PERSPECTIVES FROM THE FIELD

Gulf Oil Blowout: A Lesson *Not* to Be Learned by Experience

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As voters, automobile drivers, and home owners with oil-burning furnaces, we must count ourselves among those responsible for the recent Gulf of Mexico oil blowout involving the Macondo mine and Deepwater Horizon oil rig. We may fail to realize how toxic gasoline and number 2 fuel oil are. As a toxicologist who has addressed oil industry risks to human health, I rarely if ever have had to consider quantities of released contaminants as vast as the Deepwater Horizon scale of release to the Gulf and to the planet. Deepwater may dwarf the air pollution that sickened so many volunteers after the 9/11 attacks on the World Trade Center in 2001. Climatologists rarely must consider individual releases of greenhouse gases, such as methane, on the Deepwater scale; and seismologists rarely must consider impacts on deep-sea oil wells. Yet, such impacts constitute just the tip of the ecological and human health risk icebergs, especially for people living and working on the affected Gulf Coast, and for its vulnerable ecosystems.

The Gulf of Mexico oil blowout is many things, but two things that it is not are a *spill* and an *accident*. Since oil is involved, the explosion also is not *nuclear* . . . but make no mistake: explosion of the Deepwater Horizon drilling rig, because of its potential planetary impact, ranks with the 1991 volcanic eruption of Mt. Pinatubo in the Philippines as the single-incident environmental equivalent of the first A-bomb explosion. At the end of World War II, the atomic bomb, and annihilation by nuclear conflict, together emerged as global military megathreats, later followed by the threat of "nuclear winter." Albert Einstein pessimistically lamented "everything has changed . . . except the way we think." Today, that lament applies to our horse-and-buggy-age thinking about the new global environmental megathreat of deep-sea oil deposits and drilling to exploit them.

The term *spill* was an understatement in 1989 when the Exxon Valdez lost its enormous cargo of oil off the Alaska coast. "Don't cry over spilt milk" captures the meaning and magnitude of the word *spill* better than the spinmasters who linked Exxon Valdez to it two decades ago, or those who seek to link the Deepwater blowout to it today. In contrast to a spill, Deepwater, if uncapped, would violently spew oil into the ocean, possibly for a human lifetime or longer.

The Deepwater blowout also was not an *accident*. Unintended catastrophes do not automatically qualify as accidents. When a supposed 100-year storm, or 100-year flood, occurs in year one, you can bet that someone misrepresented the risks and, as a result, someone else prepared for a lesser storm, or a lesser flood, because they uncritically accepted the misinformation. That is best described as irresponsible, not *accidental*.

The United States (US) Department of Interior's (DOI's) April 2007 Final Environmental Impact Statement (EIS) for deep-sea drilling in the Gulf of Mexico (US DOI, 2007) failed to consider the worst-case scenario of a blowout involving failure of blowout preventers. The DOI estimated less than a 1% chance of an oil spill of over 1,000 barrels occurring within a 40-year period. According to the EIS, "blowouts are expected to have [only] temporary localized impacts on water quality" (p. xi). The DOI also indicated that, "in the rare event that a spill exceeding 10,000 barrels should occur, it is estimated that approximately 15,000 barrels of oil will be spilled" (p. 4-283). This prediction is falsified and patently fictitious. Further, the DOI clearly considers 15,000 barrels as small potatoes as, by comparison, it cites a 2003 US National Research Council study: "It is estimated that 980,000 barrels of oil is released to the Gulf of Mexico annually from natural seeps" (US DOI, 2007, p. 4-233).

Suddenly, in the face of gross risk underestimation, the enormity of our dependence on oil for energy has dawned, spawning both overreaction: "stop deep undersea drilling," and underreaction: "stop the spill, clean up the damage, and keep drilling." Both viewpoints represent narrow thinking, by which I mean the quest for a solution to a secondary problem while ignoring the primary problem. The primary problem is to learn how and why yesterday's unthinkable potentiality became today's unpalatable reality, and how we might bring such potentialities under control before they emerge as realities. Indeed, some problems simply lack conceivable solutions and cannot be allowed to materialize . . . but the Deepwater Horizon blowout at the Macondo well nonetheless was allowed to happen.

The quest for a solution for a problem lacking a solution amounts to yet another overoptimistic spin. If you lose your horses, closing the barn door may be necessary, but it is not a solution. If thousands of marine birds and sea turtles die, they cannot be brought back to life. If ecosystems are destroyed, their restoration will require decades at least; Alaska ecosystems impacted by Exxon Valdez two decades ago still have not been restored fully. If Deepwater kills coral reefs in Florida, their restoration will require centuries, if not millennia.

The secondary problem of capping the blown Deepwater well clearly is the immediate one. Many people think ahead, contemplating possible cessation of deep-sea

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drilling for oil, given the higher-than-anticipated risks. Unrecognized in this idealism is the hard reality that aggressive drilling, at least in the Deepwater case, may be necessary to relieve unsafe pressure on the precarious cap on that compromised well.

Another unrecognized hard reality is that human error is not the only source of risk. Seismic activity also might have the potential to compromise undersea oil deposits, releasing massive amounts of oil catastrophically, with no hope of technological control. This inconvenient truth suggests that we must catalogue undersea oil deposits, especially those nearest to shore, including those not currently being exploited, to characterize the vulnerability of each to seismic activity.

Stabilization of the Deepwater Horizon well, once it is capped, still will not address seismic risks. The well is located in a seismically active area. We know this from the massive earthquake that recently hit Haiti, along with subsequent aftershocks. This quake occurred along the Enriquillo-Plantain Garden Fault System, a major fault line that runs along the southern coast of Haiti. A second fault runs from the southern edge of Cuba to the Cayman Islands and to Guatemala, Belize, and Honduras. On September 11, 2006, a magnitude 6.0 earthquake struck in the Gulf of Mexico 330 miles southeast of New Orleans. By comparison, the Deepwater well is about 50 miles southeast of New Orleans. A previous quake in the Gulf occurred 33 years earlier, the geological blink of an eye.

So, we are back to the hard reality that aggressive drilling is necessary, at least in the Deepwater case. It is necessary in that case not only to eliminate the technological risk that pressure will overwhelm the makeshift cap, but also the seismic risk that an earthquake will destroy it. Deepsea drilling might be required in other cases, too, to prevent catastrophic releases of oil, especially in active earthquake zones . . . the oil version of the Old Faithful geyser. Thus, to act responsibly, we must drill while reforming the requirements on undersea drilling by oil companies. Above all, we must move to a renewable energy economy, not only because of scarcity of easily exploitable fossil fuel deposits, but because of risks that are becoming clearer for ecosystems globally.

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