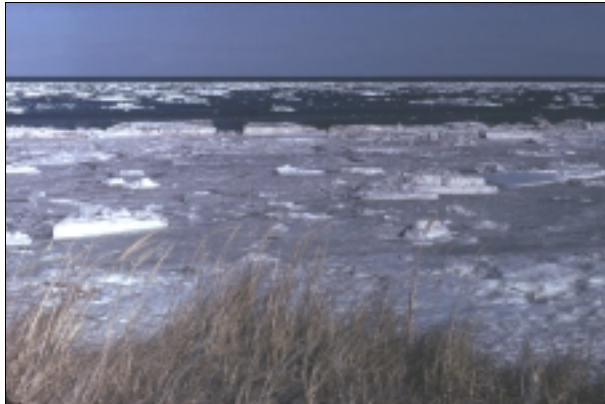


Oil Spill Response in Cold Climates (Snow and Ice)

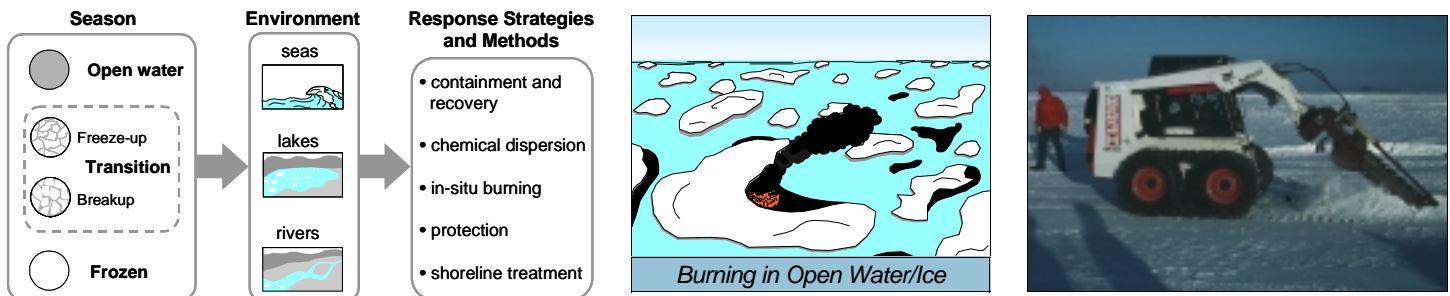


Oil spills in cold-operating environments, such as the Arctic and Antarctic or in mid-latitude winter conditions, pose a unique set of problems for spill assessment and response.

POLARIS APPLIED SCIENCES offers oil spill management and response training for snow and ice conditions based in part on material prepared for the Arctic Council (EPPR) Field Guide for Oil Spill Response in Arctic Waters.

The EPPR Field Guide provides an approach for management and operations solutions to spills at sea, on lakes, at the shoreline, and in rivers for a range of ice and snow conditions.

Training is provided by two of the most experienced and internationally well-known researchers and response trainers, both of whom have extensive spill and cold-weather experience. All courses are tailored to meet client requirements.



Dr. Ed Owens has over 30 years arctic experience and has been involved in spill response since 1970. He has presented more than 100 spill response training courses for oiled shorelines, and has conducted snow and ice-related field studies in:

- the Chukchi Sea and the Alaskan North Slope
- the Canadian Beaufort Sea, Amundsen Gulf, and the Northwest Passage
- Baffin Island, Labrador, Newfoundland, the Gulf of St. Lawrence
- the Sea of Okhotsk (Sakhalin Island), and
- Spitzbergen (Svalbard).

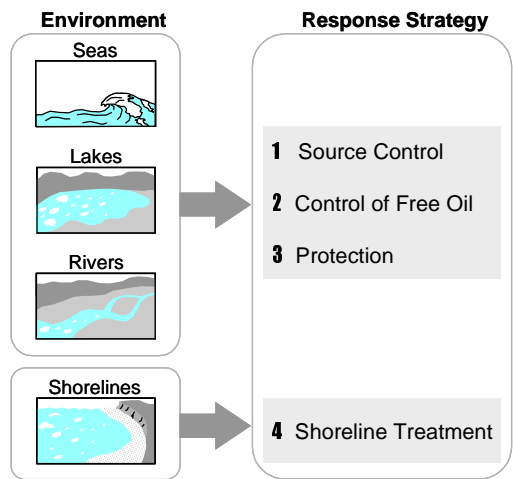
In addition, he was the scientific advisor for the cleanup of the one-million barrel pipeline oil spills on the tundra of the Komi Republic of northern Russia in 1995-96.

David Dickins, President of DF Dickins Associates Ltd., has over 30 years of field experience with the offshore oil and marine transportation industry in the arctic waters of the Alaskan North Slope and the Canadian Arctic as well as with development projects in the Caspian Sea, Sakhalin Island, Chukchi Sea, Pechora Sea, Kara Sea, Labrador and offshore Newfoundland. He has played a key role in large-scale experimental oil spills in ice and cold waters off the Canadian Arctic and East Coasts and is recognized worldwide as an expert on arctic ice conditions and oil spills in cold climates. Over the past five years David has developed pipeline and facility oil spill response strategies for BP's Northstar Project in Alaska, Sakhalin 1 and 2 developments and NE Caspian fields. A recent two-year project evaluated arctic oil spill research priorities for the Prince William Sound Oil Spill Recovery Institute and the US Arctic Research Commission.



Training can be provided as a one-, two-, or three-day course. The focus of the training can range from a coverage of all environments and seasons to specific topics such as pack ice, shoreline, or river response conditions. When and where possible, field trips are encouraged to provide real-world experience for trainees. Such training includes a strong safety component to emphasize the difficulties associated with cold-operating environments.

On Water or Ice		On Shorelines	
	mechanical containment		natural recovery
	mechanical diversion		washing/recovery
	mechanical recovery		removal
	in-situ burning		in-situ treatment
	chemical dispersion		chemical/biological



Season	Water/Ice Conditions	Oil Location	Response			Feasibility	Waste Management
			contain/recover	burn	disperse		
●	• no ice • open water					●	• barge • tanker • workboat • towable tank
						○	
●	• open water • ice floes • broken ice • frazil/grease ice • slush • pancake ice					●	• barge • tanker • workboat
						○	
						●	
●	• solid ice • multi-year ice • ice floes • broken ice • brash ice • ice hummocks					●	• drums • tanker truck • workboat • porta-tank
						○	
						●	
●	• open water • ice floes • broken ice • melt pools • leads					●	• barge • tanker • workboat
						○	
						●	



Specific topics that can be covered in the training course include:

- Ice conditions at sea, on lakes and in rivers
- The weathering and behavior of oil on ice and snow
- Spill tracking and assessment in winter
- Documentation of oiled shorelines in winter
- Management issues related to the decision process, safety, feasibility, and response priorities and objectives
- Mechanical control and recovery (booms and skimmers) in varying ice conditions
- Operating strategies in open-water, freeze-up, frozen and break-up seasons
- Source control, free-oil control and resource protection methods at sea, on lakes and in rivers
- Shoreline treatment methods for snow and ice conditions

For more information on this and other Polaris training programs please contact Dr. Ed Owens:

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