The Gulf Oil Spill

At the time of this writing, the BP oil spill in the Gulf of Mexico has continued unabated for one month. On April 20, 2010, the Mississippi Canyon 252 Deepwater Horizon oil well exploded, killing 11 people. The rig sank on April 22. Since then, we have witnessed a series of failed efforts to stop the oil discharge followed by a flurry of accusations and recriminations by BP, Transoceanic (the operator of the rig), Halliburton (the contractor employed to expedite the drilling operation), and the U.S. government. But none of these parties are fully responsible—our addiction to oil is really to blame.

When you are addicted, you will do anything necessary to satisfy your habit, even drilling in 5000 ft (1.5 km) of water to a depth of 5 mi (8 km) under the sea, jeopardizing the entire Gulf ecosystem. And when you are addicted to oil, it is difficult to imagine any other alternative. Somehow, we need a 12-step recovery program from the Obama administration.

This isn't the first time I've written about an oil spill for *ES&T*. As a young Associate Editor, I invited research articles following the 1989 Exxon Valdez oil spill in Prince William Sound, Alaska, by visiting the cleanup operation and meeting with researchers onsite. We published some of the first technical papers explaining the fate, transport, and eco-effects of the oil, and the bioremediation of Alaskan beaches. **By means of this editorial, I'm similarly issuing a call to Gulf researchers to consider submitting your scientific articles about the oil spill here.** We pledge to peer-review them rapidly (and thoroughly) and publish them with high quality and high impact.

Every oil spill is different, and that's what makes emergency preparedness so difficult. In the case of the Exxon Valdez spill, emergency response was handicapped by jurisdictional quandaries, and that has proven to be the case again. In Prince William Sound, 2000 mi (3200 km) of shoreline were contaminated, and the plume traveled up to 500 miles (800 km). The high energy tides (15 ft [4.6 m]) caused skimming and burning the oil spill to be difficult, and it drove oil deep into some beaches. Cold water in Alaska caused oil to biodegrade more slowly and caused fisheries to have lower rates of reproduction and slow recovery times.

The BP Gulf of Mexico spill is the first to emanate from 5000 ft beneath the sea. It is the first to make major use of dispersants at the source of the leak, and it is the first to result in a major submerged plume. The vast area potentially impacted by the spill is also unprecedented. Already it is 16,000 sq. mi. (41,400 km^2) of sea surface covered by oil slick and 46,000 sq. mi. (119,000 km^2) of area closed to fishing (roughly the size of Pennsylvania). Obviously, it's imperative that the oil discharge be stopped and stopped soon before the spill contaminates the entire Gulf. But no one knows what the final economic and environmental burden will be. Larry Schweiger, President of the National Wildlife Federation, was quoted in an AP story, "The Gulf of Mexico is a crime scene, and the perpetrator cannot be left in charge of assessing the damage."

Assessing the damages is tricky and highly site-specific. If the Gulf oil spill continues to stay mostly at sea, it will affect more open-water fisheries and less shoreline habitats and spawning than previous massive spills. The use of dispersants could prove to be a brilliant decision that broke-up the spill and allowed biodegradation of billions of tiny droplets more easily. Or it could be a disaster that served to submerge the plume, spread it into the Loop Current, and transport it to the ecologically rich Florida Keys. When the plume is submerged, it is no longer subject to volatilization and photodegradation, important processes in the weathering of the oil, which could further delay recovery. When millions of gallons of dispersants are used, it is yet another toxicological stressor on ecosystems.

No energy source comes without risks and environmental impacts, but our addiction to oil is particularly vexing because of the energy insecurity it fosters. Our addiction is largely one of liquid transportation fuels for driving more and more miles each year. If we could solve our overdependence on cars and trucks, we would solve our addiction to oil.

Imagine a world without oil—and with efficient plug-in hybrid electric cars running on solar, wind, and geothermal power. We'd have less dependence on foreign oil, less greenhouse gas emissions and climate change, a better balance of payments, lower debt burden, a stronger dollar, a more resilient energy infrastructure, cleaner air, and less emphysema and asthma.

Years ago, I said, "The oil spill at Prince William Sound was caused by human error and was largely preventable. We hope to learn from these disasters so we do not have to relive them" (*Environ. Sci. Technol.* DOI 10.1021/es00013a600 [**1991**, *25* (1), 14]).

Just repeat the refrain. But add a real plan to end our oil addiction.

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