Research Profile

Nancy Kinner – Engineering a Response to Environmental Hazards

Even in the face of overwhelming and disastrous environmental damage, Nancy Kinner, professor of civil and environmental engineering at UNH, holds an enduring belief that something positive can result. It is that conviction and commitment to communicating science into understandable solutions to the public that has made her one of the nation’s most trusted researchers in spill response and restoration.

Kinner, a UNH alumna, has been a member of the UNH faculty since 1983 and serves as the Director of the Center for Spills and Environmental Hazards and as the UNH Director for the Coastal Response Research Center, which was established in 2004 in partnership with the National Oceanic and Atmospheric Administration’s Office of Response and Restoration. Her research has explored the role of bacteria and other microorganisms in the biodegradation of petroleum compounds and chlorinated solvents.

Since 2010, much of her work has concentrated on the response to, and the aftermath of, the Deepwater Horizon oil spill that ravaged the Gulf of Mexico, focusing predominantly on creating and implementing expert science-driven policy to address response issues and to respond quickly and effectively when spills do occur. Kinner frames the challenge: “Get people to look at the cutting-edge issues, to think [them] through, and ask what gaps do we have in our understanding and how can we address them.”

Lately, Kinner’s work has focused on the policy surrounding the use of dispersants in oil spills. Dispersants, which work similarly to detergent on dirty dishes, take the film of oil floating on the surface of water and break it down into tiny droplets that then disperse into the water column. By breaking up the oil slick, Kinner explains, scientists and first-responders are able to preserve the ocean’s most critical resources, including marine mammals, endangered species such as turtles, and other surface-dwelling organisms.

Dispersants are not the ideal remediation method nor are they always the correct response. In fact, prior to the 2010 spill in the Gulf, dispersants were widely viewed as being a poor, even dangerous, method of attack against oil slicks. However, in a massive and catastrophic spill such as the Deepwater Horizon, where 2.5 million gallons of oil escaped into the ocean daily, dispersants were “the least bad option.” Oil spills are always bad; the goal of response is to use the suite of response options that can best minimize the damage to the ecosystem and society.

Recently, Kinner’s efforts on Deepwater Horizon have rippled beyond the Gulf of Mexico to the frigid waters of the Arctic Circle where her team is investigating dispersant use, including its impact on food safety, in Alaska. Though these two regions of the country may appear completely different, Alaska, like the states bordering the Gulf, is an area that relies heavily on oil production for tax revenue and on a resource that is potentially susceptible to damage from oil spills, fishing—both commercially and by subsistence fishers.

Work on spill response often leads to conflict due to its impact on individuals, communities, and business interests, leading Kinner to act as a mediator between state and local officials, tribal and religious councils, industry, academia, and non-governmental organizations. As the project progresses, Kinner’s goal is to obtain the best scientific data to support policies that will lead to the preservation of commercial, local, and sacred fishing areas in the Arctic region.
When Kinner is not travelling, she finds her office at UNH a haven. Being in New Hampshire gives her a welcome break from dealing with lobbyists and state officials heavily invested in the economic impacts of oil production. And when she’s home, she can focus on her other passion—teaching. In addition to mentoring graduate students, she teaches courses on environmental microbiology, marine pollution and control, the fundamentals of environmental engineering, and environmental sampling and analysis.

“I love my students,” exclaims Kinner, who has won numerous teaching awards. In 2012, she was named a University Professor at UNH, a prestigious title given only to a select few who have made outstanding contributions to their field and to the university community through their teaching, research, and service.

Kinner’s enthusiasm for teaching, added to her research and outreach efforts, helps her work toward her ultimate goals: encouraging all citizens to take action to protect the environment now, and preparing the next generation of scientists to help shape the policies needed to ensure the integrity and health of the world’s oceans for years to come.

Throughout her career, Nancy Kinner has been devoted to outreach and educating people at both the local level (teaching, giving presentations, leading workshops at local science centers, alumni events, etc.) and at the national level by testifying before Congress to improve national policy.

Here are some highlights of her national involvement in just the past last five years:

April 29, 2015 — Kinner presented invited testimony to the Senate Committee on Commerce, Science and Transportation. The hearing focused on the developments and challenges that have occurred since 2010 in response to the Deepwater Horizon oil spill.

April 21, 2015 — Kinner spoke at the Senate Forum, “Advances in Oil Spill Response: Five Years After the Deepwater Horizon” held at UNH and hosted by Senators Shaheen and Ayotte (NH), and the Center for Spills and Environment Hazards.

September 27, 2010 — Kinner presented invited testimony to the National Commission on the Deepwater Horizon oil spill.

July 29, 2010 — Kinner made a presentation at “Chemistry in the Clean-Up: Oil Dispersants,” a Congressional briefing hosted by the American Chemical Society Science and the Congress Project, The American Institute of Chemical Engineers, and the Senate Science and Technology Caucus.

July 21, 2010 — Kinner presented testimony to the U.S. Senate, Committee on Commerce, Science and Transportation.


May 19, 2010 — Kinner presented testimony to the U.S. House of Representatives Committee on Transportation and Infrastructure.

Learn more....

The Coastal Response Research Center (CRRC) and the Center for Spills and Environmental Hazards (CSE)
http://crrc.unh.edu/

On Call http://unhmagazine.unh.edu/f10/gulf_oil_spill.html
As the disaster in the Gulf of Mexico unfolded, UNH’s Coastal Response Research Center—and its director, Nancy Kinner ’80G, ’83G—became the go-to source for oil spill expertise.

The Many Unknowns of Inevitable Arctic Oil Spills http://www.unh.edu/erg/many-unknowns-inevitable-arctic-oil-spills

Story by Kristen Bulger, with Michael Thompson and Lynnette Hentges 1/11/16