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Oil Spills project

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Canada 



OIL SPILLS PROJECT



Transporting Canada's energy resources to market is vital to the country's economy. The federal government is committed to ensuring the safety of Canadians and their environment.

However, Canada's capacity to adequately regulate safe transport and to effectively respond to spills on land and in water is limited by lack of information. We need to know more about the environmental impacts of accidental petroleum products leaks.

Fundamental questions in this research include:

- What are the behaviour and fate of diluted bitumen (dilbit) when it spills into terrestrial environments and travels from the surface to groundwater?
- What is the natural capacity of microorganisms to degrade oil spilled in water on Canada's Pacific coast, now and in the decades to come?

The research will involve lab-controlled and field-based experiments. The testing will focus on terrestrial environments analogous to those found along current and proposed pipeline routes. The marine component will focus on the Douglas Channel area (British Columbia's northern mainland coast), which connects the active port of Kitimat to foreign markets.

EXPECTED OUTCOMES

The research will use cutting-edge techniques to better understand and quantify environmental impacts of spilled petroleum products. The focus will be on the geochemical properties of the petroleum constituents, soil (or sediment) and microorganisms, to better inform regulatory bodies and improve Canada's environmental stewardship.

The **terrestrial component** will address how changes in the geochemical and microbial community that are associated with natural attenuation processes (e.g. biodegradation) influence the toxicology of dilbit released to the shallow subsurface of land. The research will conduct controlled releases in large-scale laboratory experiments.

The **marine component** will first establish a robust baseline of environmental conditions in the Douglas Channel area along the mainland coast of British Columbia. The research will use sediment trap and core samples to understand the natural variability in the fjord system and to investigate impacts of previous spills. The research will test the capacity of local bacterial communities to degrade spilled oil in water and sediment in the lab under a range of past and projected conditions.

PARTNERS

This research is part of the Environmental Geoscience Program. Partners include the Geological Survey of Canada and other sectors of Natural Resources Canada (e.g. CanmetENERGY). Other federal and provincial departments involved include Environment and Climate Change Canada, Fisheries and Oceans Canada, the National Research Council of Canada, and Alberta Environment and Parks. The research also collaborates with Canadian and international universities including the Institut National de la Recherche Scientifique (INRS - Université du Québec), McGill University, the University of Ottawa, the University of Alberta and the University of Minneapolis.

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