



Update on Implementation of the Oil Pollution Act of 1990

Office of Emergency and Remedial Response
Emergency Response Division OS-210

Intermittent Bulletin
Volume 1 Number 2

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SPILL EXERCISE IN BALTIMORE

On February 21-22, 1991, the U.S. Coast Guard sponsored an On-Scene Coordinator/Regional Response Team (OSC/RRT) exercise in Baltimore, Maryland to test oil spill response plans and capabilities. Representatives of EPA Headquarters as well as Region III attended the exercise.

The scenario for the table-top exercise involved a collision in the Chesapeake Bay between an inbound tank vessel loaded with 200,000 barrels of oil and an outbound container vessel. Oil was spilled into the Bay from ruptured cargo wing tanks. An unknown number of containers were pushed over the side of the container vessel; one 5,000-gallon intermodal tank filled with methyl bromide also was thrown onto the deck of the tank vessel. Each vessel contacted Coast Guard Group Baltimore which in turn notified the Marine Safety Office. That office then notified the Federal pre-designated On-Scene Coordinator, the 5th Coast Guard District Operations Center, which got word to the Region III RRT, and the Maryland Department of the Environment.

Approximately 500 Federal, state, and local government personnel as well as representatives from the private sector participated in and observed the

exercise. As is typical in such exercises, separate rooms were provided for the OSC and his staff, the RRT, and the control group running the exercise. Everyone else was in a large meeting room where closed-circuit television monitors provided continuous video coverage of the activities in the three smaller rooms.

The issues addressed during the exercise included: various provisions of the Oil Pollution Act (OPA) such as responsible party liability and fund access; differing state liability limits; the use of a NOAA Scientific Support Coordinator; wildlife rescue, cleaning, and rehabilitation; the disposal of oil, oiled debris, and toxic wastes; the use of state and local resources (including a "mosquito" fleet of local fishermen); the OSC's role in directing a large spill cleanup by responsible parties; the use of dispersants, in-situ burning, and/or bioremediation; the emergency capabilities of local medical facilities; communications among responders and with ship crews; as well as public and media relations.

The OSC, RRT members, and others took part in a debriefing session that provided several lessons for future planning and response efforts. Among the lessons learned were the following: OSCs and other response officials could profit from training in stress management; planners need to include a fish and wildlife section in Area Contingency Plans; officials must provide accurate information to the public as quickly as possible without reaching any snap decisions about long-term impacts; and local barge and tugboat operators have developed their own contingency plans that could be useful to the OSC.

On March 13-14, a follow-up meeting was held in Rosslyn, Virginia to provide an opportunity for senior headquarters and regional officials of agencies represented on the NRT to see how their agencies might participate in the response to a catastrophic spill. Additional drills will be held in the future to test removal capability under Area Contingency Plans and tank vessel and facility response plans; such drills are required to be conducted periodically under OPA section 4202. ■

OIL SPILL PLANNING AND RESPONSE: PRACTICAL ISSUES

Preparing Area Contingency Plans or response plans for vessels and facilities under the new OPA requirements will not be easy. That's because there are many complicating factors in oil spill response and contingency planning.

First, "oil" itself may have different physical properties depending upon where it comes from and whether it has been processed into a useable end product. Oil right from the ground is called "crude" oil. Most people probably know that this crude oil requires further processing before consumers and businesses can use it. But what may not be commonly understood is that there are many types of crude oil, and these types can vary widely in consistency, appearance, and environmental persistence. Various refined oil products have their own physical properties. Chemical additives further alter the character of refined oil products.

These physical and chemical differences mean that teams planning for or responding to a release of oil must use the approach that is specifically tailored to the particular properties of the kind of oil released. For example, some types of spilled oil may respond well to the introduction of nutrients to stimulate biodegradation by indigenous microorganisms; other spilled products may require the introduction of new biodegrading species.

A second complicating factor is the environmental circumstance (weather conditions and affected areas) of the spill. For example, vessels outfitted with equipment to skim oil from the surface of the water are relatively ineffective in rough seas. A particular oil spill dispersant may be effective in treating a given type of crude oil but toxic to organisms in the environment where the spill occurred. Mechanical cleanup methods may be able to remove oil from a marsh but may do more harm than good to the marsh in the process. The challenge in planning for an oil spill response is that every spill is different and requires a unique approach to response.

In future editions of the *Update*, we will present articles on some critical issues affecting oil spill response and contingency planning, such as the types of oil and constituent chemicals in oil spills and technologies (new and existing) for combating oil pollution. ■

SAN DIEGO OIL SPILL CONFERENCE

The tradition of government and industry oil experts convening to discuss common concerns and to share information continued this year at the 12th Biennial International Oil Spill Conference.

The Conference, sponsored by EPA, the U.S. Coast Guard (USCG), and the American Petroleum Institute (API), was held in San Diego, California, on March 4-7, and had an unprecedented attendance of 2,400 people. This high attendance was a consequence of concern over the impact of two recent major events -- the 1989 oil spill in Prince William Sound, Alaska, and promulgation of the OPA -- on government organizations, industry, and the environment. The conference featured technical sessions, poster presentations, and films on oil pollution prevention schemes, the need to establish and implement comprehensive response and management plans, and the effect of increasing public concern and involvement in oil pollution. About 190 exhibitors provided displays and hands-on demonstrations of oil spill prevention and response products available from U.S. and foreign companies, institutions, and government agencies.

Events began with a plenary session in which representatives from EPA, the USCG, state agencies, and industry discussed the effects of the OPA and similar state legislation on the oil industry, cleanup contractors, and Federal and State enforcement agencies. After the opening plenary session, participants elected to attend any of 28 sessions on such topics as contingency planning, cleanup operations, response policy, case histories, damage assessment, dispersants, fate and effects, bioremediation, and modeling.

Four special panel discussions (on research and development issues, scientific/litigation conflicts in oil spill damage assessment and operational spill response, crisis communications, and oil spill management and decision-making) had lively audience participation. The 1989 oil spill in Prince William Sound has undeniably stimulated new public interest and involvement in oil pollution issues. During discussions of the spill, representatives of citizen groups often provided first-hand accounts and differing perspectives from the statements and opinions presented by EPA, the USCG, API, the National Oceanic and Atmospheric Administration, and others.

Off-site and conference demonstrations were well-attended additions to the Conference and offered

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San Diego Conference (Continued)...

valuable educational opportunities to attendees. Approximately 500 people attended a demonstration of state-of-the-art oil containment and recovery equipment and response systems, including dedicated oil spill response vessels, rapid response boats, skimmers, booms, and dispersant application techniques. Capping the week's events was a discussion of the new, industry-created, non-profit Marine Spill Response Corporation. ■

THE EXXON VALDEZ: LESSONS LEARNED

Two years ago, the 987-foot tank vessel *Exxon Valdez* struck Bligh Reef in Prince William Sound, Alaska. What followed was the largest oil spill in U.S. history. The oil slick spread over 3,000 square miles and onto 350 miles of beaches in Prince William Sound, one of the most pristine and magnificent natural areas of the country. Soon after the *Exxon Valdez* spill, the National Response Team (NRT), at the request of the President, began preparing a report to address the preparedness for, the response to, and early lessons learned from the incident. The Report was published two months after the spill, in May 1989. In the Report, the NRT concluded the following:

- **Preparedness was not adequate to address the spill.** Neither Exxon, nor the State of Alaska, nor the Federal government was adequately prepared for the spill. The various contingency plans in place at the time of the spill did not reference each other or establish a workable response command hierarchy.
- **Response efforts were slow and often insufficient.** The quantity of oil released in such a short time overwhelmed recovery and containment efforts. The isolation of the spill area hampered the movement of response and worker support equipment.
- **Compensation and liability provisions of existing statutes may have been insufficient.** If Exxon had not voluntarily assumed financial responsibility for cleaning up the spill, the Clean Water Act section 311(k) Trust Fund would have been rapidly depleted. (At the time of the spill, there was \$6.7 million in the Trust Fund.)

The Report also noted that the NRT was conducting a related study of the adequacy of oil spill contingency plans throughout the country under the

leadership of the Coast Guard. This study resulted in publication of the October 1990 *Oil Spill Contingency Planning Report* to the President.

The October 1990 Report looks at the *Exxon Valdez* incident several months into the cleanup and also analyzes the National Response System as a whole, including: the NRT; Regional Response Teams; the National Oil and Hazardous Substances Pollution Contingency Plan; Federal On-Scene Coordinators; Regional, State, and local personnel; and industry personnel. It examines the ability of the Nation's oil spill response system to address worst-case spills on the order of the *Exxon Valdez* incident. It also reviews the adequacy of response equipment and personnel, assesses the effectiveness of response training and exercises throughout the Regions, and reports on the organizational effectiveness of the National Response System. Topics and findings in the report include:

- **Prevention.** The best defense against spills is to prevent them from occurring in the first place. Unfortunately, budget restrictions in recent years have placed constraints on many prevention programs, both in the government and in industry.
- **Planning and Coordination.** The network of Federal, state, local, and industry organizations that participate in oil spill response cannot operate to maximum effectiveness without better coordination among the participants. This is particularly true of government and private sector coordination.
- **Catastrophic Spills.** According to the review of contingency planning conducted for the October 1990 Report, the ability of Federal, state, and local governments as well as the ability of industry to respond to a catastrophic spill is inadequate. The *Exxon Valdez* incident provided a graphic example of how the concern over one catastrophic spill, such as the *Amoco Cadiz* incident in 1978, can turn to complacency in the years following the spill, with the result that response capabilities are ineffective when the next catastrophic spill occurs.
- **Cumulative Effect of Responses.** During a single week in June 1989, Federal, state, local, and industry organizations and agencies responded effectively to three demanding oil spills across the country, all at a time when the *Exxon Valdez* response also was underway. However, those involved in responding to these major spills pointed out that these incidents pushed the response system to its limits. If the spills had

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The Exxon Valdez (Continued)...

occurred under less favorable circumstances, or if the response actions had gone on longer, some parts of the system might not have had the backup capability to perform a timely and adequate cleanup.

The OPA incorporates many of the recommendations of the two NRT studies. For example, the OPA provision requiring the establishment of Area Committees and Area Contingency Plans stems from the finding in both studies that increased planning and coordination are essential to improving the National Response System. ■

THE EXXON VALDEZ INCIDENT: WHAT IF THE OPA HAD EXISTED?

The *Exxon Valdez* oil spill predated enactment of the OPA by a year and a half. In fact, the *Exxon Valdez* incident is widely regarded as the primary event behind the development of many provisions of the OPA, its unanimous passage in Congress, and its eventual signing into law. But suppose the OPA had already been in effect as the *Exxon Valdez* pulled out of the Alyeska marine terminal on the evening of March 23, 1989 and made its way down Valdez Arm toward the more open waters of Prince William Sound. What might have been different?

Although it is impossible to say for sure, the OPA's many provisions specifically related to Prince William Sound (such as the requirement that pilots of tankers in Prince William Sound not be tanker crew members) might well have prevented the spill from occurring in the first place. However, even without these Prince William Sound provisions (which probably would not have been included in the OPA but for the *Exxon Valdez* spill), there are a number of more generally applicable OPA requirements that might have prevented the spill or at least diminished its size and the resulting damage.

Prevention

Several OPA provisions might lead to measures that, had they been in place, would have prevented the accident altogether. The forthcoming study on vessel traffic service systems required by OPA section 4107 might lead to improvements in vessel traffic operations that would have prevented the incident by keeping the *Exxon Valdez* away from Bligh Reef and other dangerous areas. Similarly, the study on tanker

navigation safety standards mandated by section 4111 might lead to the establishment of new standards on the size of and rest periods for tanker crews that could have prevented the incident. The small size of the *Exxon Valdez* crew and its fatigue after cargo loading have been identified as factors that may have contributed to the incident.

The OPA section 4115 requirement that most tankers be equipped with double hulls might have prevented the spill or resulted in a smaller spill. The USCG has estimated that a double hull on the *Exxon Valdez* would have reduced the size of the spill by 50 percent, or 5½ million gallons. Although this phased-in requirement would not have prohibited the use of a single hull on the *Exxon Valdez* until more than 19 years after OPA enactment, the tanker might have been built with a double hull in anticipation of the requirement. If the *Exxon Valdez* were still a single-hull tanker, the section 4116 requirement that it be escorted by at least two towing vessels and piloted by a person who is not a crew member might have prevented the incident by keeping the tanker away from dangerous areas.

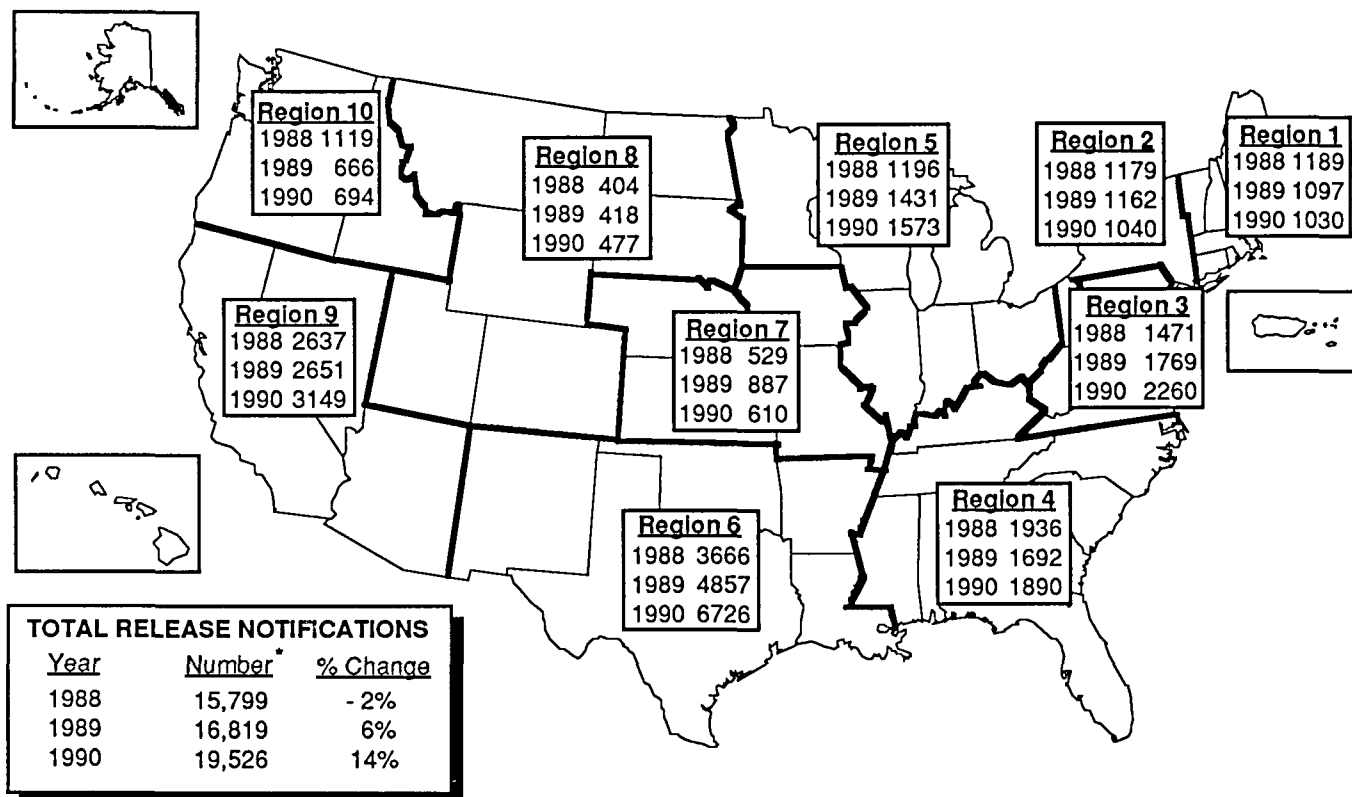
Response

Even if the *Exxon Valdez* had spilled oil, certain OPA provisions designed to improve spill response actions might have reduced the size and environmental impact of the spill. The OPA section 4202 requirements for an Area Contingency Plan and a tank vessel response plan designed to handle a worst-case spill (worse than the *Exxon Valdez* spill), and for the best available spill removal equipment to be kept on board on the tanker, might have resulted in quicker and more effective spill response.

Other section 4202 provisions requiring periodic inspection of removal equipment and unannounced drills of removal capability might have revealed inadequacies in response planning that could have been addressed before the *Exxon Valdez* spill occurred. In addition, the section 4201 requirement that the Federal government direct responses to spills that pose a "substantial threat to the public health or welfare" might have improved the initial response to the spill by clarifying the chain of command for spill response activities.

Because most of the provisions described here are not limited to any single area, their potential for preventing or mitigating the effects of another *Exxon Valdez* incident also applies to any major U.S. spill that might occur after the OPA is fully implemented. Thus, this brief look at "what might have been" bodes well for what might occur -- or be prevented -- in years to come. ■

OIL SPILL STATISTICS: RELEASE NOTIFICATIONS BY REGION, 1988-1990



* Total numbers include notifications where the Region was not provided.

Source: Emergency Response Notification System (ERNS); February 21, 1991.

The information presented in the map above is from the Emergency Response Notification System (ERNS), a national computer data base and retrieval system used to store information on releases of oil and hazardous substances. ERNS contains preliminary information on the date, cause, and size of a release; the response actions taken; the environmental media affected; and several other data items. The map shows the number of oil spills that have been reported to EPA Regions, the National Response Center, and the U.S. Coast Guard during the past three years. ERNS is continually updated as new reports are received and information is verified.

As the map shows, oil release notifications vary substantially from one EPA Region to another. In 1990, the number of these reports ranged from 477 in Region 8 to 6,726 in Region 6. Emergency responders use this type of information to determine where to concentrate emergency response efforts. For example, the highest number of notifications are consistently received in Region 6, which includes the States of Texas, Oklahoma, and Louisiana. These states also account for the greatest number of oil production facilities.

An overall increase in the number of notifications each year is apparent. The number of notifications increased six percent in 1989 and more than twice as much, 14 percent, in 1990. This rise, however, does not necessarily indicate an increase in the number of oil spills. More diligent reporting, greater awareness of Federal reporting requirements, and improved notification and data collection processes may account for at least part of the increase.

ERNS information can be used for different and more extensive analyses than that presented above. Data in ERNS are available to anyone interested in release notifications, such as emergency response personnel, government officials, the public, the media, educational institutions, and scientific organizations. Data may be provided in various forms, including computerized copies, printouts, or summarized release totals. General information and specific data may be obtained by calling the ERNS Project Manager at (202) 382-2342 or by writing to the U.S. Environmental Protection Agency, Freedom of Information Act Office (A-101), 401 M Street, S.W., Washington, D.C. 20460. ■

INTERIM GUIDELINES FOR BIOREMEDIATION SPILL RESPONSE PLANS

The identification and development of promising new technologies for the prevention and reduction of oil pollution are important parts of EPA's effort to implement the OPA. Bioremediation -- the use of microorganisms to degrade chemical substances (such as petroleum products and other hydrocarbons) -- is a technology that the Agency believes offers significant potential for addressing not only oil spills, but releases of hazardous substances as well. Given an appropriate environment and sufficient time, microorganisms have exhibited the ability to degrade a wide variety of chemical substances. The Bioremediation Action Committee (BAC) was created last year at the direction of EPA Administrator William K. Reilly to foster the development of bioremediation as a safe and effective solution to environmental problems. Within the BAC, six subcommittees have been established: Data Identification and Collection, Education, National Bioremediation Spill Response, Pollution Prevention, Research, and Treatability Protocol.

The Subcommittee on National Bioremediation Spill Response recently took the first steps toward its long-term goal of developing a national bioremediation response capability for oil spills. It has prepared interim guidelines to address the urgent need for guidance on the use of promising but not widely established bioremediation spill response measures, including the use of bioremediation agents listed on the Product Schedule under Subpart J of the National

Oil and Hazardous Substances Pollution Contingency Plan (NCP). (The Subpart J regulations are among those EPA is in the process of revising based on the OPA.) In preparing the guidelines, Royal Nadeau, of EPA's Environmental Response Team in Edison, New Jersey, who headed up the effort, drew on the expertise of Subcommittee members involved in bioremediation projects in Alaska's Prince William Sound and on research being conducted at the Agency's Office of Research and Development laboratories.

The new guidelines provide a general model on how to craft site-specific plans for using bioremediation agents that reflect the particular needs and characteristics of a given location. As the first major product of its kind, the interim guidelines have been forwarded to U.S. personnel in Saudi Arabia to assist in response to the Kuwaiti oil spill. In addition, the Subcommittee is conducting a pilot project in which the guidelines are being used to develop a site-specific bioremediation response plan for a particular area. For more information, please write to: Pamela Russell-Harris, Emergency Response Division (OS-210), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460. ■

COMMENTS ON THE UPDATE

Your comments on this new series of bulletins are welcome. Please contact the editor, Phyllis Anderson, at (202) 382-5614 or write to the Emergency Response Division (OS-210), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.



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