
Gulf Oil Spill Fight Turns to Chemicals

Team Hopes Oil Dispersants Will Limit Damage on Land



A dispersant plane passed over an oil skimmer in the Gulf of Mexico on Tuesday. Chemicals are a key tool in the fight against the spreading oil spill.

Photograph by Patrick Semansky, AP

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To combat the massive oil spill from BP’s wrecked drilling site, cleanup crews are dropping huge quantities of chemical dispersant into the Gulf of Mexico in an urgent effort to stop as much of the slick as possible from reaching land.

(See Related, “Oil Spill Hits Gulf Coast Habitats”)

This could well be the single largest deployment of dispersants against an oil spill in U.S. history, said Richard Gaudiosi, president of the Delaware Bay and River Cooperative in Linwood, Pennsylvania.

The joint federal-industry response team responsible for the cleanup effort reports that nearly 140,000 gallons (529,928 liters) of dispersants have been used so far, with an additional 51,000 gallons (193,056 liters) available. Responders also have been trying controlled burns and have deployed long lines of inflatable booms, but they have said the chemicals have proven the most effective method of attacking the spill so far.

"Even on the Exxon Valdez spill, dispersants weren't used all that readily," Gaudiosi said. The notorious 1989 tanker disaster, up until now the worst oil spill in U.S. history, dumped 11 million gallons (41.6 million liters) on the remote Prince William Sound in Alaska.

But the spill now spreading from the site of the April 20 explosion that destroyed the *Deepwater Horizon* oil rig, which could reach the size of the Valdez spill in 52 days at its current rate, threatens not only wildlife refuges, ecologically sensitive areas, and fisheries but also densely populated and developed waterfronts and resort areas.

(See Pictures: Gulf Oil Spill Hits Land—And Wildlife)

The oil slick touched land Thursday night in Louisiana and was expected to reach shore in Mississippi and Alabama this weekend and in Pensacola and the Florida panhandle by Monday.

Breaking oil into droplets

Oil dispersants have been available to combat spills since the mid-1980s. They are detergent-like chemicals that break up oil slicks on the surface of the water into smaller droplets, which can then be broken down by bacteria in the water and by other natural processes. Dispersants also help prevent the oil droplets from coalescing to form other slicks.

According to the U.S. National Research Council, oil spill dispersants do not actually reduce the total amount of oil entering the environment. Rather, they change the chemical and physical properties of the oil, making it more likely to mix into the water column than to contaminate the shoreline.

The NRC report says that evaluating the environmental trade-offs associated with

dispersant use is "one of the most difficult decisions that oil spill responders and natural resources managers face during a spill." The reason is the increased oil exposure for fish, as well as for corals and creatures that live in the lowest level of the water, such as oysters, the report said.

"Dispersant only alters the destination of the toxic compounds in the oil," redirecting its impact from

feathered and fur-bearing animals on shore to organisms in the water column itself and on the seafloor, Richard Charter, senior policy adviser for marine programs at the conservation group Defenders of Wildlife, said in an email.

"No good answers to a mess this big, only degrees of damage to various life-forms," Charter said.

(See [Gulf Oil Spill Pictures: Aerial Views Show Leak's Size](#))

Dispersants are specially designed to have low toxicity to marine organisms, so any environmental impact they do have has more to do with the breakup of the oil into droplets than with the dispersants themselves, said Robin Rorick, director of marine and security at the American Petroleum Institute.

When the oil at the surface is treated with the chemicals, it initially disperses within the upper 30 feet (9 meters) of the water column, according to a briefing paper distributed by the *Deepwater Horizon* response team.

An underwater chemical experiment

The dispersants are being applied by aircraft over the Gulf of Mexico. Helicopters and ships also can be used, and the joint federal-industry response team, led by the U.S. Coast Guard, said yesterday it is planning also to apply dispersants underwater, directly to the source of the leak.

This technique is considered experimental and has never been attempted at a depth of 5,000 feet (1,524 meters). If BP and the Coast Guard go through with the plan, the undersea dispersants would probably be applied by robotic submarines, also known as remotely operated vehicles, or ROVs.

It would be yet another job for the submarines at a site that is far too deep, and where pressures are far too great, for human divers to venture.

(See "[Rig Explosion Shows Risks in Key Oil Frontier](#).")

The subs also are monitoring the well site and have been deployed—unsuccessfully so far—to try to stop the leak. With BP saying it may take weeks or months to stop the flow, the need for more effective ways to disperse the oil and protect the shore has become urgent.

Rorick said undersea application probably is being considered because dispersants are most effective when they are applied to freshly leaked oil.

"If the oil is out there for a long period of time and it gets really mixed with the water ... the dispersants are less effective," he explained.

(Related blog: "[Who's Still Spilling Oil in the Seas?](#)")

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