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Oil Spill Program Update

Oil Program Center Report

Office of Emergency and Remedial Response
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EPA's *Oil Spill Program Update* is produced quarterly, using information provided by EPA Regional staff, and in accordance with Regions' information needs. The goal of the Update is to provide straight-forward information to keep EPA Regional staff, other federal agencies and departments, industries and businesses, and the regulated community current with the latest developments. The Update is distributed in hard copy and is available on the Oil Program home page at ***www.epa.gov/oilspill***.

ABOUT THIS ISSUE

This issue of the *Oil Spill Program Update* offers highlights of the Freshwater Spills Symposium, held from March 6 to 8 in Albuquerque, New Mexico. One of the major themes of the symposium was the development of partnerships and coordination of prevention planning and response efforts among federal agencies, states, tribes, local communities, and industry. The event attracted 251 participants, including 78 from industry, 101 from federal government agencies, 47 from tribal, state, and local governments, and 25 from other countries.

Prominent issues addressed at the symposium included scientific and technical aspects of spills and spill sources; fuels management; Indian tribes perspectives on regulation and prevention; and non-traditional spill sources and substances. A complete list of session topics, presenters and presentation titles is available on the oil spill program web site at ***www.epa.gov/oilspill/fss***.

During the opening plenary session, Myron Knudson, Superfund Director for EPA Region 6, and Stephen Luftig, Director of EPA's Office of Emergency and Remedial Response, outlined the importance of efforts to specifically address the issues and problems associated with freshwater spills. Knudson stressed the number and severity of spills in EPA Region 6 and spoke of EPA's commitment to promoting compliance with spill prevention requirements and enforcing spill prevention regulations. He outlined five elements that comprise the Regions' balanced approach including:

- Outreach to industry organizations and state and tribal agencies;
- Compliance workshops for smaller industries
- SPCC inspections;
- Expedited enforcement for minor violations and small spills; and
- Traditional enforcement when warranted.

In remarks to the plenary session, Luftig noted the unique nature of inland and freshwater oil spills, and provided information about the prevalence and severity of spills in freshwater areas. For example, a majority of the oil-related "significant incidents" reported to the National Response Center were into or near freshwater, and many of those were spills of greater than 100,000 gallons. Luftig also noted the variety of types of spills that occur in freshwater, including vegetable oil and animal fat spills, and he discussed the Final Facility Response Plan that includes rules for animal fats and vegetable oils which will be published this summer.

The issues and challenges of freshwater spills were the focus of Luftig's concluding comments. He cited improved cooperation between DOT and EPA regarding oil pipeline issues as an example of partnerships and cooperation that can be built at all levels of the regulatory and response community. EPA and other federal agencies must continue to recognize the importance of local responders and planners and address their needs. Government agencies also need to find more opportunities to work with the regulated community. And finally, all groups that have a stake in preventing and controlling spills need to address new challenges such as those presented by the gasoline additive MTBE.

The symposium provided a forum for participants to discuss new cooperative approaches, new methods, and results of studies. It demonstrated that oil spill professionals from all areas are working to meet the challenges of freshwater spills and reduce risks to our nation's waters. The following articles summarize a few of the presentations made at the symposium.

ASTS IN RURAL AND NATIVE VILLAGES
Presenter: Bert Tarrant, Alaska Energy Authority

The use of bulk fuel storage facilities in Alaska began in the 1950s when the Bureau of Indian Affairs established schools and developed water, sewage, and power projects in rural villages. Tank farms were built as part of these developments to store the fuel needed to keep them running. Due to remoteness and weather conditions, the rural communities that use the storage facilities receive fuel shipments only once or twice a year, so they must provide long-term storage. There are approximately 1,000 above-ground tank farms serving 160 rural villages in Alaska - essential infrastructure to allow these communities to survive through the winter season. A typical rural community has 5 tank farms with storage capacity of 200,000 to 300,000 gallons.

Tank farm before upgrades.

Tank farm after upgrades.

Many rural tank farms were built using secondhand equipment and without strict adherence to standards and applicable codes. These tank farms often have sub-standard piping, tanks, and fuel dispensing systems. Additionally, spill containment dikes may be inadequate or nonexistent at these facilities, which are often located close to the ocean or rivers. There was little concern about the condition of these tank farms until 1990 when liability questions were raised about the transfer of fuel. The *Exxon Valdez* spill in Prince William Sound on March 24, 1989 contributed greatly to these concerns. In 1991, the U.S. Coast Guard assessed and documented the status of rural Alaskan tank farms, raising the possibility that farms with tank deficiencies would be barred from receiving shipments of fuel. If this were to happen, some rural communities would be left without power, transportation, heat, and the means to meet other needs. In 1992, the Alaskan Energy Authority

(formerly Department of Energy) estimated that corrective measures to bring all 210 existing farms to compliance would cost $200 million. More recently, this figure has been re-estimated at $400 million. In 1999, 97% of the facilities inspected by EPA were out of compliance.

In 1996, the Alaskan Energy Authority began a three-year effort to assess the condition of all tank farms in rural Alaskan communities. The data collected from this assessment revealed that nearly every tank farm needed reconstruction. Shutting down fuel facilities was not an option, but deteriorating tank farms were already polluting the environment, negatively impacting local human health, and creating serious fire hazards. The Energy Authority determined the best course of action would be to prioritize construction schedules and consolidate multiple tank farms into single community facilities at all sites where such an approach was practical. To aid in funding the reconstruction, the Energy Authority applied for and received federal block grants.

Additional funding was procured through discussions with EPA and the Denali Commission (an organization formed in 1998 to address rural re-development needs). Village liaisons helped to maintain partnerships between the Energy Authority and rural communities. The arrangement allows the communities to make the major decisions in project planning, and leads to results the residents have helped to shape. In the initial phases of the project, the Energy Authority completed tank farm construction or reconstruction at 20 rural communities and replaced piping systems at 40 others. Fourteen more bulk fuel projects are currently underway or are in planning stages.

CALIFORNIA'S SOLUTION TO MARINE OIL SPILL EVENTS - THE OILED WILDLIFE CARE NETWORK: CAN THIS PROGRAM WORK FOR INLAND SPILLS?

Legislatively mandated rehabilitation of wildlife damaged in coastal oil spills has resulted in professionally supervised rehabilitation efforts in California. The Oiled Wildlife Care Network (OWCN) is a joint program of the Wildlife Health Center, School of Veterinary Medicine at the University of California, Davis and the California Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR). The OWCN is on call 24 hours a day, 7 days a week, 365 days a year to respond to injured oiled wildlife. The mission of the OWCN is to provide the best achievable care to oil injured wildlife.

The four main programs of the OWCN include: 1) oil spill response, 2) establishing and equipping facilities, 3) training OWCN personnel about oiled wildlife care techniques, health and safety issues, and the incident/unified command system, and 4) oversight of a grant program that supports research on the effects of oil on wildlife and other aspects of health for species that could be impacted by oil spills.

To date, the OWCN has established over 20 wildlife care facilities with trained personnel available along the entire California coast from Crescent City to San Diego. The OWCN has awarded over $800,000 in competitive grants during the past 4 years of the research program.

While the OWCN was initially established to respond to marine oil spills, DFG-OSPR is now responding to inland oil spill incidents, and the OWCN has started to respond to inland spills as well. Certain issues associated with inland spill responses make them more challenging than coastal spills in many ways. The physical infrastructure of the OWCN does not exist inland and trained response personnel are not geographically close to inland spill locations. In these situations, if the OWCN is not activated early during a spill incident, geographical challenges may delay capture of injured wildlife resulting in higher mortality, or secondary petroleum exposure to other predators from scavenging oiled carcasses. Search and collection activities can also be difficult at inland spills because access to the spill site is not always convenient. Dense vegetation or sensitive habitat (wetlands/riparian) may exist,

and often, there are dangers associated with rapid-flowing rivers or deep waterways.

Another challenge associated with inland spill responses is the variety of species that require care which are often quite different from species injured by coastal spill incidents. In addition to birds, inland spills can also affect a variety of reptiles and terrestrial mammals. Capturing these species can also be very difficult because these animals are often mobile and fast moving, or they can hide in dense vegetation or burrows.

Most recently, the OWCN responded to a 600-barrel crude oil spill outside of Bakersfield, California, where oil flowed for approximately one mile through a wetlands habitat heavily used by a variety of avian and mammalian species including raptors (red-tail hawk, golden eagle, American kestrel, and White-tailed kite); owls (great-horned owl, burrowing owl); shorebirds (common snipe, killdeer); doves (mourning dove, rock dove); rails (sora, Virginia rail); songbirds (red-winged blackbird, tricolor blackbird, brown-headed cowbird, European starling, Western meadowlark, marsh wren, black phoebe, Say's phoebe, Northern mockingbird, American goldfinch, house finch, white-crowned sparrow, Savannah sparrow, Lincoln's sparrow, common raven, and loggerhead shrike); northern flicker; and greater roadrunner. Non-avian species observed in the spill area included Pacific tree frogs, ground squirrel, rabbits, rodents, skunks, and gopher snakes. Several dens (either kit fox, red fox, or badger) were observed adjacent to the spill site as well.

A total of 22 live animals were recovered during the spill response, most of which were red-winged blackbirds. Since no definitive care facility was available in the area, the OWCN used DFG-OSPR's mobile veterinary lab to stabilize birds at the spill site. Once stable, birds were transported to the International Bird Rescue Research Center in Berkeley, California, one of the OWCN's marine care centers. One hundred and thirty-three dead animals were recovered, including tri-colored blackbirds, a species of special concern. In addition to caring for oiled wildlife and collecting dead animals at this spill, the OWCN assisted OSPR with multiple hazing techniques (Zon guns, gun fire, and milar tape, streamers and balloons).

From the experience gained from this spill and other marine and inland spills that the OWCN has responded to, certain important lessons have been learned. The most important lesson being that it is essential to be prepared before the spill. This includes having in place, a rapid call out system to activate responders, pre-identifying local personnel who can respond, and pre-training response personnel (search and collection techniques, animal handling, OSHA regulations). It is important to pre-identify a stabilization and definitive care facility and to identify methods for birds to be transported if these facilities are distant locations. When well prepared, inland spill responses can result in appropriate care for oil-injured wildlife.

For more information, please contact Scott Newman at (530) 754-9424.

IOWAN SOYBEAN OIL SPILL
Presenter: Tom McCarthy, Iowa DNR

Vegetable oil spills and other non-petroleum spills pose significant risks to natural resources in rural areas. In areas where there is a minimal capability to respond to hazardous materials, they can also put a strain on local resources. Tom McCarthy of the Iowa Department of Natural Resources (DNR) illustrated the nature of vegetable oil spills with a presentation describing a soybean oil spill into a tributary of Buffalo Creek in Linn County Iowa.

On April 2, 1999, a railroad tank car carrying 22,000 gallons of crude soybean oil derailed, spilling nearly 9,000 gallons. The spill presented a threat to both Buffalo Creek, classified as a “significant warm water stream,” and to the Coggon Impoundment, a downstream resource used for recreational fishing and swimming.

The spill occurred near the Town of Coggon, allowing its volunteer fire department to respond quickly. The Linn County hazmat unit, the local sheriff, and the Iowa DNR also responded. Local responders worked quickly to dig ditches and contain the spill on the night of the accident. During the first 4 days of the response, contractors collected 3,500 gallons of spilled oil.

Despite the quick response, oil did reach the surface water through an underground drainage system. Much of the oil was spilled into a corn field that was drained by a network of underground pipes that drained into the affected tributary of Buffalo Creek. Long-term measures to address the spill included booming areas around the points where the drainage system emptied into the stream, installing valves on the affected outlets to control the flow, monitoring the area, and recovering the oil with sorbent pads. Streambed sediments were not monitored during or after the spill, but the Iowa DNR plans to perform this type of analysis for future vegetable oil spills.

Although no impacts to fish and wood duck habitats were detected, the spill did result in substantial damage to farmland. The spill also highlights the importance of local volunteer fire departments in rural response. Iowa has between 40 and 45 paid fire departments, including 17 hazmat units, but has approximately 830 volunteer fire departments. The 17 hazmat units cover areas in 64 counties; 35 counties are without hazmat coverage.

OVERVIEW OF THE FUELS MANAGEMENT PROGRAM

Presenters: Donn Zuroski and Steve Calanog, U.S. EPA Region 9

"Fuels Management" includes the entire life cycle of oil, from production, through refining, storage, and distribution. Each phase of this process is often regulated by multiple agencies, each with its own set of rules and regulations.

Buffalo Creek was threatened when 9,000 gallons of crude soy bean oil was spilled by a derailed train.

This "*patchwork*" regulatory approach results in major gaps and substantial overlap in the regulatory framework, misunderstanding and confusion regarding responsibility, and inconsistencies between agencies in regulatory implementation. Although regulators seem to have similar concerns regarding fuels management, there is little communication regarding roles and responsibilities, and often a general lack of consensus on common key issues needing resolution. Resolving these issues and coordinating among regulators is especially important in an era of rapid change in the oil industry.

The oil industry is transforming itself through mergers, industry downsizing, and sales of production, refining, and distribution facilities to smaller and less sophisticated companies. These changes can lead to abandoned oil wells and inadequate investment in maintenance and new infrastructure. EPA's Fuels Management Program (FMP) was conceived to help regulators from all agencies understand and adapt to the changes in the industry.

The FMP can provide a neutral forum for candid discussion of regulatory issues through the Oil Program's area contingency planning process or through a similar process. Fuels management can also provide coordination among efforts and

help leverage resources for more efficient regulatory and enforcement actions.

EPA has a natural leadership role in fuels management because it has regulatory oversight in exploration and production through consumption. Further, its emergency response and Oil Programs cover the fuels life cycle from exploration and production to retail storage systems, and in many cases, end users' small bulk storage facilities.

Fuels management facilities include oil and gas fields, pipelines, refineries, terminals, service stations, transportation systems, and other facilities such as oil recyclers, landfills and chemical plants. Many of these facilities have aging infrastructure–some over 100 years old. In addition, some are subject to preventable fuel spills from inadequate operator training, infrequent maintenance, and incomplete monitoring.

Current goals for the FMP are to improve regional interagency communication; identify issues that could be resolved through partnerships and training; and identify the universe of problem petroleum sites in Region 9.

To accomplish these goals, regulators must become more familiar with the technical aspects of the oil industry; the regulatory community needs a better understanding of each other's roles; and, there must be substantive discussion and significant consensus, building on pertinent fuels management and resource issues.

The FMP is conducting a series of workshops and outreach activities for the regulatory community and regulated industry. To date, EPA has held four workshops to encourage regulators to gain a better understanding of each others' function and to improve technical understanding of the oil industry. Workshops are structured to highlight the environmental and regulatory problems posed by fuels management facilities, offer technical training, examine specific fuels issues through case studies, and demonstrate state-of-the-art equipment. Future workshops are planned for Las Vegas, Nevada; southern California; and a two or three day Pacific Islands workshop.

For more information, contact Steve Calanog at (415) 744-2327, or Donn Zuroski at (415) 744-2285.

REGULATING OIL FACILITIES: THE NAVAJO EXPERIENCE

Presenters: Steve Austin and Ronnie Ben, Navajo Environmental Protection Agency

One of the themes of the Freshwater Spills Symposium was developing partnerships and finding opportunities for cooperation. Tribal government agencies are valued partners in preventing, preparing for, and responding to oil spills. Because identifying common interests is an essential step in developing partnerships, the symposium offered participants the chance to learn more about tribal government activities and priorities. Representatives of the Navajo Nation shared some of the following information.

The Navajo Nation Environmental Protection Agency was established in 1972 and became an independent organization in 1995. The agency works to establish policy, protect public health and the environment, represent the Navajo Nation in environmental issues, regulate activities that have potential environmental impacts on Navajo lands, and collect and manage environmental information. The Navajo EPA has four divisions: air and toxics, waste, water, and enforcement. The agency has grown to include 13 programs and 70 employees with offices in Window Rock, Shiprock, and Tuba City.

The area under the jurisdiction of the Navajo EPA covers 17,627,262 acres in 10 states, 39,000 miles of streams, and 7,853 lakes, ponds, and impoundments. Oil facility development on Tribal lands began in the 1920s, hitting a major production era from the 1950s through the 1970s. Present-day facilities under agency jurisdiction include 50 oil production facility

operators, 1,900 wells on reservation lands, and 1,700 wells on allotted lands. These facilities have a combined annual production of 6 million barrels. Federal agencies that provide regulatory oversight to the Navajo EPA include the Bureau of Indian Affairs, U.S. Geological Survey, Minerals Management Service, Bureau of Land Management, Federal Indian Minerals Office, and the U.S. Environmental Protection Agency. State oversight is provided by the New Mexico Oil Conservation Division. Tribal regulatory oversight is provided by Navajo Minerals, Navajo Nation Department of Environmental Management, Utah Land Office, and the Navajo EPA.

Navajo EPA involvement in the regulation of oil facilities increased markedly in the 1990s. During this decade, the agency closed unlined pits, increased involvement in oil spill response by opening a sub-office in Shiprock, performed facility inspections with the US EPA, increased above and underground storage tank regulatory actions, and developed policies on regulatory issues, spills, and remediation. Most recently, the agency passed the Navajo Nation Clean Water Act in January 1999 and established Navajo Nation Water Quality Standards in November 1999, while continuing work on its oil spill policies.

For more information, contact Steve Austin at (505) 368-1037, or Ronnie Ben at (520) 871-7187.

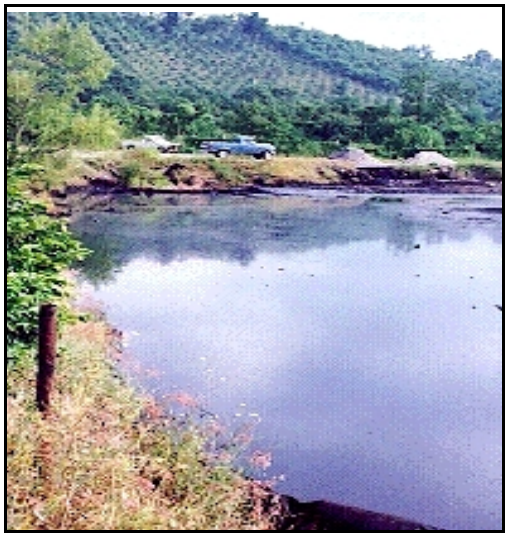
PROBLEM OIL PIT INITIATIVE
Presenters: Jane Nakad, U.S. EPA, Region 8; Pete Ramirez, U.S. FWS; and Craig Eggerman, Wyoming Oil and Gas Conservation Commission

In many western oil-producing states, problem oil pits are a persistent threat to wildlife and the environment. Oil pits are used as part of the crude oil production process. When oil is extracted from the ground, water is often extracted along with it. Heat is used to separate the oil and water, but the waste water produced by the process still contains significant amounts of oil. The water is often placed into ponds known as oil pits for further separation.

Unfortunately, many animals mistake uncovered oil pits for wetlands and become coated with or ingest the oil. Affected wildlife include birds, bats, snakes, and muskrat. Songbirds account for about half of the victims of oil pits. Mortality of oil pit-exposed wildlife generally occurs slowly. Oil is toxic to birds and other wildlife, and can be ingested as oiled animals attempt to clean themselves. Secondary affects may also arise if scavenging animals feed on oiled carcasses.

EPA and the U.S. Fish and Wildlife Service (FWS) have formed a partnership that draws on their complementary authorities to address problem oil pits. The goal of this problem oil pit effort is to minimize the potential for bird and wildlife mortality from oil. EPA and FWS hope to rectify contamination of surface water and groundwater, damage to wetlands and habitats, and ensure that oil pit facilities are constructed and managed in an environmentally protective manner.

EPA and FWS have established a four-phase process to address the problem, consisting of information gathering, information evaluation, field inspections, and follow-up.


Abandoned oil pit

Many oil pit operators, in an attempt to deter wildlife from their pits, string plastic flagging across their pits. However, flagging is an ineffective deterrent. The best option for keeping animals out of oil pits is to enclose the pits with netting. Although netting requires considerable maintenance, it is otherwise an economic and effective alternative.

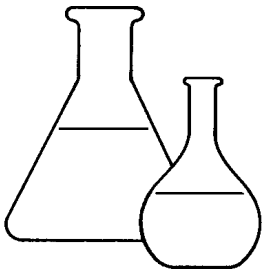
Under the Migratory Bird Treaty Act, pit operators may be fined $250 or more for each bird that dies as a result of contact with an oil pit. Each state may handle fines against corporations differently. Pedro Ramirez, who works for FWS in Region 6, notes that rather than simply levying fines, FWS prefers that problem pit operators clean up their pits. Both Ramirez and Craig Eggerman of Wyoming Oil and Gas Conservation, noted that a small percentage of operators account for a majority of the problem.

Further information on problem oil pits can be found on the Region 6 FWS web pages at ***www.r6.fws.gov/contaminants/oilpits.htm***.

OPPORTUNITIES FOR SCIENCE
Presenters: Allen Mearns, NOAA; Gary Shigenaka, NOAA; Jacqui Michel, RPI; Steve Lehmann, NOAA; and Jason Maddox, NOAA

As part of efforts to learn more about the effects of oil spills and methods for mitigating their effects, scientists often conduct field experiments immediately following a spill. One session of the Freshwater Spills Symposium was dedicated to exploring the opportunities for scientific exploration when a spill occurs, and approaches to taking advantage of those opportunities.

Alan Mearns started the Opportunities for Science session by reminding participants of what "science" means. Science is an organized inquiry involving the formulation of a hypothesis and testing the hypothesis. Science helps to reduce the level of uncertainty and "puts a number on things."



Opportunities for science during spills means that hypotheses can be tested on already-spilled oil. It gives scientists the opportunity to validate and improve predictions, develop criteria, avoid surprises, and monitor the progress of a spill.

Steve Lehmann, of the National Oceanic and Atmospheric Administration, led a discussion on "set asides" - what they are and how they can be used. Set asides are areas reserved for testing hypotheses about the fate and behavior of spilled oil and the efficiency of new treatment methods. Participants discussed the problems encountered when trying to obtain permission to use certain portions of land after a spill. Communicating with the public can be an important issue when attempting to use a spill as a scientific opportunity. It is important for the public to understand that the area will be cleaned up and new techniques or products will be used.

Participants also discussed how to pull together sources of information and present them in an informal way - a way of saying "this is what we did and here is what happened" without formality and peer-review. Two ways of "publishing" material were brought up - the use of a web page and submitting articles to the *Spill Science and Technology Journal*.

For more information on NOAA, please visit the NOAA web site at ***response.restoration.noaa.gov***.

SURFACE WASHING AGENTS
Presenter: Royal Nadeau and Harry Allen, U.S. EPA

Surface washing agents are used to clean up oil contaminated shorelines and increase the efficiency with which oil is removed from

contaminated surfaces. Applying surface washing agents is most appropriate in habitats that experience flooding, when oil has weathered to the point where it cannot be removed using water alone.

In a spill response situation, special formulations of surface washing agents are applied to a substrate, acting as a pre-soak and flushing solution. This application softens and lifts weathered or heavy oils and enhances water flushing methods. The applied agent is allowed to sit for 45 minutes to 1 hour. After that time, water is sprayed from pressure hoses to release the oil from the often rocky substrate.

Use of surface washing agents has proven to be effective in many cases. Used on vegetation, surface washing agents were found to accelerate the recovery of leaf exchange functioning. Surface washing agents also facilitated the cleanup of shorelines affected by the *Exxon Valdez* and Portland Harbor oil spills.

When considering the use of surface washing agents, it is important to recognize some of their limitations. Although they can decrease the presence of shoreline oil, the rising and ebbing tide in marine environments generally recoats treated rocks with some amount of oil. Further, as indicated by their name, surface washing agents clean the surface only, leaving subsurface rocks and soil virtually untouched.

Surface washing agents are covered by Subpart J of the National Contingency Plan (NCP), which requires EPA to maintain a list of all dispersants, other chemicals, spill mitigating devices, and substances that are authorized for oil spill remediation. This list is known as the NCP Product Schedule. The Product Schedule lists dispersants, surface washing agents, surface collecting agents, bioremediation agents, and miscellaneous oil spill control agents.

To obtain more information about the NCP Product Schedule, including copies of the schedule itself and the technical notebook for schedule-listed products, please visit EPA's web site at ***www.epa.gov/oilspill/ prodover.htm***. To obtain a Subpart J product application package, please call the NCP Product Schedule Information Line at (202) 260-2342.

NON-FLOATING OILS RESPONSE TECHNIQUES

Presenter: Ed Owens, Polaris Applied Sciences

The fate and behavior of non-floating oils, or sinking oils, in freshwater is much more complex and therefore, the oils are much more difficult to contain and recover than most floating oils. Non-floating oils, such as bunker oil, asphaltine, and Group 5 oils, have a specific gravity greater than 1 and sink in fresh water. Because the density of water is not uniform throughout the water column, non-floating oils will sink to a level where their density is equal to that of the surrounding water–the greater the density, the deeper the oil sinks.

When oil sinks, it takes on three dimensional dynamics that are more complex than the two dimensional dynamics of floating oil. When oil sinks, it often breaks up into tiny droplets that disburse throughout the water column and almost never re-coalesce. Floating oils, on the other hand, can break into smaller slicks, move several miles apart, eventually find each other, and re-coalesce. These dynamics make sunken oil much more difficult to locate and therefore, much more difficult to contain and recover.

Dr. Owens presented techniques and processes for responding to non-floating oil spills and what to realistically expect when trying to contain and recover the oil. The first thing the responder should do when faced with a freshwater, non-floating oil spill is to determine whether the oil can be accurately located; how long it is likely to stay in the same location; whether it is likely to be eroded or buried; and what are its environmental effects. The responder should then determine whether to allow the oil to disburse naturally, contain and recover all of the oil, or contain and recover as much oil as possible.

The most common tools used to contain sunken oil are booms. A standard boom may be used for spills that are likely to extend to six feet or less in depth. Specialized booms such as split curtain booms and deep skirt booms, can contain oil up to depths of 10 feet and 12 feet, respectively. Nets and pneumatic barriers may also be used to contain sunken oil. Although nets and pneumatic barriers are often not as effective as booms, they are useful under some circumstances. Recovery mechanisms for submerged and sunken oil include skimmers, suction recovery dredges, adhesion recovery mechanisms, and weir devices. Both skimmers and suction recovery dredges act like vacuums to recover oil; however, suction recovery dredges are much more effective with large amounts of sunken oil that are subjected to low currents. Weir devices are almost never used, but can be used when sunken oil has pooled into a depression on the floor of the water body.

The following conditions affect an oil containment and recovery effort:

- Water depth and current action which affects oil distribution;
- Wave exposure which affects oil adhesion;
- Extent of the affected area;
- Amount of oil spilled; and
- Distance the spill is offshore.

It is important for those involved in a sunken oil spill operation to understand the complexities and limitations of oil containment and recovery of sunken oil. Responders of non-floating oil spills should keep in mind the following three principles:

1. Never expect to predict the movement or detect submerged oil.
2. Know that no practical containment measures for submerged oil have been demonstrated and it is not realistic to contain a plume.
3. Understand that realistic control and recovery of sunken oil is likely when the sunken oil is located.

CALIFORNIA TIRE FIRE HANDLED RAPIDLY BY OSC DAN SHANE

In the late fall of 1999, another tire fire occurred when lightning struck a large pile of tires–estimated at 40 million tires–in Westley, California.

On-Scene Coordinator (OSC) Dan Shane oversaw the response to the fire, which prompted officials to declare a state of emergency. Response included not only extinguishing the fire, but also skimming and booming the pyrolitic runoff from the piles. OSC Dan Shane and his team should be commended for their efforts.

Using these principles, a responder should be able to set practical, feasible, and reasonable goals and communicate reasonable expectations to all stakeholders.

NON-TRADITIONAL SPILLS: KIRBY TIRE INFERNO CASE STUDY
Presenter: Mark Durno, U.S. EPA Region 5

Inland oil spills are most often associated with pipelines, storage tanks, tank cars, trucks, and barges. However, some of the most devastating and complex inland oil spills are caused by non-traditional sources such as tire fires. Tire fires produce pyrolytic oil that can flow into groundwater, rivers, or streams. In addition to pyrolytic oil, tire fires produce a variety of other harmful substances such as arsenic, lead, zinc, sulfuric acid, benzene, benzo(a)pyrene, toluene, and carbon monoxide. These substances can pose threats of contamination through multiple pathways, including releases into the air, soil, and water. Tire fires can be particularly challenging because they are very hard to control and extinguish. A recent tire fire at the Kirby Tire Recycling facility in Sycamore, Ohio, illustrates the complexity of tire fires and their potential damage to the environment.

On Saturday, August 21, 1999, a massive fire broke out on the southwest portion of the Kirby Tire Recycling facility. At 1:30 a.m., state and

local responders arrived at the site and began using foam in an effort to extinguish the fire, but were unsuccessful. Consequently, they attempted to control the migration of the fire with massive amounts of water, and built a sand and soil berm to help contain the runoff. At 3:30 a.m., the Ohio EPA requested assistance from the U.S. EPA. U.S. EPA and contractors followed the smoke plume to the site. The plume was visible over 70 miles away. U.S. EPA arrived at 11:00 a.m., joining 21 fire departments, 30 pieces of heavy equipment, and various volunteer groups. EPA immediately became the lead responder and established a unified command. EPA promptly ceased the use of water, covered the fire with soil, and constructed a collection basin and water treatment system for the runoff.

EPA established a mobile command post and mobilized Emergency and Rapid Response Services (ERRS) contractors and team subcontractors and solicited local support. EPA also sought assistance on health and safety issues from the U.S. Coast Guard Strike Team. As the fire came under control, local fire departments were demobilized. Ohio EPA began sampling, air monitoring, monitoring the nearby Sycamore Creek for potential releases, and conducting daily public briefings.

The fire site was completely covered with soil, and a clay cover was installed to suffocate the fire and slow down water infiltration. The initial fire response was completed in three weeks. During this time, however, there were two releases of oil and dissolved contaminants into nearby Sycamore Creek. Fish kills were observed immediately and storms and drainage from the tire fire caused increased river levels and movement. Nearly seven miles of Sycamore Creek had been affected and the contamination was flowing towards the Sandusky River, which serves as a drinking water source for the city of Tiffin. The Ohio Department of Health posted an advisory.

Two siphon dams were installed to remove the floating oil and five aeration systems were placed upstream of the dam to vent off volatile organic compounds and increase the dissolved oxygen levels in the water. A secondary water treatment system was also established.

The tire fire response and the creek mitigation cost EPA approximately $2.05 million, including $1.25 million in Comprehensive Environmental Response, Compensation, and Recovery Act (CERCLA) funding and $800,000 Oil Pollution Act (OPA) funding. Either CERCLA or OPA funds can be used in tire fires that pose a threat to waterways. In this case, the initial response of covering the fire was funded under CERCLA; capping and creek mitigation was funded under OPA. EPA spent 24 days on site and used over 93,000 cubic yards of soil/clay for capping, treated over 517,000 gallons of water, and collected and disposed of 56,000 gallons of oil.

For more information, please contact Mark Durno at (440) 250-1743.

OIL SPILL LIABILITY TRUST FUND
Presenter: Commander Jeffrey Hammond, USCG

The Oil Spill Liability Trust Fund was established under the Oil Pollution Act of 1990 (OPA) to cover certain costs related to oil spill clean-up, damages from spills, and restoration costs. In a presentation to attendees of the Freshwater Spills Symposium, Commander Jeff Hammond, of the National Pollution Funds Center, explained how state agencies can gain access to the fund.

Under OPA, the owner or operator of a facility from which oil is discharged (also known as the responsible party) is liable for the costs associated with the containment or cleanup of the spill and any damages resulting from the spill. The federal government's first priority in paying the costs of a spill is to ensure that responsible parties pay to clean up their own oil releases. However, when the responsible party is unknown or refuses to pay, funds from the Oil Spill Liability Trust Fund can be used to cover

removal costs or damages resulting from discharges of oil.

The trust fund is replenished in a variety of ways including a five cent per barrel tax on oil, and costs and penalties from responsible parties. The fund can provide up to $1 billion for any one oil pollution incident, including up to $500 million for the initiation of natural resource damage assessments and claims in connection with any single incident.

The fund can provide:

- Funding for State removal action;
- Payments to Federal, State, and Indian tribe trustees to carry out natural resource damage assessments and restorations;
- Payment of claims for uncompensated removal costs and damages; and
- Research and development and other specific appropriations.

States can access the fund by contacting the federal on-scene coordinator for the spill, and having him or her approve a plan of action on how to proceed with the cleanup. The fund can be used if expenses are:

- Consistent with the on-scene coordinator's agreement;
- Documented;
- Appropriate; and
- Below an agreed upon ceiling.

In responding to questions asked by state representatives about hiring extra police to barricade spill areas, Commander Hammond said that as long as the extra police were over and above what the area normally needed, they could be compensated by fund monies.

For more information on how to use the fund, contact the National Pollution Funds Center at (202) 493-6999 or visit their web page at ***www.uscg.mil/hq/npfc/npfc.htm***.

REMEDIATION OF A FRESHWATER WETLAND IN THE PRESENCE AND ABSENCE OF WETLAND PLANTS THROUGH ENHANCED BIOSTIMULATION

Presenters: Al Venosa, U.S. EPA and Kenneth Lee, Fisheries and Oceans

Large oil spills can have devastating effects on wildlife and aquatic animals. Local ecological diversity can be seriously threatened and food chain interactions significantly disrupted for years following a catastrophe. Accelerated cleanup is vital and can prevent or mitigate further damage to exposed living populations, some of which may consume animals that may have bioconcentrated contaminating compounds. This project was undertaken to develop an understanding of how to implement bioremediation for cleanup of a catastrophic spill on the ecologically, environmentally, and economically important St. Lawrence River. The project is sponsored by the U.S. EPA and Fisheries and Oceans Canada.

The objectives of the field study were: 1) to determine the effectiveness of bioremediation with and without the confounding effects of wetland plants to restore the contaminated area to pre-spill conditions; 2) to determine the effect of phytoremediation to restore the impacted ecosystem; and 3) to evaluate the ecotoxicity of the oil exposed areas once bioremediation/ phytoremediation activities are in place.

Biostimulation is nutrient enrichment to enhance bioremediation. While it is a technique that can be successful in converting toxigenic compounds to nontoxic products, it is not without challenges. The washout rate for water-soluble nutrients can be very high in the intertidal zone of marine beaches or near the shore zone of rivers, where spill impacts usually occur. The effectiveness of biostimulation will depend on the characteristics of the contaminated environment.

Phytoremediation is the use of vegetation for the *in-situ* treatment of contaminated soil and

sediment. Phytoremediation has shown to be an effective and inexpensive cleanup option for certain hazardous wastes. However, little research has been conducted to assess the capacity of revegetation to enhance biodegradation. Phytoremediation may prove particularly effective when used in conjunction with biostimulation. The addition of fertilizers that enhance indigenous microbial activity will also stimulate plant biomass production and thereby increase the effectiveness of phytoremediation.

The experimental area consisted of 20 plots. The five treatments included a no oil control and four oiled treatments. Sampling began one week after oiling when the first nutrient application was made. The subsequent sampling intervals were at weeks 1, 2, 4, 6, 8, 12, 16, 21, and one to be conducted this spring, yielding a total of 10 sampling events.

Preliminary results indicated that slow but steady biodegradation occurred in all plots through the 21- week sampling period. The data suggests that the biodegradation was not enhanced by fertilizer addition. However, at and subsequent to week 12, additional samples were collected from the top centimeter surface of each plot. These samples revealed that an enhanced biodegradative removal occurred in the plots with cut plants that had received ammonium as the nitrogen source. The preliminary conclusion is that, if oil contaminating a wetland is able to penetrate below the surface substantially, oxygen availability to the oil degraders limits their productivity even if substantial nutrient concentrations exist in the sediment. These conclusions are preliminary, however, and should not be considered final until a more thorough analysis of all the data has been made.

For more information on this study, contact Al Venosa at ***venosa.albert@epa.gov*** or Kenneth Lee at ***leek@dfo-mpo.gc.ca***.

IN THE NEWS...

DOT AND EPA SIGN AGREEMENT

In a Memorandum of Understanding (MOU) dated February 4, 2000, from Richard B. Felder of the United States Department of Transportation (DOT) and Stephen D. Luftig of the United States Environmental Protection Agency (EPA), the two agencies clarified jurisdictional issues involved with breakout tanks/bulk oil storage tanks at transportation-related and non-transportation-related facilities, and established mutual goals for the EPA Office of Emergency and Remedial Response and DOT's Office of Pipeline Safety.

Existing statutes require EPA to regulate non-transportation related facilities; DOT has regulatory authority over transportation-related facilities. However, some facilities engage in both transportation and non-transportation related activities. Such a facility is defined as a "complex facility" and is subject to the dual jurisdiction of EPA and DOT. The most current MOU explains the discussions of the two agencies to improve communications and establish long term goals.

The MOU provides for improved communication through information sharing, sharing critiques and assessments of response efforts, inviting EPA staff toparticipate in a DOT pipeline safety committee, and having DOT staff participate in inland area committees to advise EPA on pipeline issues. The agencies will continue discussions involving jurisdictional issues between the two agencies. Future discussions will involve both regional and headquarters staff. The MOU also provides for cross training of EPA and DOT staff, and joint inspections
of facilities subject to dual jurisdiction.

The mutual long term goals of EPA and DOT are:

- To ensure that all breakout tanks/bulk storage containers are appropriately regulated under all applicable statutes,

- That all rules and enforcement practices of both agencies are substantially equivalent to the extent possible and,

- That as many facilities as possible are subject to single jurisdiction in the interest of regulatory efficiency.

It is the hope of EPA and DOT to encourage the implementation of tank management programs that exemplify “best practices/good engineering and operational practices” in the industry.

This MOU can be viewed at ***www.epa.gov/oilspill/ what.htm***.

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