volumes of water are required for hydraulic fracturing which may be repeated a number of times if wells are re-fractured. Requires large external supplies and large volume water storage at well sites. **Pipelines and Transmission** Main impacts are crossing of water bodies or wetlands with potential for spread of fluids if leaks occur.
Monitoring	**Exploration** Sites are rarely visited after exploration activities are completed. **Development** Active and enhanced monitoring during periods of high activity. **Production** Usually daily to monthly visits by field operators, high volume or sour wells often equipped with Supervisory Control and Data Acquisition (SCADA) systems due to high value of production. **Pipelines and Transmission** System wide monitor from control rooms. Compressor sites often unattended but equipped with SCADA systems. Routine fly-overs or group patrolling of line rights of way.

Case Studies

These case studies provide examples of Canadian technologies and services applied in the field, along with the impacts on clients. In some examples, multiple technologies and services are used to provide the best solution to the client.

Ecological Mitigation

Cypher Environmental

Provides clean technology solutions for road surface management including dust control and road stabilization to help deal with the thousands of kilometers of gravel roads used by the oil and gas industry, where dust and road conditions have a major impact on the environment and safety of operations. Dust control is achieved through use of an environmentally friendly alternative to road salts to reduce airborne dust by 90+%. Road stabilization of clay soils often found in oil and gas development areas reduces vehicle fuel use and associated greenhouse gas emissions and increases the load bearing capacity of the surfaces.

OptiSeis Solutions Ltd.

Provides services through planning exploratory seismic acquisition campaigns using its EcoSeis tool to plan for acquiring the highest quality of data with the minimum environmental impact combined with safe and efficient field operations. The technology utilizes aspects of alternative geometries and processing advances, can be implemented as a proprietary software or service solution and is applicable in both land and marine environments.

Water Treatment

Implementation of Multiple Technologies for Oil Sands Water Reuse

Extremely large volumes of water are required for oil sands operations mainly for stream generation and bitumen extraction from mined oil sands. Volumes required can be 2 to 3 cubic meters of water per cubic meter of bitumen produced, where total production has grown to over 500,000 cubic meters per day (3.3 million barrels per day) of bitumen. Initial pilot operations at small scale mainly used fresh water from surface sources, with produced or contaminated water sent to deep disposal or to tailings ponds. Over the last 5 decades, numerous technologies have been applied to reduce this impact by facilitating water reuse in both applications. The result is that today over 88% of the water used for in-situ steam generation is reused and over 73% of the water used for bitumen extraction is recycled.

Aqua Pure Technologies

Based in Grande Prairie, Alberta, Aqua Pure Technologies provides integrated water treatment systems for a range of industrial clients but based on experience in the oil and gas industry. Processes include oil recovery, removal of particulates and bacteria, solids removal, desalination. System designs can be mobile with small footprint and high energy efficiency.

ClearBakk

Provides services for water reuse, as well as freshwater and wastewater treatment for the oil and gas and other industrial sectors, including life cycle solutions. Services cover full-service support in conceptual design, detailed design, fabrication, installation, commissioning as well as on-going support for maintenance and operations. Treatment processes range from physical, chemical, biological processes to desalination and membrane systems.

Site Remediation

Trium Environmental Inc.

Provides environmental remediation and management solutions to mitigate the impact of oil and gas contamination of soil and groundwater. Services include provision of labour for site treatment, research and development and custom solutions. Key technologies include chemical oxidation, bioremediation, stabilization and sequestration, and bench scale, pilot scale, aerobic and anaerobic testing.

Research

C-FER Technologies Inc

Responding to spills on inland waterways poses significant challenges due to the difficulty in accessing remote areas and the huge variability in spill conditions, such as river flow rates during floods, spills in ice-covered water, changes in spilled oil properties in cold temperature, interaction of spilled hydrocarbons with suspended solids in the water, and with plants along shorelines and riverbanks. C-FER has constructed the Inland Waterway Simulator (IWS) to help equipment vendors and pipeline operators assess and improve the performance of spill response technologies, including oil detection technologies for both floating and submerged or sunken oil in flowing water; spill containment technologies such as booms and bubble curtains; and oil recovery technologies such as skimmers and adsorbers.

Monitoring and Reporting

Government of Alberta Water Reports and Data

This government site has been rapidly growing, driven by the major increase in oil and gas water use in the province for hydraulic fracturing of shale wells, and declines in water available under drought conditions. This could serve as a model for use in other jurisdictions with similar issues related to flow estimation for ungauged watersheds; viewing of water licenses; river forecasts and advisories; surface water quality data; and water use reporting system.

Canadian Capabilities to Address Environmental Management Issues

The following table lists a few of the Products and Services available from Canadian companies to assist in the global effort to reduce environmental impacts from upstream oil and gas operations. Product categories below describe the general type of products available to physically remove or reduce the impact of exploration through to abandonment. Service categories describe the solutions available to detect, quantify, monitor, manage and mitigate environmental impacts.

Category	Description
Products	
Air Emissions Control	The manufacturing of combustors, incinerators, or catalytic oxidizers, to efficiently consume oil or gas contaminants or other means to reduce their impact on the environment.
Ecological Mitigation	Products to reduce the impact of oil and gas activities at various stages of development on local flora, fauna, and nearby residents.
Water Treatment	Equipment to treat water for oil and gas use, after use or produced water disposal.
Site Remediation	The provision of materials or equipment to assist in returning oil and gas sites to their original biological productivity or use by other industries such as agriculture.
Waste Management	Provision of services for managing or reusing waste materials from oil and gas operations
Monitoring	Effective monitoring of environmental factors around oil and gas facilities to understand the base natural condition, impact of disturbances and to monitor post-reclamation.
Services	
Research	The investigation of a wide range of environmental factors which may be impacted by oil and gas operations resulting in potential changes in biodiversity, ecological cycles, animal behaviours and natural systems.
Reporting	The use of tools and methodologies to allow the tracking and assessment of environmental factors at various stages of development and making recommendations or suggesting potential methods of mitigating impacts.
Management	Methodologies for managing oil and gas activities or remedial actions to minimize the impact of operations on the local environment at various stages of development
New Technology and Redesign	The investigation of new tools, technologies, or methodologies to improve the sustainability or otherwise reduce the impacts of oil and gas operations.

Canadian Company Directory

The Canadian companies listed here have identified a primary product/service category, and each company is listed under its respective primary category. Each company has also identified additional products and services that it offers. Click on a company name to skip to its listing or website. Listing includes companies who have submitted summaries specific to this **Directory (in Bold)** as well as companies listed in the Canadian Energy Export Guide (*).

		Product Categories							Service Categories				
Company	Page Number	Air Emissions Control	Ecological Mitigation	Water Treatment	Site Remediation	Monitoring	Waste Management	Other	Research	Monitoring & Reporting	Management	New Technology & Redesign	Other
Directory													
Aqua Pure Technologies	16			■							■		
Cascadia Scientific	17		■					■					
ClearBakk	18			■									
Clear Rush Co.	19	■							■			■	
Cypher Environmental	20	■	■										
Delta Remediation	21				■						■		
EnBiorganic	22			■									
Enviro-Pads	23		■										
Flux Labs	24	■								■			
Livestock Water	25			■									
OptiSeis Solutions	26		■										
PureJet Inc.	27	■											
Pyrogenesis	28						■						
Rotating Right	29						■						
Sawback Tech	30					■				■			
Trium Environmental Inc.	31				■					■	■		

VentMEDIC	32													
Energy Export Guide														
AGES Thermal Processing	N/A													
Atlantis Research Labs	N/A													
Aureus Energy Services Inc.	N/A													
BI Pure Water Canada Inc.	N/A													
BioNorth Solutions	N/A													
Blue Drop Solutions	N/A													
Canada North Environmental Services	N/A													
Catapult Environmental	N/A													
CEGEN Green Energy Ltd	N/A													
Earthmaster Environmental Strategies	N/A													
FilterBoxx Inc.	N/A													
Gaia Water Ltd.	N/A													
Geo Tactical Remediation	N/A													
Ground Effects Environmental Solutions	N/A													
H2O Innovation	N/A													
Nelson Environmental Group	N/A													
Northshore Environmental	N/A													
Ovivio	N/A													
Paragon Soil and Environmental	N/A													
Saltworks Technologies Inc.	N/A													
Saskatchewan Research Council	N/A													
SCFCan Inc.	N/A													
Secure Energy Services	N/A													
Summit Earth Services	N/A													

Swirltex	N/A													
Technika Engineering Ltd.	N/A													
Total Combustion Inc.	N/A													
WaterSmart Solutions	N/A													
WSP Canada Inc.	N/A													
Zirco	N/A													

Aqua Pure Technologies

https://www.aquapuretech.com

LOCATION
15402 91 St Grande Prairie, Alberta
T8X 0B2

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Jennifer Demmery
info@aquapuretech.com
403-262-2610

SECONDARY CATEGORY
Water Treatment & Water recycling

COMPANY DESCRIPTION
Aqua Pure Technologies is an integrated water treatment solutions group. We develop, manufacture, and operate water treatment solutions for industrial applications. We have developed the patented, automated, ultrafiltration PROH2O® platform to meet rigorous hazardous area and HSE requirements.

We offer mobile, cost-effective and scalable packages for our clients.
Aqua Pure Technologies provides a full-service turnkey solution to address all water treatment needs.

TECHNICAL CAPABILITIES

What we do
Our Technology base grown out of our experience in the oil and gas industry.

- Design water treatment processes
- Recover 100% of immiscible oil and fats from water
- Remove 99% of particulate from water
- Remove 99.9% of bacteria from water
- Extended capability, high load solids removal, desalination, disinfection
- Provide small footprint, low energy, cost efficient mobile packages

The Difference
- PROH2O® provides consistent product for wide ranging and variable input process conditions
- PROH2O® is a lower energy footprint than any competing technologies
- PROH2O® minimizes waste and disposal streams, maximizing water re-use
- PROH2O® is a learning system that optimizes on-the-fly reducing cleaning cycle periods and cleaning chemistry
- PROH2O® may or may not require chemistry depending on what type of effluent required
- PROH2O® development models provide reliable capacity data at evaluation stage
- PROH2O® can be readily adapted to meet all local HSE needs
- PROH2O® is not limited to a single supply of components, components are available world-wide

Cascadia Scientific Inc.

https://cascadiascientific.com/

LOCATION
15300 Croydon Dr Suite 202,
Surrey, BC
V3Z 0Z5, Canada

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Stephen Edwards
sedwards@cascadiascientific.com
+1 778-806-1303

SECONDARY CATEGORY

COMPANY DESCRIPTION
Cascadia Scientific is a leading Canadian data science company on innovative and carbon-friendly solutions tailored to mobile mining equipment. Cascadia Scientific provides decision intelligence that drives optimized mining operations. We unlock productivity, efficiency, and availability gains by combining high-precision sensing, vehicle network integration and leading-edge machine learning (ML) techniques.

COUNTRIES EXPORTED TO
Canada, USA, Mexico, Colombia, Perú, Chile, Brazil, Guinea, Turkey, Australia, Indonesia

INTERNATIONAL APPLICATIONS AND EXPERIENCE
Cascadia Scientific is a leader in data science solutions for the mining industry on a global scale, boasting a distinguished presence in 11 countries and serving over 35 distinct types of mobile mining equipment. Our pioneering technology has garnered international acclaim, having been effectively implemented and supported by leading mining firms worldwide.

TECHNICAL CAPABILITIES
Leveraging hardware, software, and consultive data science support, the SmartRView platform is a subscription service for mobile mining equipment. Cascadia Scientific combines high-accuracy fuel measurement, onboard sensing, data analytics and machine learning to drive sustainability, efficiency, and productivity improvements for surface mining equipment.

ClearBakk

www.clearbakk.com

LOCATION
5120 6 Street NE, Calgary, AB
T2K 4W5

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Norm Sacuta
norm.sacuta@ptrc.ca
1-306-787-7497

SECONDARY CATEGORY
N/A

COMPANY DESCRIPTION

Clearbakk is an engineering company focused on water reuse, and water & wastewater treatment. We operate in a variety of industry sectors such as the Oil & Gas industry, mining industry, and municipal. Clearbakk, and our parent company ALSYS, bring 35 years of project experience and expertise. Our solutions approach factors in entire project lifecycle, optimizing the design of your projects for facility performance, utilization, and ease of operation, while decreasing construction and operating costs. This is achieved through applying sound process engineering and design concepts, selecting the most appropriate process technology and seamlessly integrating our design into your site requirements. We can provide support for every step of your project, including conceptual design, detailed design, fabrication, installation, commissioning, ongoing support, and replacement parts. Our field services team also offers operations and maintenance support. We focus on building trust and relationships with our clients and vendors, this foundation enables us to understand your project and business drivers objectively. Our team then aligns to that vision, and we follow through with the most efficient execution.

INTERNATIONAL APPLICATIONS AND EXPERIENCE

ClearBakk's parent company ALSYS is situated in France. ALSYS has a fairly strong presence in Western Europe, mainly in the Nuclear, Marine, Industrial, and Wine industries.

TECHNICAL CAPABILITIES

Water / Wastewater Treatment

- Physical Treatment
- Chemical Treatment
- Biological Treatment
- Advanced Oxidation Process (AOP)
- Sludge Treatment Systems
- Ozone Treatment Systems
- Desalination Systems
- Decentralized Commercial & Residential Developments
- Membrane Filtration and Systems (MF, UF, NF, RO)
- Frac Water / Produced Water / Brine Water Treatment
- Mining Wastewater Systems

Polymer Hydration Plants

- Mine Tailings
- cEOR – Chemical Polymer Floods

Ancillary Equipment

- Pump Packages
- Chemical Injection / Dosing Systems
- Dewatering, Desludging Systems
- Dry Product Storage & Conveyance
- Storage Tank Systems

Pilot / Lab Testing

- Technology Screening
- Equipment Testing
- Treatment Evaluation
- Bench Studies

Equipment Packaging & Integration

- Package Integration & Interconnects
- Packaged Equipment on Open Skids
- Modular Plants in Finished Shipping Containers
- Modular Plants on Skids, Live Roll Skids
- Single Level or Stacked Buildings
- Vertical and Horizontal Tanks (Aluminum, Stainless Steel, Carbon Steel)
- Intermodal Transport Certifications (Rail, Truck, Ship)
- Laser Scanning (3rd Party)

Electrical System Design

- MCC Buildings
- Gensets
- Programming
- Automation
- Level Control
- ARC Flash Studies

Clear Rush Co.

https://www.clearrushco.com

LOCATION
5406 Township Road 325B
Sundre, Alberta, Canada
T0M 1X0

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Dallas Rosevear
dallas@clearrushco.com
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C: 403.507.0485

SECONDARY CATEGORY
Air emissions reduction

COMPANY DESCRIPTION
Clear Rush Co located in Sundre Alberta Canada has been the leader in supplying safe and reliable burner management systems and flare stack ignition systems for over 30 years. Clear Rush Co has pioneered the use of enclosed vapour combustors in Western Canada and has worked alongside the regulatory agencies in order for producers to safely install the combustors in reduced spacing applications.

COUNTRIES EXPORTED TO
Worldwide

INTERNATIONAL APPLICATIONS AND EXPERIENCE
As emission reduction opportunities present themselves throughout the energy producing nations Clear Rush enclosed vapour combustors and high efficiency burners will continue to provide producers with the emission reduction tools, they require to eliminate routine venting from equipment such as storage tanks, compressor seals, pneumatic instruments, casing gas or any other low pressure venting equipment.

TECHNICAL CAPABILITIES

Clear Rush enclosed vapour combustors are designed to cleanly combust low pressure vent gas at extremely high efficiencies from sources such as storage tanks, compressor seals, pneumatic instruments, casing gas or any other low pressure venting equipment. The combustors are able to operate as low as .09 psi and provide destruction efficiencies greater than 99.9% with no visible flame, smoke or odours.

Cypher Environmental

https://cypherenvironmental.com/

LOCATION
1149 St. Matthews Avenue, 2nd Floor
Winnipeg, Manitoba, Canada
R3G 0J8

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Todd Burns, CEO
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1-204-489-1214

SECONDARY CATEGORY
N/A

COMPANY DESCRIPTION

Cypher Environmental is a leading global provider of cleantech solutions for dust control and road stabilization. Our innovative proprietary products, DUST/BLOKR® and ROAD//STABILIZR® are non-toxic, non-corrosive, and biodegradable; they are the only products that leave behind zero environmental impact.

DUST/BLOKR® is a non-corrosive and environmentally friendly alternative for road salts capable of delivering superior dust control results. Whereas the impact of road salts such as magnesium chloride and calcium chloride is well known, DUST/BLOKR®'s unique formula poses no adverse impact on the environment.

- US EPA Safer Choice Certified and Boeing BSS7432 conformity
- Improves engineering properties and can be applied to a wide range of road and material types
- Longer lasting results than chlorides
- Reduces water and fuel consumption

ROAD//STABILIZR® is a long-term soil stabilization solution for roads that eliminates the need for continual maintenance due to wet weather conditions and marginal road materials. ROAD//STABILIZR® targets soils with high clay content by increasing density and providing enhanced stability and strength. ROAD//STABILIZR is specifically engineered to work on high clay content soils which would normally be considered marginal in terms of their engineering properties. The product allows for the use of these types of in-situ materials providing substantial cost savings over traditional materials for road building, such as aggregate.

- Effective in both wet and dry conditions and during freeze-thaw cycles
- Increases CBR (California Bearing Ratio) value
- Induces cationic action, which binds dust particles together to help reduce road and dust emissions

Our commitment extends beyond business success, as we actively contribute to the well-being of the communities where we operate through our CSR initiative, Cypher Green Roads program. Through this program, we donate our cleantech products to help communities address their road issues.

COUNTRIES EXPORTED TO
Worldwide

INTERNATIONAL APPLICATIONS AND EXPERIENCE
Cypher's dust control and road stabilization products have been used in over 50 countries around the world. Our products have been used in: North America, South America, Australia, Africa, Asia, Europe.

TECHNICAL CAPABILITIES

DUST/BLOKR®

- Reduce airborne dust by 90%+
- Reduce water consumption by 85%+

ROAD//STABILIZR®

- Reduce truck fuel burn by 17.4%
- Reduce rolling resistance by 61%
- Reduce swell potential by 63%
- Increase California Bearing Ratio by 300%+

Reduce CO_2 emissions by over 10,000 tons per year.

Pictures are from the Shenhua Shengli Open Pit Coal Mine in Inner Mongolia, China

Delta Remediation

https://www.deltaremediation.com/

LOCATION
10436 255 Street Acheson Alberta
Canada T7X 6B4

PRIMARY CATEGORY
Environmental Protection and Management

SECONDARY CATEGORY
N/A

CONTACT INFORMATION
Robert Lacey
Rlacey@DeltaRemediation.com
780-962-7991

COMPANY DESCRIPTION
At Delta Remediation Inc., we address environmental problems with advanced hydrocarbon bioremediation, merging scientific innovation and nature to combat soil and water pollution. Our expertise in ex-situ and in-situ methods revolutionizes site assessments and cleanup processes.

With 25 years of research, we've developed a technology that combines unique microbes, chemistry, and engineering, crucial for groundwater and environmental services. This cost-effective approach effectively removes hydrocarbons from soil and water, tackling critical environmental issues head-on.

Join our mission of environmental restoration, as we lead in addressing the pressing problems of soil and water pollution through our comprehensive site assessments and remediation services.

COUNTRIES EXPORTED TO
Nigeria, Brazil, Kuwait, USA, UK, Australia

INTERNATIONAL APPLICATIONS AND EXPERIENCE
We have successfully completed remediation on 3 continents. Our process has never been denied for import application and the process has been proven in a variety of climates and environments.

TECHNICAL CAPABILITIES
At Delta Remediation, our dedication to addressing environmental problems fuels our innovation in soil and water pollution remediation. We excel in crafting fast-acting, organic solutions that contribute to a cleaner environment. Leveraging our extensive history in environmental services and our team's expertise in biology and chemistry, we constantly advance our techniques. Our BioLogix and other products not only have a positive impact on environmental sustainability but also enhance our clients' financial outcomes.
BioLogix is an innovative solution that amplifies naturally occurring hydrocarbon-degrading bacteria to break down contaminants effectively into harmless byproducts like carbon dioxide and water. Developed and created in partnership with 4 Canadian universities, BioLogix is a sustainable and eco-friendly technology that can remediate many contaminants, including refined and unrefined petroleum hydrocarbons, chlorinated solvents, and pesticides.

EnBiorganic Technologies

https://enbiorganic.com/

LOCATION
Suite 700 – 1816 Crowchild Trail NW
Calgary, Alberta
T2M 3Y7

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Anson Liski
sales@enbiorganic.com
1-888-356-8333

SECONDARY CATEGORY
N/A

COMPANY DESCRIPTION
EnBiorganic developed the “EBS-Di” - An autonomous bioaugmentation wastewater treatment system dosing with very high quantities of concentrated active state microbiology. EnBiorganic Technologies is redefining water and wastewater treatment and its relationship with nature, in environmentally sustainable ways.

COUNTRIES EXPORTED TO
USA

TECHNICAL CAPABILITIES

The EBS-Di has various applications. It can be utilized in Municipal wastewater treatment systems, Lake Restoration, Animal Agriculture and Industrial wastewater.

Enviro-Pads Containment Systems Inc.

https://enviro-pads.com/

LOCATION
Red Deer Alberta, Canada

PRIMARY CATEGORY
Environmental Protection and Management

SECONDARY CATEGORY
N/A

CONTACT INFORMATION
Nick Wassick
Email: nick@enviro-pads.com
Phone Number: 403-550-8469

COMPANY DESCRIPTION
Enviro-Pads Containment System's design and manufacture heavy-duty portable containment systems for the prevention of ground and surface water contamination. Engineered certified in Canada and the United States. Enviro-Pads Containment System's provide industry with a proactive solution for the primary and secondary containment of hazardous fluids, chemicals, and wash water in a portable, affordable, and reusable manner.

COUNTRIES EXPORTED TO
Canada and USA

INTERNATIONAL APPLICATIONS AND EXPERIENCE
Portable ground containment for wash water and various hazardous materials/chemicals, for both cleaning and storage applications. Used in Pipeline and heavy construction work, lay down yards, refinery turnarounds and any project looking to eliminate ground contamination. Custom sizing and weight ratings available for monthly rental or purchase.

TECHNICAL CAPABILITIES

Set up in an hour or less once on site. No tooling required. Standard platforms range from 120-250 TON surface weight ratings. Our modular design gives the ability to customize required platform size to accommodate specific areas and equipment. Available with drive on/off ramps and drop in walls on 1-4 sides. We can work with the customer to customize all aspects of the platform (sizing dimensions, wall height, storage volume capacity, weight ratings etc.)

FluxLab, St. Francis Xavier University

www.fluxlab.ca

LOCATION
Antigonish, Nova Scotia

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Chelsie Hall / Dave Risk
chall@stfx.ca / drisk@stfx.ca

SECONDARY CATEGORY
Carbon Capture and Storage (CCUS)

COMPANY DESCRIPTION

FluxLab is non-profit research group at St. Francis Xavier University, in Nova Scotia, which consists of over 30 students and professional researchers. The group's capabilities lie in gas emissions measurement and data processing to identify methane, and other gases, in natural and industrial settings.

We have been involved in ecological gas measurement projects from pole to pole; monitoring design for Carbon Capture and Storage sites, and for much of the past decade our focus has been reducing methane in Canadian oil and gas and solid waste sectors. Our research involves developing and improving gas measurement technology, inventory studies, computation, and providing data to support regulatory design and policy development. So far, our team has made gas emission measurements at over 10,000 oil and gas facilities across North America and at 130 landfills - onshore and offshore - to help industry and regulators better measure, understand, and manage greenhouse gas emissions.

This research group is a centre of excellence for greenhouse gas sensing, and many industries and government departments bring their questions here to be answered with specialized research, facilities, now-how, and proven ability to solve complex problems. We design our research to have impact outside traditional academic settings, and regularly collaborate and partner with companies, governments, non-government organizations, and international research initiatives to ensure our findings can be utilized in the real world.

COUNTRIES EXPORTED TO
United States, Turkmenistan, England, Antarctica

INTERNATIONAL APPLICATIONS AND EXPERIENCE

We FluxLab has worked with stakeholders and collaborators to help advance measurement technologies for monitoring, measurement, and validations, and executed large scale field measurement campaigns with third party vendors, NGOs and companies.

TECHNICAL CAPABILITIES

1. Measurement technology innovation and field application development
2. Field studies including large scale (national and international)
3. Emissions computational data science and plume modeling

(Image of our vehicle-based hardware used in mobile methane measurement campaigns)

Livestock Water Recycling

https://www.livestockwaterrecycling.com/

LOCATION
7920 56th Street SE | Calgary, AB
Canada | T2C 4S9

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Karleigh Lewis
Karleigh.lewis@livestockwaterrecycling.com
1 855-LWR-4972

SECONDARY CATEGORY

COMPANY DESCRIPTION
Step into a greener, more profitable future with Livestock Water Recycling's First Wave and PLANT systems. With over a decade of successful installations and the world's first manure methane avoidance verification, LWR is the market leader in data-driven resource recovery and nutrient optimization. By processing your bioliquids immediately, you can significantly reduce storage capacity while seizing opportunities in both the carbon credit market, the booming biogas sector and nutrient management. LWR creates feedstock from green waste sources for RNG and green ammonia, while producing 75% clean water and reducing air pollutants. LWR's dedicated team of ManureExperts leverages insights from over 3 million analyzed data points to help you unlock the real value trapped inside bioliquids. Installations are able to improve project economics while also positively impacting the environment through reduced runoff, precise nutrient application, and reduced emissions from trucking outputs. To grow MORE crops and produce MORE food using less money and fewer resources, choose Livestock Water Recycling for profit-driven sustainability.

COUNTRIES EXPORTED TO
United States, United Kingdom, Lebanon

INTERNATIONAL APPLICATIONS AND EXPERIENCE
LWR has successfully deployed their sustainable, data-driven technology throughout the world and continue to expand daily. With distributor partnerships in Spain, Mexico, Portugal, Ireland, Japan, and Eastern Europe, LWR continues to spread their knowledge of profitable manure and bioliquids.

TECHNICAL CAPABILITIES
LWR's nutrient recovery technology has become the most sought-after sustainability solution in the world by global producers who are looking to grow more crops and produce more food using less money and fewer resources. This proven, patented, sensor enabled platform isolates and concentrates manure and bioliquids into a valuable solid fertilizer, a crop additive liquid fertilizer, and clean reusable water. This nutrient recovery is offered in **two** platforms:

- The **First Wave** system for phosphorus and nitrogen capture and removal
- A complete fertilizer **PLANT** to achieve nutrient capture and clean water recovery by adding the Second Wave

Both platforms come complete with a sophisticated automation and unprecedented data analytics package, to digitize the nutrient footprint of manure to unlock the value of biosolids. With recovery rates of 85% plus the technology can treat between 1 million gallons annually to 100 million gallons annually through the modular adaptation of the equipment. This data can be tied into existing management software for regulatory reporting. It can also assist in the creation of new revenue opportunities by facilitating easy access into digital marketplaces for fertilizer sales and potential for nutrient trading, greenhouse gas and carbon credits.

OptiSeis Solutions Ltd.

Optiseis Solutions Ltd. – Subsurface Imaging & Analytics

LOCATION
Calgary, AB
Canada

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
info@optiseis.com
403-452-3615

SECONDARY CATEGORY
Subsurface imaging for resource planning and management

COMPANY DESCRIPTION

OptiSeis is a subsurface imaging and analytics company providing high-resolution imaging through proprietary methods and algorithms for improving operating efficiency and safety at companies in both traditional (oil & gas) and new energy economies (critical mineral mining, geothermal, nuclear, and carbon capture & sequestration). OptiSeis enables companies with subsurface operations to design, plan and execute subsurface operations efficiently and safely. OptiSeis' market focus includes companies operating in oil & gas, critical mineral mining, geothermal, nuclear, and carbon capture, utilization, and storage ("CCUS").

COUNTRIES EXPORTED TO

USA, Colombia, Australia, Europe, Middle East, Africa, Central & South America

INTERNATIONAL APPLICATIONS AND EXPERIENCE

Optiseis has experience working on all continents (except Antarctica)

TECHNICAL CAPABILITIES

OptiSeis specializes in all aspects of subsurface imaging including land and marine 2D/3D/4D/VSP seismic acquisition design, modeling, planning, operations, and QAQC, as well as seismic processing, interpretation, and quantitative analysis. OptiSeis has developed proprietary algorithms for these analyses that can create very high degrees of resolution while minimizing surface land footprint and GHG emissions associated with acquiring the data.

PureJet Inc.

https://purejet.ca/

LOCATION
Medicine Hat, Alberta, and Calgary, Alberta, Canada

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Vladimir Mravcak
contact@purejet.ca
403-585-6096

SECONDARY CATEGORY
Well Integrity, Decommissioning and Reclamation

COMPANY DESCRIPTION

PureJet Inc is a Canadian privately-held company established in 2015 to deploy cutting-edge environmental management products for the global energy sector. The company's flagship product is the PureJet® waste-gas incinerator that eliminates harmful methane emissions to solve world-wide air challenges. The product is designed for environmental compliance specifically for field use in the upstream and midstream oil and gas industry. PureJet® has sales representatives located in Calgary, AB, which is the oil and gas industry's headquarters of Canada. Product manufacturing for PureJet® Incinerators are completed in Medicine Hat, AB, ideally located close to the United States border for ease of export and deployment.

PureJet® is a family of incinerators that apply patented aerospace intake technologies to destroy methane emissions in the oil / gas supply chain. Efficient waste-gas destruction is at the core of PureJet® incinerators which provide top-tier capacities and turndown ratios in a unit with minimal footprint. Utilizing no moving parts, PureJet® incinerators offer reduced maintenance and increased service life compared to other combustion products on the market. PureJet® incinerators are an environmentally friendly replacement to traditional flaring and venting processes. Providing sufficient air to facilitate the combustion of a large amount of waste gas is a complex engineering challenge, and PureJet® is designed to integrate into existing facilities for ease of deployment and the ability to tie into existing infrastructure.

PureJet® incinerators can also be ordered with a power generator that converts waste heat to power. The PureJet is also designed to connect with an emissions monitoring unit to validate and report on environmental performance. The technology can also be useful in the production and administration of carbon credits. PureJet Inc collaborates with Atlantis Research Labs on feasibility studies and customized engineering projects relating to advanced combustion.

COUNTRIES EXPORTED TO

Experience exporting incinerators to the United States of America.

Product exports and patent licensing opportunities are available for oilfield servicing businesses that operate in petroleum markets worldwide. Distributor and reseller opportunities are also available for environmental businesses.

INTERNATIONAL APPLICATIONS AND EXPERIENCE

PureJet® follows Canadian standards that are suitable in many international markets and has global patent protection. PureJet® performs in the diverse conditions found in the global oil/gas supply chain.

PureJet entered international markets in 2021 with the installation of an incinerator in Georgia, USA. This PJ18 model is in continuous operation on-site for the last 3 years. PureJet Inc has experience working with engineers on research projects and construction planning in Germany, France, India, Saudi Arabia, and UAE.

TECHNICAL CAPABILITIES

PureJet® runs a continuous pilot that can be tied into existing infrastructure. It can run on waste gas, or an alternative fuel source based on the application. The system can be operated from on-site power or deployed to a remote location using an optional solar/ battery system. The fuel train and ignition system is CSA B149.3 compliant. Ignition is managed by an electronic control box. All units are up to 99.9% efficient to the unit's maximum capacities. PureJet® technology allows for a wide range of flows and pressures to be handled. A unique intake design allows PureJet® to handle variable flow rates without compromising efficiency

PyroGenesis

www.pyrogenesis.com

LOCATION
1744, William St. Suite 200
Montréal, QC
H3J 1R4
CANADA

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
info@pyrogenesis.com
+1 514 937 0002
+1 514 937 5757

SECONDARY CATEGORY
N/A

COMPANY DESCRIPTION

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and sustainable solutions which reduce greenhouse gases (GHG) and are economically attractive alternatives to conventional “dirty” processes. PyroGenesis has created proprietary, patented and advanced plasma technologies that are being vetted and adopted by multiple multibillion dollar industry leaders in four massive markets: iron ore pelletization, aluminum, waste management, and additive manufacturing. With a team of experienced engineers, scientists and technicians working out of its Montreal office, and its 3,800 m2 and 2,940 m2 manufacturing facilities, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The operations are ISO 9001:2015 and AS9100D certified, having been ISO certified since 1997.

COUNTRIES EXPORTED TO

Waste remediation solutions: Poland, New Zealand, South Africa, USA, Canada

Commodity and optimization solutions: Qatar, USA, Mexico, Italy, Saudi Arabia, India, Canada

Energy Transition solutions: Germany, India, Spain, Sweden, Poland, Netherlands, Israel, India, France, UK, Australia, Brazil

INTERNATIONAL APPLICATIONS AND EXPERIENCE

PyroGenesis serves a diverse global customer base within the industrial technology sector across all continents, spanning the globe from North America to Europe, Asia, Africa, and Australia.

TECHNICAL CAPABILITIES

World leader in thermal plasmas, PyroGenesis offers plasma torch systems to replace burners in various reactors and furnaces. Available torch power ranges up to 5 MW. Running entirely on electricity, plasma torches provide process heat without any CO2 emissions. PyroGenesis also offers waste gasification and destruction systems, all using plasma torches. High temperature furnaces (rotary titling furnaces and DC electrical furnaces) are also part of our product lineup. Pyro GreenGas (PGG), a fully owned PyoGenesis subsidiary, offers gas separation systems for extraction of hydrogen from syngas and coke oven gas, as well as carbon capture systems using amine and absorption/desorption technologies. PyroGenesis is an integrated equipment supplier providing engineering, fabrication, start-up and after sales services on its machinery and processes.

Rotating Right Water Technologies Inc.

https://www.rotatingright.com/

LOCATION
101 3903-75 Avenue
Leduc, Alberta, Canada
T9E OK3

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Gordon Lentz
gordon.lentz@rotatingright.com
780-777-5615

SECONDARY CATEGORY

COMPANY DESCRIPTION

- Rotating Right Water Technologies Inc. engagement of our internationally proven Water Clarification, Clean Technology Water solutions is structured to repurpose, recycle, reuse and reprioritize water. Our proprietary, WID Chemical clarification technology is delivered via Rotating Right manufactured automated equipment systems. Specially designed mobile equipment manufactured to ISO 9001 2008 Quality Management Systems.
- Rotating Right Water technologies Inc. addresses the demands from Governments: National, Provincial, Municipal and Local seeking cost effective strategies and operational solutions to incorporate their Wastewater Management standards, policy and procedure. Allowing for increased recovery of clean water from organic or hydrocarbon laden source waters.
- Rotating Right Water Technologies Inc. integrates solutions, supporting existing customer WWM programs, systems and organization. To achieve short to long term WWM goals and missions by providing location and process specific WID treatment of wastewater.
- Rotating Right Water technologies Inc. Water-Insoluble Dispersion (WID) Chemical Technology and equipment systems are adaptable and can be integrated into a host of Industries sourcing innovative Water Clarification technologies for practical purposes in: Municipal, Oil & Gas, Mining, Industrial, Agriculture and Disaster Relief.

COUNTRIES EXPORTED TO
Export ready to China, USA, Latin America and Indo-Pacific region

INTERNATIONAL APPLICATIONS AND EXPERIENCE
Boots On the Ground in Canada, USA, China, México, MENA, Ecuador.

TECHNICAL CAPABILITIES
Rotating Right Water technologies Inc. addresses the de from Governments: National, Provincial, Municipal and L seeking...
Nano-Chemical Technology and equipment systems are adaptable and can be integrated into a host of Industries sourcing innovative...
Our platform of proprietary Nano-Chemical clarification technology is delivered via Rotating Right manufactured automated equipment...

Sawback Technologies

www.sawbacktech.ca

LOCATION
Calgary, Alberta
Canada

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Neil Keown
neil@sawbacktech.ca
1- 844-210-2950

SECONDARY CATEGORY
Well Integrity, Decommissioning, and Reclamation

COMPANY DESCRIPTION
Sawback Technologies is a near-surface sensing company, that has developed a proprietary solution to collect, visualize and analyze near-surface data enabling customers to use RPAS or other platforms to identify active and abandoned buried oil/gas assets, methane and hydrocarbon leaks, soil contamination and environmental assessment over large and remote areas.

COUNTRIES EXPORTED TO
Internationally

TECHNICAL CAPABILITIES
Enabling customers to collect near-surface data using electromagnetic, ground penetrating radar, electric conductivity, and magnetic sensors, with our automated software package performing the analysis in near real-time.

Trium Environmental Inc.

www.triuminc.com

LOCATION
Calgary, AB
CANADA

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
Olohi Ejere
oejere@triuminc.com / info@triuminc.com
+1 (403) 932 5014

SECONDARY CATEGORY
N/A

COMPANY DESCRIPTION

TRIUM Environmental is a leading provider of environmental remediation and management solutions, specializing in technologies that mitigate the impact of oil and gas contamination of soil and groundwater. With over four decades of experience, TRIUM is dedicated to delivering innovative and sustainable solutions to the energy, oil and gas, manufacturing, agricultural and real estate sectors.

Our services encompass total remediation management, including site assessment, management, and restoration. We offer a comprehensive range of services, from equipment provision and labor expertise to specialized site management. We are committed to research and development, continually exploring new solutions and methods. Our innovative approach includes the development of custom solutions tailored to the unique needs of each project. We understand the importance of operating in diverse conditions and are equipped to provide services in all weather conditions and in the tightest spaces, with Health and safety paramount in all our operations.

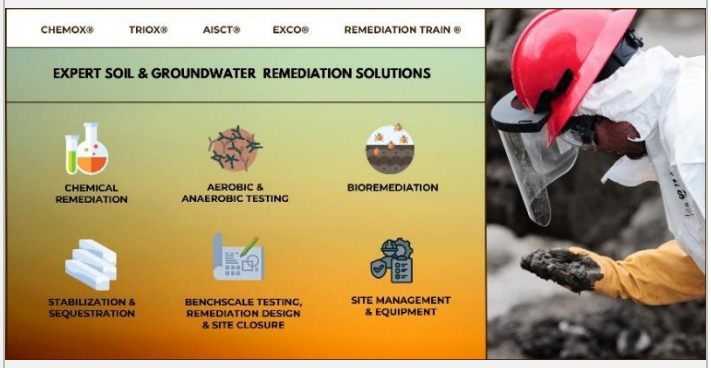
Our core remediation technologies and services Include:

- Chemical Oxidation (CHEMOX®)
- Bio-remediation
- Stabilization & Sequestration
- Bench Scale Testing
- Aerobic & Anaerobic Testing
- Pilot Scale Testing
- Development of Site Closure Strategies

COUNTRIES EXPORTED TO
Globally

INTERNATIONAL APPLICATIONS AND EXPERIENCE
USA, South Korea, China, Middle East

TECHNICAL CAPABILITIES
Full turnkey capabilities from remedial investigations, remediation engineering and design, in-situ and ex-situ soil and groundwater remediation, as well as site closure. Trium's applications are engineered to manage such contaminants as Petroleum Hydrocarbons, Phenols, Chlorinated Compounds, Aliphatics, Heavy Metals, Recalcitrant Compounds and other Organic Compounds, with products such as Peroxides, Persulfate, Permanganate, Ozone, Activated Carbon, Zero Valent Iron, HFO & Ferric Compounds and Bio-Stimulants etc. Common sites of concern include fuel/oil spill sites, gas stations, industrial & manufacturing sites, migrating contamination in residential areas and commercial complexes as well as contaminated purposed lands such as farmlands, parks & recreational areas and ecological sites.



VentMEDIC

https://ventmedic.com/

LOCATION
Suite #605 32 Varsity Estates Circle NW
Calgary, Alberta
T3A 2Y1
Canada

PRIMARY CATEGORY
Environmental Protection and Management

CONTACT INFORMATION
info@ventmedic.com
1-403-879-7627

SECONDARY CATEGORY

COMPANY DESCRIPTION
VentMEDIC pioneers the future of environmental stewardship with our cutting-edge emission measurement technology. Born from 25 years of industry expertise, our mission is to transform how businesses measure and manage greenhouse gas emissions.

COUNTRIES EXPORTED TO
United States, Western Europe

INTERNATIONAL APPLICATIONS AND EXPERIENCE
Researched many applicable markets to exporting our solution, attended many conferences abroad.

TECHNICAL CAPABILITIES
VentMEDIC is a cutting-edge digital Measurement, Reporting, and Verification (dMRV) technology. It goes beyond traditional methods, ensuring unparalleled accuracy and transparency in methane emissions quantification.

Canadian Energy Export Guide

The Canadian Energy Export Guide is a searchable database that represents more than 1,000 Canadian companies that export products and services in the area of oil & gas and related clean technologies, from grass roots exploration, pipeline construction and operation, to end of production decommissioning, reclamation, and remediation. The Canadian Energy Export Guide uses 12 primary categories and 60 sub-categories to identify Canadian companies that are exporting to international markets. Many of the companies listed in this Canadian Capabilities in Environmental Management Guide and Directory can also be found online in the Canadian Energy Export Guide under the category of Clean Technology and Environmental Management.

Industry Partners

The following Canadian associations and organizations have members and/or are working in the area of methane emissions management and reduction.

Canadian Association of Petroleum Producers (CAPP) is an industry association that advocates for economic competitiveness and safe, environmentally, and socially responsible performance from its members.

Canada's Oil Sands Innovation Alliance (COSIA) is an alliance of oil sands companies working with scientists, academics, and innovators to make Canadian energy part of a sustainable environment.

Clean Resource Innovation Network (CRIN) was created to contribute to a future in which Canada is a global leader in producing clean hydrocarbon energy from source to end use.

Enserva is the national trade association representing the service, supply and manufacturing sectors within the upstream petroleum industry. They also maintain the Canadian Energy Export Guide noted above.

Petroleum Technology Alliance Canada (PTAC) is an industry association with production, academia, government, regulator, and technology vendor members. It leads the technology development of methane emission reduction devices, and research into many environmental areas. Of note is PTAC's Canadian Emission Reduction Innovation Consortium including 16 producers and 16 research organizations.