PSA-032-Oil Spill Response-World's Oceans

Join us to save coral reefs

Vic Ferguson

The World Federation for Coral Reef Conservation 281.971.7703 P.O. Box 311117 Houston Texas 77231

11.19.13

NOAA'S RESPONSE AND RESTORATION BLOG

An inside look at the science of cleaning up and fixing the mess of marine pollution

February 5, 2016

by Office of Response and RestorationLeave a comment

Accidents on a Flooded Lower Mississippi River Keep NOAA Busy with a Rash of Spills

A barge carrying slurry oil being pushed by the towing vessel Amy Francis hit the Natchez-Vidalia Bridge, Jan. 21, 2016. The barge reportedly has a maximum potential of more than 1 million gallons of slurry oil on board. (U.S. Coast Guard)

This is a post by the Office of Response and Restoration's Donna Roberts.

Did you know that oil spills occur every day in U.S. waters? Rivers bustling with ship traffic, such as the Mississippi, are no exception to this rule.

In the past few weeks, we've been involved with quite a few accidents involving vessels carrying oil and chemicals on the Lower Mississippi River.

These river accidents coincided with high water and swift currents. Despite safeguards for vessel traffic put in place by the U.S. Coast Guard, the river conditions resulted in ships colliding, hitting bridges and ground, and breaking away from their towing vessels. One unlucky railroad bridge in Vicksburg, Mississippi, has been hit by vessels five times already this year.

Even now, the NOAA River Forecast Center reports that the Lower Mississippi is experiencing moderate flood conditions. It's difficult to navigate a river with a tow of barges at any flow—and extremely challenging when the flow is high and fast. In spite of

everyone's best efforts, under conditions like these, accidents can and do still happen, and investigations are ongoing into the precise causes.

Luckily, most of the incidents that have occurred were relatively minor, resulted in no injuries to vessel crews, and all spills received immediate responses from state and federal agencies. Still, when oil or chemicals spill into rivers, we know that they differ from spills in the ocean or along coasts, and therefore present different challenges for spill responders.

Here are just a few of the dozen or so spills and near-spills we know of and which have been keeping our spill modelers, chemists, and Scientific Support Coordinators busy over the past few weeks.

January 21, 2016: A barge being towed by the UTV *Amy Frances* struck the Natchez Bridge, where Highway 84 crosses over the Lower Mississippi River between Mississippi and Louisiana, in the vicinity of Mile Marker 363. As a result, two of the barge's tanks were damaged, spilling slurry oil, which our chemical lab confirmed was denser than water. That means this oil sinks.

In the wake of this oil spill, one of our Scientific Support Coordinators helped survey the river to detect sunken oil. Given the river's very fast and turbulent water at the time, we think any oil released from the damaged tanks was immediately broken into small droplets and carried downstream while also sinking below the river surface. Any oil that reached the bottom was probably mixed with or buried by the sand moving downstream near the river bottom. This is because rivers that move a lot of water also move a lot of sediment.

In addition, we provided information on the expected fate and effects of the barge's spilled slurry oil and on the animals and habitats that could be at risk.

Response crews remove oil from the damaged MM-46 barge, Jan. 23, 2016, on the Mississippi River. Crews estimate that approximately 76,000 gallons of clarified oil mixture is still unaccounted for. Crews continue to take soundings of the damaged barge tank to determine the amount spilled while assessment teams work to locate missing product. (U.S. Coast Guard)

January 25, 2016: Just a few days later, the Coast Guard called on us for advice related to a barge containing liquid urea ammonium nitrate (liquid fertilizer), which sank south of Valewood, Mississippi, at Mile Marker 501 on the Mississippi River. Side-scan sonar indicates the barge is upside-down on the river bottom, approximately 80 feet down.

Given the position and water pressure, we believe the chemical cargo stored on the barge was likely released into the river. The chemical is heavier than water and will mix quickly into the water column. Because elevated levels of ammonia can affect aquatic life, our focus was on predicting and tracking where the chemical would go downriver and what would happen to it. Salvage efforts for the barge itself continue.

January 26, 2016: The next day, two vessel tows collided upriver of New Orleans, Louisiana, near Mile Marker 130 on the Lower Mississippi River. The collision capsized one of two barges carrying caustic soda, or sodium hydroxide. We provided the Coast Guard with an initial chemical hazard assessment for this chemical, which is a strong base. The release of a large enough quantity of sodium hydroxide could raise the pH of the water around it, posing a risk to local fish and other aquatic life nearby. The barge is secure, but righting it is difficult in the swift currents. No pollution release has been reported to date.

PSA-032-Oil Spill Response-World's Oceans

Join us to save coral reefs

Vic Ferguson

The World Federation for Coral Reef Conservation 281.971.7703 P.O. Box 311117 Houston Texas 77231

Science for Spills of All Kinds

During these kinds of spills, we have to be ready to provide the same round-the-clock, science-based support to the Coast Guard and other agencies as big spills like the *Deepwater Horizon* in the Gulf of Mexico.
For example, if a chemical has spilled into a river, we need to know where it's going to go, what's going to happen to it, and what, if any, species will be harmed by it. To help answer the "where's it going?" question, our response specialists use the spill trajectory tool, GNOME, to predict the possible route the pollutant might follow.
To better understand the pollutant and its possible effects, we use software tools such as CAMEO Chemicals to provide information about the chemical's properties, toxicity, and behavior as it is diluted by the river water. OurChemical Aquatic Fate and Effects (CAFE) database contains information on the effects of thousands of chemicals, oils, and dispersants on aquatic life.
The Mississippi River and its floodplain are home to a diverse population of living things. On the Lower Mississippi, there may be as many as 60 separate species of mussel. To protect vulnerable species, we use our Environmental Sensitivity Index maps and data to report what animals or habitats could be at risk, particularly those that are threatened or endangered. Keeping responders and the public safe and minimizing environmental harm are two of our top priorities during any spill, no matter the size.

Donna Roberts
Donna Roberts is a writer for the Emergency Response Division of NOAA's Office of Response and Restoration (OR&R). Her work supports the OR&R website and the Environmental Sensitivity Index mapping program.

Categories: chemical releases, oil spills | *Tags:* chemical spills, chemicals, Emergency Response Division (ERD), Mississippi River, NOAA, oil spills, pollution, response, scientific support, shipping,U.S. Coast Guard | Permalink.
February 4, 2016

by Office of Response and RestorationLeave a comment

Apply Now for NOAA's First Class Examining the Science of Chemical Spills

This three and a half day class will provide a broad, science-based approach to understanding chemical release response. (NOAA)

For years, NOAA's Office of Response and Restoration has been offering our popular Science of Oil Spills classes to oil spill responders and planners. But oil isn't the

PSA-032-Oil Spill Response-World's Oceans

Join us to save coral reefs

Vic Ferguson

The World Federation for Coral Reef Conservation 281.971.7703 P.O. Box 311117 Houston Texas 77231

only hazardous material for which we have expertise. This

March, we'll launch our first official Science of Chemical Releases (SOCR) class to share this expertise in new ways.
This class is designed to help spill responders and planners increase their scientific understanding when preparing for and analyzing chemical spills, which could range from toluene to sulfuric acid, and when making risk-based decisions to protect public health, safety, and the environment in the event of such a release.
The three and a half day class will take place at NOAA's Gulf of Mexico Disaster Response Center in Mobile, Alabama, from March 21–24, 2016.
We are accepting applications for this class until Friday, February 19, 2016. We will notify accepted participants by email no later than Friday, February 26.
The class is primarily intended for new and mid-level spill responders, planners, and stakeholders from all levels of government, industry, and academia.
During the class, participants will be introduced to a realistic scenario to demonstrate the use of scientific tools, resources, and knowledge to aid in response to chemical releases. The scenario will be centered on a hypothetical chemical incident involving the derailment of multiple railcars containing hazardous chemicals, resulting in a fire and release of dangerous chemicals into the environment.
Through this new training, we hope to provide a broad, science-based approach to understanding chemical release response, thereby increasing awareness and preparedness and reducing uncertainty and risk associated with this type of incident.
There is no tuition for this class. However, students are responsible for all miscellaneous expenses, including lodging, travel, and food.
For more information, and to learn how to apply for the class, visit the SOCR Classes page.
If you have any questions or experience any problems with your application, please send us an email.
To receive updates about our activities and events, including Science of Chemical Releases or Science of Oil Spills classes, subscribe to our monthly newsletter.

Categories: chemical releases, preparedness, science | *Tags:* chemical spills, chemicals, chemistry, Emergency Response Division (ERD), NOAA, response, safety, science, training | Permalink.
January 28, 2016

by doug helton Leave a comment
Alaska Updates Plan for Using Dispersants During Oil Spills

By breaking crude oils into smaller droplets, chemical dispersants reduce the surface area of an oil slick as well as the threats to marine life at the ocean surface, such as whales and seabirds. (NOAA)

While the best way to deal with oil spills in the ocean is to prevent them in the first place, when they do happen, we need to be ready. Cleanup is difficult, and there are no magic remedies to remove all the oil. Most big oil spills require a combination of cleanup tools.
This week the Alaska Regional Response Team, an advisory council for oil spill responses in Alaska, has adopted a revised plan for one of the most controversial tools in the toolbox: Chemical dispersants.

PSA-032-Oil Spill Response-World's Oceans

Join us to save coral reefs

Vic Ferguson

The World Federation for Coral Reef Conservation 281.971.7703 P.O. Box 311117 Houston Texas 77231

How Dispersants Are Used in Oil Spills

Dispersants are chemical compounds which, when applied correctly under the right conditions, break crude oils into smaller droplets that mix down into the water column. This reduces not only the surface area of an oil slick but also the threats to marine life at the ocean surface. By making the oil droplets smaller, they become much more available to natural degradation by oil-eating microbes.

Dispersants are controversial for many reasons, notably because they don't remove oil from the marine environment. Mechanical removal methods are always preferred, but we also know that during large oil spills, containment booms and skimmers can get overwhelmed and other pollution response tools may be necessary. This is a big concern especially in Alaska, where weather and remote locations increase the logistical challenges inherent in a large scale oil spill response.

Although dispersants get a lot of attention because of their extensive use after the 2010 *Deepwater Horizon* oil spill, they actually are used rarely during oil spills. In fact, dispersants have only been applied to about two dozen spills in the United States in the last 40 years. The only time they were tested during an actual spill in Alaska was during the *Exxon Valdez* oil spill in 1989.

Some oils like light and medium crude are often dispersible and others, like heavy fuel oils, often are not. In some cases dispersants have worked and in others they haven't. The results of the *Exxon Valdez* testing were unclear and still subject to debate. So, why have a plan for something that is rarely used and may not be successful?

Probably the biggest reason is pragmatic. Dispersants work best on fresh, unweathered oil. Ideally, they should be applied to oil within hours or days of a spill. Because time is such a critical factor to their effectiveness, dispersants need to be stockpiled in key locations, along with the associated aircraft spraying and testing equipment. People properly trained to use that equipment need to be ready to go too.

A New Plan for Alaska

Although only used once in an Alaskan oil spill, dispersants have already been an approved oil spill response tool in the state for a number of years. This new plan improves the decision procedures and designates areas where dispersant use may be initiated rapidly. (U.S. Environmental Protection Agency)

Now, dispersants have already been an approved oil spill response tool in Alaska [PDF] for a number of years. This new plan improves the decision procedures and designates areas where dispersant use may be initiated rapidly while still requiring notification of the natural resource trustees, local and tribal governments, and other stakeholders before actual use.

Alaska's new plan specifies all the requirements for applying dispersants on an oil spill in Alaskan waters and includes detailed checklists to ensure that if dispersants are used, they have a high probability of success.

The new plan sets up a limited preauthorization zone in central and western Alaska, and case-by-case procedures for dispersant use elsewhere in Alaska. The plan also recognizes that there are highly sensitive habitats where dispersant use should be avoided.

In addition, preauthorization for using dispersants exists only for oil spills that happen far offshore. Most states have similar preauthorization plans that allow dispersant use starting three nautical miles offshore. The new Alaska plan starts at 24 miles offshore.

We realize that even far offshore, there may be areas to avoid, which is why all of the spill response plans in central and western Alaska will be revised over the next two years. This will occur through a public process to identify sensitive habitats where dispersant use would be subject to additional restrictions.

Planning for the Worst, Hoping for the Best

As the NOAA representative to the Alaska Regional Response Team, I appreciate all of the effort that has gone into this plan. I am grateful we developed the many procedures through a long and inclusive planning process, rather than in a rush on a dark and stormy night on the way to an oil spill.

But I hope this plan will never be needed, because that will mean that a big oil spill has happened. Nobody wants that, especially in pristine Alaskan waters.

Any decision to use dispersants will need to be made cautiously, combining the best available science with the particular circumstances of an oil spill. In some cases, dispersants may not be the best option, but in other scenarios, there may be a net environmental benefit from using dispersants. Having the dispersants, equipment, plans, and training in place will allow us to be better prepared to make that critical decision should the time come.

At the same time, NOAA and our partners are continuing to research and better understand the potential harm and trades-offs of dispersant use following the *Deepwater Horizon* oil spill. We are participating in an ongoing effort to understand the state of the science on dispersants and their potential use in Arctic waters. (The University of New Hampshire is now accepting comments on the topic of dispersant efficacy and effectiveness.)

You can find Alaska's new dispersant policy and additional information at the Alaska Regional Response Team website at www.alaskarrt.org.

For more information on our work on dispersants, read the April 2015 article, "What Have We Learned About Using Dispersants During the Next Big Oil Spill?" and July 2013 article, "Watching Chemical Dispersants at Work in an Oil Spill Research Facility."

Vic Ferguson
The World Federation for Coral Reef Conservation
Executive Director
P.O. Box 311117
Houston, Texas 77231
vic.ferguson@wfcrc.org
www.wfcrc.org
281.971.7703 (office)
832.269.5589 (land line))

*The only thing necessary for the triumph of evil is that good men do nothing"….**Edmund Burke***