

Oil spill tests on ice prove Arctic quests risky

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Unprecedented oil spill clean-up tests in icy Finnish conditions reveal just how hazardous and challenging an accident in the Arctic's pristine sea ice could be

The skimmer is lowered from the rear of the icebreaker, its weight pushing massive pieces of ice under the water and forcing the spilt oil up to the surface, where the sticky black goo can be sucked up.

Luckily, this is just a test: as the world's superpowers eye the lucrative Arctic region with growing interest, unprecedented [oil](#) spill clean-up tests in icy Finnish conditions reveal just how hazardous and challenging

an accident in the Arctic's pristine sea [ice](#) could be.

Emergency crews could face total darkness, extreme storms and shifting pack ice, racing against time as the oil puts endangered polar bears, seals and other wildlife at risk.

With countries and companies increasingly venturing into the polar region—the melting ice caused by global warming has opened up new shipping routes and potential oil, gas and mineral deposits—the risk of an environmental catastrophe has skyrocketed, worrying ecologists and authorities.

"If oil is spilt into the Arctic Ocean, recovering it will be a difficult, if not impossible, task," the Pew Research Center, a Washington-based nonpartisan think tank, said in a recent report.

"The challenges go beyond extreme cold, freezing spray, snow, extended periods of low light, strong winds, dense fog, sea ice, strong currents, and dangerous sea conditions to include the limited infrastructure that could support an emergency response," it said.



Fearing an oil spill in its own Baltic Sea, Finnish authorities are racing to develop an efficient response to a spill in icy conditions

Fearing an oil spill in its own heavily-trafficked, ice-covered Baltic Sea, Finnish authorities are racing against the clock to develop an efficient response to an oil spill in icy conditions.

On any other day, Antti Rajaniemi, the 37-year-old captain of Finnish icebreaker "Ahto", would be clearing the way in the country's northern ports, where even the largest vessels can get trapped within hours.

But now he's on a special mission.

A thick layer of solid ice groans and crunches before giving in and breaking into pieces, as the bow of the small but forceful icebreaker forges a path.

Finland's state-owned icebreaking operator Arctia has set itself the goal of being able to recover oil in the harshest of conditions: when a lid of thick ice covers the sea.

"We have to separate the oil from the ice out on the sea since all this ice can't be taken ashore," Rune Hogstrom of Finnish oil spill response company Lamor explained to AFP, invited aboard the icebreaker in the northern Baltic Sea on a recent numbingly cold day.



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"An oil spill here is a real challenge, when you think we've got half a metre (1.6 feet) of ice, and if you break the ice up then the oil just gets mixed in even more," he said.

The shallow waters here provide unique conditions for the tests, with brackish water and thick ice, Arctia said.

While Finland is not an oil producing country, it fears a leaking oil tanker could cause irreparable damage to the Baltic Sea's fragile ecosystem.

There are around 350,000 ship crossings a year in the Baltic, even though 45 percent of its surface is covered by ice an average winter.

Hindered by ice

A typical oil spill in water is usually skimmed, dispersed with chemicals, contained with booms or even burnt off.



Engineers brave the mercury at minus 15 degrees Celsius (5 degrees Fahrenheit) to descend onto the ice, drilling holes to inject harmless red test liquid to mimic

oil

Similar methods could be used in frozen waters, but recovering the oil is severely complicated by the black goo floating under the ice—hidden from sight—which risks mixing with the crushed ice around an icebreaker trying to locate it.

"When you recover oil mixed with ice, only one percent of it is oil and 99 percent is ice. You need to be able to sort out the ice," Rune Hogstrom explains.

As he speaks, engineers brave the mercury at minus 15 degrees Celsius (5 degrees Fahrenheit) to descend onto the ice, drilling holes to inject harmless red test liquid to mimic oil.

Hogstrom said the skimmer deployed from the rear of the vessel was capable of separating oil from ice, but more tests were needed to figure out how to use the icebreaker's propeller flows to suction the oil toward the skimmer.

Finland has been developing this technology for 20 years, and a 2015 study by the International Association of Oil and Gas Producers found the method being tested now to be one of the most suitable methods for mechanical recovery.

Other technologies being developed elsewhere involve different types of skimmers to collect the oil.

In the US and Canada, research has focused on burning off the oil in open water, but that can be difficult in densely packed ice.

Environmental organisations like Greenpeace have expressed concerns about the elevated risks of Arctic ventures.

"The ice has melted so fast that oil drilling and industrial fishing are now spreading to regions where they weren't possible before and where there aren't any rules yet," head of Greenpeace Finland Sini Harkki said.

Anglo-Dutch oil group Shell abandoned its test drills in Alaska last September and Russia's Rosneft has put its own project in the Kara Sea on hold due to the plunging oil price, but Russian Gazprom Neft and Lukoil continue to drill in Russia's Arctic regions.

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