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Some big programs start small but grow

CIRCAC has pioneered ways of gathering environmental data and making that data available to industry, regulators and the public

Alan Bailey

Petroleum News

Week of March 29, 2015--Formed under the terms of the Oil Pollution Act of 1990, in the wake of the Exxon Valdez oil spill, the Cook Inlet Regional Citizens Advisory Council has for the past 25 years been furthering a series of projects, triggered by the council's mandate to monitor the environmental impacts of oil in the Cook Inlet region. But these projects often end up achieving much more that was originally envisaged, Susan Saupe, director of CIRCAC's science and research program, told Petroleum News on March 23.

"I think that has been some of our biggest successes, taking goals that we have under OPA 90 and developing," Saupe said. OPA 90 is the abbreviated name of the Oil Pollution Act.

Often, CIRCAC has initiated relatively small but innovative pilot projects in Cook Inlet and, then, having achieved success, worked with other organizations to expand the projects to a more regional scale, Saupe said. And that has often resulted in making valuable data available to a wide range of stakeholders, including industry, government regulators and the general public, she said.

For example, in 2001 CIRCAC led efforts to develop what are referred to as "geographic response strategies" around the Cook Inlet coast, Saupe said. A geographic response strategy is a plan for protecting some sensitive environmental resource at a particular location in the event of an oil spill. A plan typically spells out requirements for equipment such as protective boom and forms a building block of a more regional oil spill contingency plan. Following success in Cook Inlet, the use of geographic response strategies has expanded to a statewide program administered by the Alaska Department of Environmental Conservation.

Measurement of pollutants

As part of its OPA 90 mandate, CIRCAC has been conducting a research program, measuring and documenting levels of a number of pollutants in Cook Inlet, both in mixing zones where

discharges from offshore oil platforms enter the waters of the inlet, and throughout the inlet. The idea is to understand the background levels of contaminants and to gain insights into where the contaminants have come from. Then, if there is, for example, an oil spill, it becomes possible to objectively measure the impact of the spill, Saupe explained.

“One point that we have really focused our effort on is that the regional citizens advisory councils should be partners among citizens, agencies and industry,” Saupe said. “We’ve actually taken that to heart quite a bit in that we can do the best work if we are really trying to do the best science to answer these questions.”

A major focus of the research has been the types of hydrocarbon that form some of the more toxic components of crude oil. However, there are many potential sources for these materials, including oil platform discharges, natural oil seeps, forest fires and volcanic eruptions, Saupe said. In fact, particulates in vehicle exhaust form a significant source, she said. Similarly, heavy metal contamination can originate from natural sources as well as potentially from drilling waste.

But some of these contaminants, such as certain classes of hydrocarbons, have distinctive chemical signatures, characterized by the precise mix of chemicals that comes from that origin. By establishing the particular signature of each particular source, CIRCAC wants to construct a picture of background contaminant levels in the Cook Inlet and the sources of each contaminant.

“One of our biggest goals was to have a really good understanding of what is the background, what are the other sources,” Saupe said.

The evolution of this monitoring program into what is referred to as the integrated Cook Inlet environmental monitoring and assessment program provides an example of a modest CIRCAC program expanding through partnerships with other organizations. In this case, CIRCAC wanted to adopt the methods used in a national coastal assessment program that had been applied for environmental monitoring in the Gulf of Alaska, and adapt these methods to the Cook Inlet region by adding some forms of monitoring that did not feature in the national scheme.

CIRCAC obtained federal funding for its initiative through the support of the Alaska congressional delegation, Saupe said. And at around the time that CIRCAC was developing its project, the Environmental Protection Agency was starting to develop a new general permit for oil industry discharges into Cook Inlet, she said. CIRCAC suggested merging its project with the sampling program that the EPA was requiring of industry dischargers, an arrangement that would enable both CIRCAC and the EPA to each obtain more data than would otherwise have been possible had they operated independently. The two oil companies involved in the oil platform discharges issue, Chevron and XTO, agreed to participate in the scheme. The result was a much larger assessment than had originally been thought possible, and a highly successful project, Saupe said.

The Alaska ShoreZone program

In another project that has grown far beyond an original CIRCAC initiative, it is now possible to click into the National Oceanic and Atmospheric Administration’s website and engage in a

virtual tour of large sections of the Alaska coastline. Called the Alaska ShoreZone program, the online system enables anyone to view high resolution video of the shoreline and intertidal zone, and to retrieve data about features of the coastline and the natural habitat. This system can prove invaluable when figuring out how to deal with a disaster such as an oil spill and was used, for example, during the response to the grounding of Shell's Kulluk floating drilling platform in 2012, Saupe said.

This ShoreZone initiative began in 2001, after CIRCAC had picked up the idea of filming the Cook Inlet coastline from a ShoreZone program that had been applied in British Columbia and the state of Washington, Saupe said. At the time, existing mapping of the Cook Inlet coast was not of high enough resolution and the data was not often collected at high tides, thus excluding the intertidal zone - CIRCAC' s concept for Cook Inlet involved collecting habitat data for the coastline, as well as detailed coastline imagery, and making the data publicly available online, she said.

After CIRCAC's initial survey in 2001, the first external funding for the project came from a federal coastal assistance program. But, as the concept gained momentum, more and more partners became involved, including the Exxon Valdez Trustee Council and the National Park Service.

"I think that part of the reason it was so successful was that we were demonstrating that this is something you can look at online, all of this habitat data and imagery," Saupe said.

But by around 2003-04 it became evident that the piecemeal funding for the project was becoming an impractical means of paying for the project website. At this point NOAA stepped in to host the website and to coordinate data coming from a variety of sources. And with multiple organizations contributing content to the site, the program became designated "the Alaska ShoreZone Partnership."

"It's now statewide and more than 80 percent of the state has been mapped. It's all served up on the NOAA website," Saupe said.

The Cook Inlet Response Tool

For oil spill response support, CIRCAC wanted to be able to layer the ShoreZone data and fully streamed shoreline videos with other resource data, which was not possible either through the NOAA ShoreZone website or through another NOAA online spill response application. To achieve its objective CIRCAC worked with a company called Axiom Computing to develop a way of putting full-resolution streaming video on line, and with the Alaska Ocean Observing System, an association for overseeing ocean observation around the state, to develop a tool for integrating data for geographic response strategies, bird site information and other information needed during an oil spill response. The result of this partnership has been the Cook Inlet Response Tool, a tool that pulls in data from dozens of organizations, with the Alaska Ocean Observing System acting as data aggregator, Saupe said. The tool now has several portals served by the AOOS, including a portal for the Gulf of Alaska, she said.

An offshoot of the concepts behind Alaska ShoreZone has been Coastal Impressions, an exhibit and corresponding publication with photographs of spectacular scenery around the Cook Inlet and Gulf of Alaska coasts. With many people having little idea of the incredible diversity of the Cook Inlet coastline, the idea was to show that the coast consists of much more than the mudflats familiar to many residents of the Cook Inlet region, Saupe said. The selection of about 80 images from a collection of about 60,000 photographs resulted in a traveling exhibit with large-format photographic prints she said. The exhibit has been shown at a number of venues and has proved so successful that several federal agencies have partnered in developing a similar exhibition for the Arctic coast of Alaska.

In yet another example of a CIRCAC initiative being picked up by other organizations, CIRCAC established a system of cameras for the continuous monitoring of sea ice conditions around Cook Inlet. Most of the funding for this now comes from the state Legislature, with the National Weather Service using the system for ice forecasting, Saupe said.