

British Columbia Environmental Technology & Services Industry

British Columbia's environmental technology and services industry is a dynamic component of the province's rapidly diversifying economy. The industry offers a diverse range of leading edge solutions in areas such as recycling, eco efficiency, energy efficiency, alternative fuel, urban and industrial wastewater, remediation and hazardous waste management, geographic information systems, mapping technologies, instrumentation and specialized environmental service solutions.

Comprised of more than 700 companies that employ over 22,000 professionals, British Columbia's environmental sector represents 15 per cent of Canada's environmental industry and contributes \$1.5 billion to the provincial economy. Many of the companies are small- to medium-sized enterprises, and more than 80 per cent of them have been in business for more than five years.

British Columbia's environmental industry can be characterized with one word — diversity. While many of British Columbia's environmental solutions originated in the pulp and paper and mining industries, the majority of technologies and services provided can be applied across a number of sectors, including manufacturing and municipal infrastructure, as well as the mining, forestry and gas industries.



Photo courtesy of Bennett Environmental Inc.

The industry has a strong focus on both domestic and international markets, with more than 75 per cent of environmental technology providers pursuing projects internationally through joint ventures, licensing, strategic partnerships and subcontract supply arrangements. While a large portion of the industry is focused on the United States and the Pacific Northwest region in particular, many companies are targeting opportunities in the Pacific Rim, European and South American markets.

British Columbia firms are optimistic about future growth prospects. In fact, most companies expect to achieve growth rates of 60 per cent over the next two to three years.

Municipal and Industrial Wastewater Treatment

British Columbia companies have leading industrial water and wastewater technologies ranging from packaged sewage treatment plants to full-scale sewage and sludge treatment solutions.

Aqua-Pure Ventures Inc.

This Kelowna-based company is a leader in water purification and distillation systems and offers turnkey engineering and technology solutions for industrial wastewater remediation. The company designs, manufactures, installs, commissions and operates wastewater distillation plants. Their technologies are extremely energy efficient and virtually eliminate all scaling and fouling. Aqua-Pure technologies are used in the purification of power plant cooling water, enhanced oil recovery, the food and beverage industry, and contaminated waste streams for brine recovery, metal recovery, nutrient recovery and waste sterilization. Aqua-Pure has acquired Applied Oxidation Technologies (2000) Inc. (AOT) of Ladysmith. AOT offers a non-biological wastewater treatment system, ElectrofloccPLUS, to process high strength organic contaminants (e.g. domestic sewage, food processing, oil and grease).

www.aqua-pure.co

Hydroxyl Systems Inc.

Hydroxyl Systems Inc. designs, builds, finances and operates water and wastewater treatment facilities throughout North America. Hydroxyl provides customized solutions for municipal, industrial, marine and non-hazardous liquid waste applications. Through the development and optimization of innovative wastewater treatment processes, Hydroxyl combines its effluent treatment solutions with conventional treatment techniques to produce superior commercially proven systems. The company's systems are compact, energy efficient and cost effective.

www.hydroxyl.com



Photo courtesy of Turborator/Aquaplant Construction

Hazardous & Solid Waste Management

To maintain a pristine environment, British Columbia companies have developed solutions for dealing effectively with hazardous waste contaminants.

Bennett Environmental Inc.

Bennett Environmental Inc. is a leading provider of thermal treatment services for soils contaminated with chlorinated hydrocarbons. The company's thermal treatment plant, Recupere Sol Inc. (RSI), is fully permitted for and experienced in treating such contaminants as PCBs, PCPs, dioxin, furan, pesticides and all other chlorinated organic contaminants. RSI is one of two Canadian facilities permitted to thermally treat

PCB contaminated soil. The permit also allows for the acceptance and treatment of material from the United States. RSI's destruction removal efficiency is >99.99999% (minimum required is 99.9999%). The facility is designed to treat up to 10 tons of soil per hour, 24 hours per day. Certificates of destruction are provided, eliminating any liability for the contaminated material.

www.bennettenv.com

Powertech - Contech

Powertech is a wholly owned subsidiary of BC Hydro and has developed a unique non-incineration process technology for the destruction of PCBs in transformer oils, allowing utility companies to recycle and reuse the transformer oils. The process has been approved by the Japanese government and extended to treat PCBs in fluorescent light ballasts and other solids. Their technology is also suitable for destroying chlorinated solvents, CFCs and PCPs. Powertech has a strategic alliance with Contech, a company with extensive experience in consolidation and transferring PCB-contaminated wastes.

www.contech.ca and www.powertech.bc.ca



Photo courtesy of Powertech

Municipal Waste/Sludge Management

In addition to the waste hauling and recycling industry, British Columbia companies have developed expertise in waste to energy, co-generation, incineration and waste-reduction compacting technologies.

Inproheat Industries Ltd.

Inproheat is a wholly-owned British Columbia company celebrating over 40 years of business and has developed unique energy efficient technologies that are marketed around the world. Inproheat's patented SubCom technology has been applied for pasteurizing municipal sludge to a class A designation. This technology provides the lowest possible greenhouse gas emissions both in volume and temperature. The company has an impressive client list worldwide and has developed low NO_x thermal oxidation systems used in rendering plants, coffee roasters, food processing plants and foundries.

www.inproheat.com

International Bio-Recovery Corp.

International Bio-Recovery Corp. is a technology developer and organic waste processor that diverts organic waste from landfills by converting it into valuable end products such as fertilizers. The compa-

ny has established a processing facility in Greater Vancouver and is expanding its operations internationally. The technology converts more than 400 tonnes per day of organic waste and all organic wastes are converted over a 72-hour time span with zero harmful discharge and odour.

www.ibrcorp.com

Richway/Eneco

Richway provides environmental technologies that effectively recover energy, metals and glass from solid waste while simultaneously reducing the volume of municipal solid waste by 90 per cent. Richway's gasification/oxidation systems have state-of-the-art emission controls and can convert more than 300 tonnes per day of municipal solid waste and produce up to 6MW of energy. The company is experienced in "build, operate and transfer," "build, own and operate" and other international project financing mechanisms. Richway's technology is highly adaptable and allows local fabricators to optimize their local content.

Environmental Laboratories

British Columbia has a large selection of environmental laboratories recognized throughout the world for their leading-edge and cost-effective analytical services.

Analytical Services Laboratories

ASL is a full-service laboratory specializing in environmental chemistry and is accredited by the Standards Council of Canada and the Canadian Association for Environmental Analytical Laboratories. ASL offers international testing, training, and consulting services and operates fixed and mobile laboratories. ASL's testing services include chemical analysis for permit monitoring, site assessments, food and drinking water safety, and waste characterization for the mining, petrochemical, forestry, food and beverage, engineering and industrial sectors. Consulting services include laboratory training, development and accreditation preparation, data management and occupational hygiene.

www.asl.ca



Photo courtesy of Elemental Research

The Axys Group

Axys Analytical Division is an environmental laboratory specializing in custom and routine trace organic analyses for a broad spectrum of organic compounds in air, water, soil, effluent, pulp, oils, sludge, industrial wastes, human tissues, blood, milk, and animal and plant tissues. Services include study design, field sampling, laboratory analysis and data interpretation. Axys Analytical has been rated the leading commercial laboratory in Canada for analysis of polychlorinated dioxins and furans.

www.axys.com

Norwest Labs

Norwest Labs is a full-service environmental laboratory that provides laboratory analysis to the environmental, agricultural, food and energy sectors. One of Western Canada's leading laboratories, Norwest analyzes hazardous waste and specializes in analyzing soil and groundwater from contaminated sites. Norwest has offices across Canada and is also working in Central and South America, Eastern Europe, Asia, North Africa and the Middle East. Norwest International has established a number of joint venture projects, including a joint venture in Thailand (IQA-Norwest Labs). MOU's have been signed in Turkey, Egypt and Jordan. Projects have included establishing soil testing, restructuring oil and gas sector studies, developing environmental toxicity workshops, natural gas control measurement projects, site reclamation work, spill management and establishing off-shore laboratories and training.

Environmental Information and Instrumentation Technology

British Columbia's environmental monitoring and instrumentation industry is a fast growing sector with leading-edge SCADA, instrumentation and geophysical monitoring technologies.

ESI Environmental Sensors Inc.

ESI is a leading instrumentation company based in Victoria that has developed moisture point sensor technologies that allow for the collection of soil moisture profiles and flows from up to seven different depths with a single probe. The technology has applications at mine sites, landfill sites, agricultural operations, forestry/silviculture operations and hazardous waste sites. ESI's technology is sold worldwide.

www.esica.com

Envirochem

Envirochem's comprehensive environmental management software (EDICTS) incorporates pollution prevention, compliance assessment, data management, policy and procedures, contingency planning, emergency response and preventative action scheduling within an ISO 14000 compatible platform. The software allows users to minimize environmental risks and enhance regulatory compliance as an integral part of an effective environmental management monitoring system. It can be used by port authorities, airports, sawmills, mining operations, pulp and paper mills, the oil and gas industry and all levels of government.

www.envirochem.com

Forest Technology Systems Inc.

FTS is a manufacturer of remote automated meteorological and hydrological monitoring systems. The company's expertise centres around weather, mountain hydrology, water quality and watershed monitoring. FTS technology includes sensors, data loggers, communications equipment, power supplies, and PC-based networks, and has options to allow communications with satellites. FTS systems are sold throughout North, Central and South America and selected Pacific Rim countries.

www.ftsinc.com

PCI Geomatics

PCI Geomatics is a world-leading developer of geomatics software and solutions based on its remote sensing, digital photography, spatial analysis and cartographic editing programs. PCI has over 11,000 licenses in over 100 countries, with applications in agriculture, forestry, the pulp and paper industry, mining, municipal government, the oil and gas industry, telecommunications and the energy sector.

www.pcigeomatics.com

Mine Reclamation

Building on one of British Columbia's core industry sectors, the province's environmental industry has developed unique applications for the mining industry in fields such as environmental restoration and acid rock drainage.

Rescan Environmental Services

Rescan is an environmental consulting company that initially focused its activities on the mining sector, but rapidly expanded in other environmental management areas such as environmental baseline studies, auditing, waste management systems design, impact assessments, oceanography, tailings disposal facility design and hydrology. The company conducts its mine reclamation work worldwide and has provided high quality environmental assessment services and audits for mining companies and organizations such as the World Bank and Inter-American Development Bank.

www.rescan.com

SRK Consulting

SRK is an international environmental and mine reclamation consulting company that provides services ranging from hydro and mine geology to mine waste management, mine reclamation, permitting, geo-environmental management, mine impact assessment and mine closure assessment planning. The company is a leader in mine environmental remediation and has offices in the United States, Australia, Chile, South Africa and the United Kingdom.

www.srk.com

Forestry Resource Management

Forest resource management is a serious business in British Columbia and the industry has developed a number of unique applications related to management of the province's forestry resources.



Brinkman & Associates Reforestation Ltd.

Brinkman & Associates is a privately held company involved in the forest renewal business for over 25 years. The company is one of Canada's largest reforestation and revegetation contractors, providing integrated silviculture services to government and industry. The company supplies ecological assessment services that include slope stabilization, erosion control, native plant restoration, watershed restoration and many innovative forest renewal practices. Brinkman & Associates clients include Canada's major forestry companies and the company has also worked on projects in Costa Rica, Thailand, El Salvador and Nepal.

www.brinkman.ca

Emission Reduction Technologies

In addition to British Columbia's leading-edge research in fuel cell applications by companies such as Ballard Power Systems, the province has a number of other innovative technologies to improve the environment in major urban settings.

Dynamotive Technologies

Dynamotive Technologies is a Vancouver-based public company specializing in environmental and renewable energy technologies. Incorporated in 1991, DynaMotive is currently commercializing a unique waste to energy technology that converts forest and agricultural waste into liquid BioOil — a clean burning, renewable alternative to fossil fuel for generating "green" power in diesel engines, boilers and gas turbines.

www.dyanamotive.com

Mogas Sales Inc.

Mogas is a 100 per cent Canadian-owned company established in 1984 and located in Vancouver. The company specializes in the development, manufacture and sale of alternate fuel components for automotive, commercial transport and marine applications. Mogas develops electronics, software and mechanical components that it integrates into fuel conversion systems for sale. The company sells a full range of natural gas and propane conversion systems that it has developed over the last decade. Mogas has sold more than 25,000 conversion systems in the United States, Canada and other countries.

www.mogassales.com

Stothert Engineering Ltd.

Stothert Engineering is a leading-edge engineering company that provides multi-discipline engineering and technical services for the power generation, pulp and paper and industrial minerals industry sectors. The company has developed a skewed gas flow technology that reduces particulate emissions from power generating and industrial precipitators applications. This extremely cost-effective process reduces emission by up to 60 per cent. Stothert Engineering carries out projects worldwide.

www.stothert.com

Westport Innovations Inc

Westport Innovations Inc. (TSE:WPT) is developing natural-gas technology designed to reduce emissions from diesel engines while retaining full engine performance and efficiency. With Cummins Engine Company Inc., Westport is developing the technology for heavy-duty trucks and high horsepower applications such as stationary power generation. These applications use Westport's patented high pressure direct injection technology to power engines primarily with clean-burning natural gas. A small amount of oil-based diesel fuel is used to initiate combustion. With Ford Motor Company Inc., Westport is developing the enabling technologies for a new natural-gas-fuelled diesel engine for light-duty vehicles.

www.westport.com

For More Information:

The information listed in this brochure is a small cross section of British Columbia's environmental services and technology industry. For a more comprehensive listing, consult our Web site at:

www.cse.gov.bc.ca/industryprofiles/environmentaltechnology

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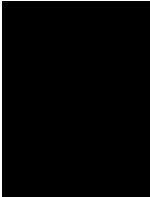
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