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Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress

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Summary

During the past two decades, while U.S. oil imports and consumption have steadily risen, oil spill incidents and the volume of oil spilled have not followed a similar course. In general, the annual number and volume of oil spills have shown declines — in some cases, dramatic declines. The 1989 *Exxon Valdez* spill in Alaskan waters played a large role in stimulating actions that contributed to this trend, particularly the decrease in the annual spill volumes. The *Exxon Valdez* spill highlighted the need for stronger legislation, inflamed public sentiment, and spurred Congress to enact comprehensive oil spill legislation, resulting in the Oil Pollution Act of 1990 (P.L. 101-380). This law expanded and clarified the authority of the federal government and created new oil spill prevention and preparedness requirements. Moreover, the 1990 legislation strengthened existing liability provisions, providing a greater deterrent against spills. After 1990, spill volume from oil tankers, the vessels that carry and have spilled the most oil, decreased significantly.

Considering that U.S. oil consumption and oil imports have steadily increased, the trend of declining spill incidents and volume in past years is noteworthy. Yet, recent annual data indicate that the overall decline of annual spill events may have stopped. Both consumption and imports are projected to maintain upward movement, and the United States is expected to increase the proportion of its imported oil. More oil-carrying vessels will be entering U.S. waters, and a higher percentage of transported oil will likely travel by vessel. The threat of oil spills may increase if more oil is being transported into and around the nation. This increased threat raises the question of whether U.S. officials have the necessary resources at hand to respond to a major spill. There is some concern that the favorable U.S. spill record has resulted in a loss of experienced personnel, capable of responding quickly and effectively to a major oil spill. Moreover, the level of funding required to respond to such a spill, particularly its aftermath, may be currently inadequate, according to U.S. Coast Guard reports.

No oil spill is entirely benign. Even a relatively minor spill, depending on the timing and location, can cause significant harm to individual organisms and entire populations. Marine mammals and bottom-dwelling species are especially vulnerable to a nearby spill. However, the effects of oil spills can vary greatly. Oil spills can cause impacts over a range of time scales, from only a few days to several years, or even decades in some cases.

This report reviews the history of oil spills, presents relevant data, and identifies the legal authorities governing oil spill prevention, response, and cleanup.

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Introduction

Oil is the dominant source of energy in the United States, supplying the nation with approximately 40% of its energy needs. Its use is widespread, providing fuel for the transportation, industrial, and residential sectors. Vast quantities of oil continuously enter the country via vessel or pipeline and are then transported to destinations throughout the nation. With such widespread use and nonstop movement, it is inevitable that some number of spills will occur. One continuing policy issue is whether the nation has the necessary resources and personnel in place to respond to a major spill.

Several major U.S. oil spills have had lasting repercussions that transcended the local environmental and economic effects. The most notable example is the 1989 *Exxon Valdez* spill, which released approximately 11 million gallons of crude oil into Prince William Sound, Alaska. The *Exxon Valdez* spill — the largest and most expensive oil spill in U.S. waters to date[1] — produced extensive consequences beyond Alaska. According to the National Academies of Science, the *Exxon Valdez* disaster caused "fundamental changes in the way the U.S. public thought about oil, the oil industry, and the transport of petroleum products by tankers ... 'big oil' was suddenly seen as a necessary evil, something to be feared and mistrusted."[2]

This report focuses on oil spills[3] in U.S. coastal waters.[4] The first section highlights background issues, including oil spill statistics and potential environmental impacts. The second section discusses the legal framework that governs oil spill prevention and response. The third section examines the threat of

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[1] Note that the *Exxon Valdez* spill ranks only 35th for spill volume on the list of international tanker spills since 1967. See International Tanker Owners Pollution Federation Limited, Historical Data, at [http://www.itopf.com/stats.html].

[2] See National Research Council (NRC), *Oil in the Sea III: Inputs, Fates, and Effects*, National Academies of Science (hereinafter "NRC report"), February 2003, p. 11.

[3] In this report, "oil" refers to crude oil and petroleum products, including gasoline and other fuels, unless stated otherwise.

[4] For the purposes of this report, "U.S. coastal waters" is defined broadly to encompass all waters between the shore and the boundary of the U.S. exclusive economic zone (200 nautical miles from shore). Note that in other documents, "coastal" may refer only to state waters, but in this report, the term "coastal waters" includes state and federally regulated waters.

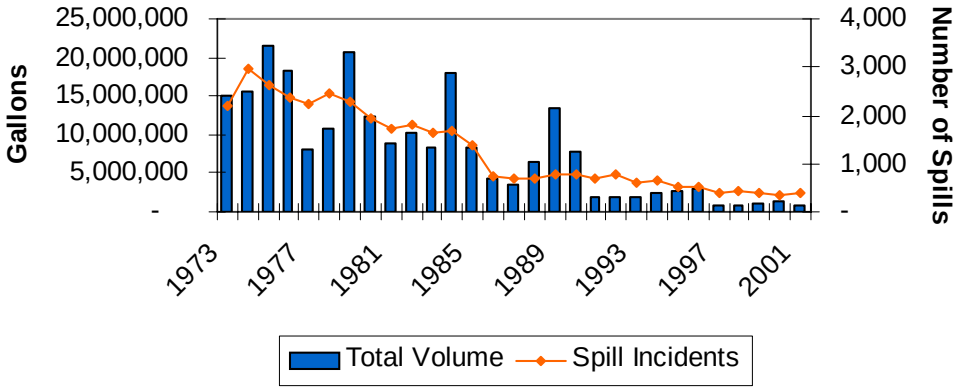
future oil spills in coastal waters and whether response personnel are prepared to respond to a major spill. The final section highlights legislative activity of the 109th Congress.

Background

Oil Spills in U.S. Coastal Waters

While U.S. oil imports and consumption have steadily risen, oil spill incidents and volume spilled have not followed a similar course (**Figure 1**). In general, oil spill events and the volume of oil released have declined over the past two decades; in some years, the declines have been dramatic.

Figure 1: Volume and Number of Oil Spills for Incidents Above 100 Gallons in U.S. Coastal Waters, 1973-2001



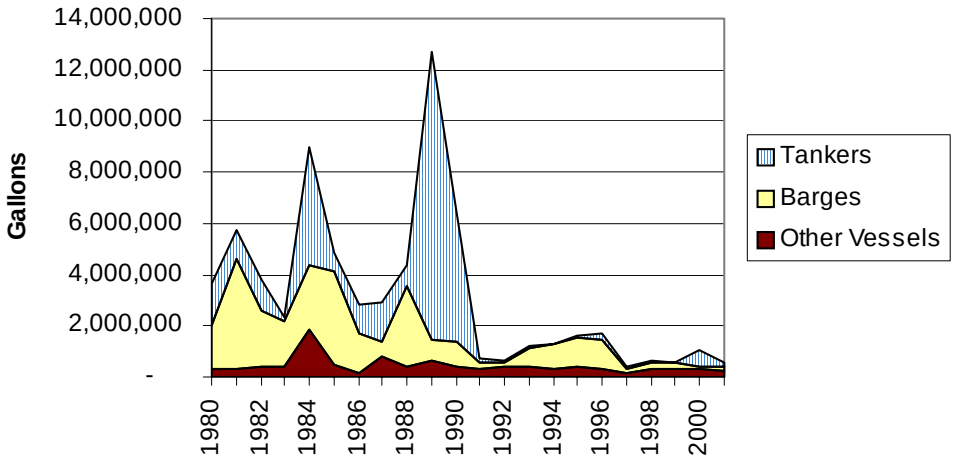
Source: Prepared by CRS with data from the United States Coast Guard (USCG) Oil Spill Compendium, available at [http://www.uscg.mil/hq/g-cp/comrel/factfile/index.htm].

The decline of spill incidents is likely related, at least in part, to international oil pollution standards that went into effect in 1983. These new standards were implemented in the United States by the Act to Prevent Pollution from Ships.[5] The substantial drop in the annual spill volume is most attributable to the decline in volume spilled by oil tankers and barges — the vessels that transport oil and have historically spilled the most oil. As shown in **Figure 2**, the volume of oil spilled from vessels in U.S. waters in the 1990s differed dramatically from the volume spilled in the 1980s. The *Exxon Valdez* spill of 1989 and the resulting Oil Pollution Act of 1990 (OPA) played key roles in the subsequent spill volume reduction. The 1990 Act (discussed below) made comprehensive changes to U.S. oil pollution law

[5] P.L. 96-478, 33 U.S.C. 1901, et seq. These standards and the U.S. law are discussed later in this report.

by expanding federal response authority and increasing spill liability. The high costs associated with the *Exxon Valdez* spill,[6] and the threat of broad liability imposed by OPA (in some scenarios, unlimited liability), have likely been the central drivers for the spill volume decline seen in the 1990s.

Figure 2: Volume of Oil Spilled from Vessels into U.S. Coastal Waters, 1980-2001



Source: Prepared by CRS with data from the USCG Oil Spill Compendium.

The **Appendix** to this report contains additional information, including a further breakdown of oil inputs in coastal waters by source category. The Appendix also provides oil spill data and analysis specific to onshore facilities and pipelines, as well as offshore oil extraction operations.

Impacts of Oil Spills in Aquatic Environments

No oil spill is entirely benign. Depending on timing and location, even a relatively minor spill can cause significant harm to individual organisms and entire populations.[7] Oil spills can cause impacts over a range of time scales, from days to years, or even decades for certain spills. Impacts are typically divided into acute (short-term) and chronic (long-term) effects. Both types are part of a complicated and often controversial equation that is addressed after an oil spill: ecosystem recovery.

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[6] As of September 2006, Exxon has paid approximately $3 billion for the spill: $2 billion for cleanup activities and $900 million in civil settlement (with a $100 million re-opener clause) for natural resource damages. A dispute over the amount of punitive damages is still in the court system. This amount could be as high as $5 billion. See Exxon Valdez Trustee Oil Spill Trustee Council, at [http://www.evostc.state.ak.us/History/settlement_detail.htm].

[7] NRC report, p. 4.

Acute Impacts. Depending on the toxicity and concentration of the spill, acute exposure to oil spills can kill various organisms and cause the following debilitating (but not necessarily lethal) effects:[8]

- reduced reproduction,
- stunted development,
- impaired feeding mechanisms, and
- decreased defense from disease.

In addition to the impacts to individual organisms, oil spills can lead to a disruption of the structure and function of the ecosystem. Certain habitats — such as coral reefs, mangrove swamps, and salt marshes — are especially vulnerable, because the physical structure of the habitats depends upon living organisms. These potential acute effects to individual organisms and marine ecosystems have been "unambiguously established" by laboratory studies and well-studied spills, such as the *Exxon Valdez*.[9]

Chronic Impacts. Long-term, chronic exposure typically occurs from continuous oil releases — leaking pipelines, offshore production discharges, and non-point sources (e.g., urban runoff). Although spills are normally associated with acute impacts, some oil spills have also demonstrated chronic exposure and effects.[10] There is increasing evidence that chronic, low-level exposures to oil contaminants can significantly affect the survival and reproductive success of marine birds and mammals.[11] However, because of the complexity of factors, including a longer time period and presence of other pollutants, determining the precise effects on species and ecosystems due to chronic oil exposure in a particular locale is difficult for scientists. As a result, studies involving chronic effects are often met with debate and some controversy.

Ecosystem Recovery. Ecosystem recovery after an oil spill is difficult to define, because interested parties often have differing opinions. At one end of the spectrum, local groups may demand that the ecosystem be returned to pre-spill conditions. However, according to the National Oceanographic Atmospheric Administration (NOAA), scientists do not define recovery as a return to the precise conditions that existed before the oil spill. Recovery, according to NOAA, is "the act, process or instance of bringing a habitat or ecosystem back to a *normal* condition; or to save it from loss and restore it to usefulness."[12] This definition leaves room for site-specific interpretation, which, in the case of the *Exxon Valdez* spill and cleanup, continues to generate considerable argument.

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[8] These "sub-lethal" effects can occur at concentrations that are several orders of magnitude lower than concentrations that cause death. NRC report, p. 127.

[9] NRC report, p. 120.

[10] NRC report, p. 121.

[11] NRC report, p. 134.

[12] Emphasis added. NOAA, Prince William's Oily Mess: A Tale of Recovery, (online document) at [http://www.oceanservice.noaa.gov].

Economic Costs of Oil Spills

The economic costs that can result from an oil spill can be broken into three categories: cleanup expenses, natural resource damages, and the various economic losses incurred by the affected community or individuals.

Cleanup Costs. The cleanup costs of an oil spill can vary greatly and are influenced by a mix of factors: location characteristics, oil type, and oil volume. Location is generally considered the most important factor because it involves multiple variables. Areas with less water movement, such as marshlands, will generally cost more to clean up than open water. Tourist destinations or sensitive habitats, such as coral reefs, will likely require more stringent cleanup standards, thus increasing the costs. The political and social culture at the spill site plays a part as well. For instance, major oil spills, especially ones that affect shoreline ecosystems, are often met with extensive media coverage, placing pressure on parties to take action. Coupled with this pressure, authorities (federal or state) at these locations may require extensive oil spill response requirements, which can influence cleanup cost. The United States likely meets this description, because its average cleanup cost (per barrel of oil spilled) is considerably higher than in other parts of the world.[13]

The more persistent and viscous oil types, such as heavy crude, are more expensive to clean up. Gasoline and other lighter refined products may require only minimal cleanup action, because the spilled material will evaporate or disperse relatively quickly.

Compared with other factors, spill volume is less important. A major spill away from shore will likely cost considerably less than a minor spill in a sensitive location. Certainly, the amount of oil spilled affects cleanup costs, because, all things being equal, a larger spill will require a larger and more expensive cleanup effort. However, the relationship between cleanup costs and spill volume is not linear. Cleaning up a smaller spill is likely to cost more than a larger spill on a per-gallon basis.[14]

Natural Resources Damages. This category of costs relates to the environmental impacts caused by an oil spill. Pursuant to OPA, the party responsible for an oil spill is liable for any loss of natural resources (fish, animals) and the services provided by the resource (drinking water, recreation).

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[13] The average cleanup cost is three times higher in the United States than in Europe (based on 1997 data and *excluding* the Exxon Valdez costs). See, Etkin, Dagmar, "Estimating Cleanup Costs for Oil Spills," paper presented at the 1999 International Oil Spill Conference, 1999, citing data from the Oil Spill Intelligence Report International Oil Spill Database.

[14] This is primarily due to the fact that a spill of any size (e.g., in a sensitive area) will require that equipment and response experts be sent to the scene. See Etkin, Dagmar, "Estimating Cleanup Costs for Oil Spills," paper presented at the 1999 International Oil Spill Conference, 1999, p. 5.

When a spill occurs, government representatives, known as *trustees*, conduct a natural resource damage assessment to determine the extent of the harm. Natural resource damage assessments have generated controversy in recent years, particularly regarding the measurement of a resource's passive-use value. A passive-use value (as opposed to a resource's market value, such as commercial fishing or recreation) includes the preference of people who believe the resource should be protected for its own sake or preserved for future generations. Many have argued that including passive-use value in damage assessment leads to arbitrary or artificially high damages. The counter-argument is that passive-use values must be included to assess the full loss of a resource. This view has been affirmed in several court decisions.[15] However, putting a precise dollar figure on the lost passive-use of a resource can be challenging, and the primary method employed — contingent valuation — is often criticized. The contingent valuation method is essentially a survey in which participants are asked, for example, how much they would pay (hypothetically) to protect a resource. For more information on this method, see CRS Report RL30242, *Natural Resources: Assessing Nonmarket Values through Contingent Valuation*, by Joseph T. Breedlove and Ross W. Gorte.

Other Economic Costs. Oil spills can generate costs other than response expenses or damages to natural resources. An oil spill can disrupt business activity near the spill, particularly businesses that count on the reputation of the local environment. For example, the local tourist industry may be affected. In some cases, a well-publicized oil spill can weaken the tourist industry near the spill site, regardless of the actual threat to human health created by the spill.

Local infrastructure and services can be disrupted by an oil spill. Port and harbor operations may be interrupted, altering the flow of trade goods. Power plants that use cooling water systems may need to temporarily cease operations. For example, the Salem Nuclear Plant — the second largest nuclear plant in the United States — was forced to halt activity due to a substantial oil spill (more than 250,000 gallons) in the Delaware River in November 2004. The plant is seeking reimbursement for $57 million in lost profits.[16]

Oil Spill Governance

When the *Exxon Valdez* ran aground in March 1989, there were multiple federal statutes, state statutes, and international conventions that dealt with oil discharges. The governing framework for oil spills in the United States remains a combination of federal, state, and international authorities. Within this framework, several federal agencies have the authority to implement oil spill regulations. The framework and

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[15] See, for exampple, *State of Ohio v. United States Department of the Interior*, 880 F.2d 432, 464 (D.C. Cir. 1989).

[16] Testimony of Rear Admiral Thomas Gilmour (U.S. Coast Guard), in U.S. Congress, House Committee on Transportation and Infrastructure Subcommittee on Coast Guard and Maritime Transportation, *Implementation of the Oil Pollution Act*, hearings, 109th Cong., 2nd Sess., Apr. 27, 2006.

primary federal funding process (the Oil Spill Liability Trust Fund) used to respond oil spills are described below.

Federal Authorities: Before and After the *Exxon Valdez* Spill

The following list highlights the primary federal authorities that were in effect when the *Exxon Valdez* spill occurred in 1989:

- Clean Water Act (1972):[17] The Clean Water Act (CWA) represented the broadest authority for addressing oil spills at the time of the *Exxon Valdez* spill. Section 311 of the CWA established requirements for oil spill reporting, response, and liability. The act also created a fund (311 Fund), maintained by federal appropriations, that could be used for cleanup and natural resource restoration.

- Deepwater Port Act (1974):[18] This statute addressed oil spills and liability issues at deepwater oil ports. The act also set up the Deepwater Port Fund to provide for prompt cleanup and compensate damages above liability limits. The fund was financed by a per-gallon tax on oil transferred at a deepwater port.

- Trans-Alaska Pipeline Authorization Act (1973):[19] This act covered oil spills and liability relating to the Trans-Alaska Pipeline System (TAPS). Although the pipeline is constructed over land, spills from it could reach coastal waters via inland rivers. The act created a trust fund, financed through a lessee fee, that could be used to respond to spills and damages from the pipeline.

- Outer Continental Shelf Lands Act Amendments (1978):[20] This act established an oil spill liability structure and rules for oil extraction facilities in federal offshore waters. With this legislation, Congress created the Offshore Pollution Fund, financed by a per-gallon fee on produced oil, that could be used for oil spill cleanup and damages.

- National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The NCP was first established in 1968, after U.S. policymakers observed the response to a 37-million-gallon oil tanker spill (*Torrey Canyon*) off the coast of England.[21] The NCP contains the federal government's procedures for responding to oil spills and

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[17] The official statutory name is the Federal Water Pollution Control Act, P.L. 92-500, as amended, codified at 33 U.S.C. 1251, et seq.

[18] P.L. 93-627, codified at 33 U.S.C. 1501, et seq.

[19] P.L. 93-153, codified at 43 U.S.C. 1651, et seq.

[20] P.L. 95-372, codified at 43 U.S.C. 1801, et seq.

[21] See EPA "National Contingency Plan Overview" at [http://www.epa.gov/oilspill/ncpover.htm].

hazardous substance releases.[22] Subsequent laws have amended the NCP, including the CWA in 1972 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) in 1980.

After the *Exxon Valdez* spill, many observers[23] described the above legal collection as an ineffective patchwork. Arguably, each law had perceived shortcomings (discussed below in the context of post-*Exxon Valdez* legislation), and none provided comprehensive oil spill coverage.

For more than 15 years prior to the *Exxon Valdez* incident, Congress made attempts to enact a unified oil pollution law. Several contentious issues produced deadlocks, hindering the passage of legislation. One of the central points of debate, state preemption, dealt with whether a federal oil spill law should limit a state's ability to impose stricter requirements, particularly unlimited liability. Other liability questions also generated debate. For example, if an oil spill occurred, should the owner of the cargo (i.e., oil) be held liable, as was the ship owner/operator? Another point of contention was whether oil-carrying vessels should be required to have double hulls. Although proponents argued that a second hull would help prevent oil spills, the shipping industry raised concern that implementing such a mandate would disrupt oil transportation and potentially affect the national economy. A final issue involved the interaction between domestic legislation (federal and state) and international measures. Some were concerned that if the United States became a party to certain international agreements under consideration in the 1980s,[24] the international standards would preempt federal and state laws, especially those establishing liability limits. Proponents argued that these concerns were overstated, and stressed that joining the international agreements was especially important for the United States because of the international nature of oil transportation and associated pollution.

Following the 1989 *Exxon Valdez* spill, Members faced great pressure to overcome the disputes discussed above.[25] The spill highlighted the inadequacies of the existing coverage and generated public outrage. The end result was the Oil Pollution Act of 1990 (OPA)[26] — the first comprehensive law to specifically address oil pollution to waterways and coastlines of the United States.

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[22] The NCP is codified at 40 CFR Part 300.

[23] See, for example, U.S. Congress, House Committee on Merchant Marine and Fisheries, Report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, 1989, H.Rept. 101-242, Part 2, 101st Cong., 1st sess., p. 32.

[24] The two agreements under consideration were the 1984 Protocols to the International Convention on Civil Liability for Oil Pollution Damage and the Protocols to the International Fund for Compensation for Oil Pollution Damages.

[25] A handful of other oil spills followed the *Exxon Valdez* in 1989 and 1990 (e.g.,the *Mega Borg* spilled 5 million gallons of oil in the Gulf of Mexico), further spurring congressional action.

[26] P.L. 101-380, primarily codified at U.S.C. 2701, et seq.

Oil Pollution Act of 1990. With the enactment of OPA on August 18, 1990, Congress consolidated the existing federal oil spill laws under one program. The 1990 law expanded the existing liability provisions within the CWA and created new free-standing requirements regarding oil spill prevention and response. Key OPA provisions are discussed below.

Spill Response Authority. When responding to a spill, many considered the lines of responsibility under the pre-OPA regime to be unclear,[27] with too much reliance on spillers to perform proper cleanup.[28] OPA strengthened and clarified the federal government's role in oil spill response and cleanup. OPA Section 4201 amended Section 311(c) of the CWA to provide the President (delegated to the USCG or EPA) with three options: perform cleanup immediately ("federalize" the spill), monitor the response efforts of the spiller, or direct the spiller's cleanup activities. The revised response authorities addressed concerns "that precious time would be lost while waiting for the spiller to marshall its cleanup forces."[29]

The federal government determines the level of cleanup required. Although the federal government must consult with designated trustees of natural resources and the governor of the state affected by the spill, the decision that cleanup is completed and can be ended rests with the federal government. States may require further work, but without the support of federal funding.[30]

National Contingency Plan. OPA expanded the role and breadth of the NCP. The 1990 law established a multi-layered planning and response system to improve preparedness and response to spills in marine environments.[31] Among other things, the act also required the President to establish procedures and standards (as part of the NCP) for responding to worst-case oil spill scenarios.[32]

Tank Vessel and Facility Response Plans. As a component of the enhanced NCP, OPA amended the CWA to require that U.S. tank vessels, offshore facilities, and certain onshore facilities[33] prepare and submit oil spill response plans

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[27] See, for example, Wilkinson, Cynthia et al., "Slick Work: An Analysis of the Oil Pollution Act of 1990," *Journal of Energy, Natural Resources, and Environmental Law*, 12 (1992), p. 190.

[28] See, Grumbles, Benjamin, and Manley, Joan, "The Oil Pollution Act of 1990: Legislation in the Wake of a Crisis," *Natural Resources and Environment*, 10:2 (1995), p. 38.

[29] U.S. Congress, House Committee on Merchant Marine and Fisheries, Report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, 1989, H.Rept. 101-242, Part 2, 101st Cong., 1st sess., p. 84.

[30] OPA Section 1011.

[31] OPA Section 4202, amending Section 311(j) of the CWA.

[32] OPA Section 4201(b), amending Section 311(d)(2)(J) of the CWA.

[33] The response plan requirement is applicable only to an onshore facility that, because of its location, could reasonably be expected to cause substantial harm to the environment by discharging into navigable waters, adjoining shorelines, or the exclusive economic zone.

(continued...)

to the relevant federal agency. In general, vessels and facilities are prohibited from handling, storing, or transporting oil if they do not have a plan approved by (or submitted to) the appropriate agency[34] (see **Table 1)**.

The plans should, among other things, identify how the owner or operator of a vessel or facility would respond to a worst-case scenario spill. Congress did not intend for every vessel to have onboard all the personnel and equipment needed to respond to a worst-case spill, but vessels must have a plan and procedures to call upon — typically through a contractual relationship — the necessary equipment and personnel for responding to a worst-case spill.[35]

In 2004, Congress enacted an amendment requiring non-tank vessels (i.e., ships carrying oil for their own fuel use) over 400 gross tons to prepare and submit a vessel response plan.[36] Congress reasoned that many non-tank vessels have as much oil onboard as small tank vessels, thus presenting a comparable risk from an oil spill. Moreover, the international standards for oil spill prevention[37] apply to tanker and non-tanker vessels alike. Thus, the 2004 amendment brought the U.S. law more in line with international provisions.

Double-Hull Design for Vessels. The issue of double hulls received considerable debate for many years prior to OPA, and it was one of the stumbling blocks for unified oil spill legislation. Proponents maintained that double-hull construction provides extra protection if a vessel becomes damaged.[38] However, opponents argued that a double-hulled vessel might cause stability problems if an accident occurred, thus negating the benefits.[39] Stakeholders also highlighted the impacts that a double-hull requirement would entail for the shipping industry (e.g.,

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[33] (...continued)
CWA Section 311(j)(5)(iii).

[34] OPA Section 4202, amending Section 311(j)(5)(E) of the CWA.

[35] U.S. Congress, House Committee on Merchant Marine and Fisheries, Report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, 1989, H.Rept. 101-242, Part 2, 101st Cong., 1st sess., p. 87. OPA Section 4202, amending Section 311(j)(5)(C)(iii) of the CWA.

[36] Amendments Relating to the Oil Pollution Act of 1990, Title VII of Coast Guard and Maritime Transportation Act of 2004 (P.L. 108-293), codified at 33 U.S.C. 1321.

[37] Primarily the shipboard oil pollution emergency plans required by MARPOL 73/78, discussed later in this report.

[38] A study from the National Academy of Sciences reached this conclusion in 1999. See National Research Council, *Double hull Tanker Legislation: An Assessment of the Oil Pollution Act of 1990*, National Academies of Science, 1999, p. 144.

[39] Opponents maintained that if water entered the space between hulls, the ship could become unstable, hindering salvage and possibly capsizing. Wilkinson, Cynthia et al., "Slick Work: An Analysis of the Oil Pollution Act of 1990," *Journal of Energy, Natural Resources, and Environmental Law*, 12 (1992), p. 196.

cost and time of retrofitting, ship availability).[40] The OPA requirements for double hulls reflected some of these concerns.

The act required new vessels carrying oil and operating in U.S. waters to have double hulls.[41] However, OPA provided certain exceptions, depending on the size of the vessel (e.g., less than 5,000 gross tons)[42] and its particular use (e.g., lightering).[43] For older vessels, OPA established a staggered retrofitting schedule, based on vessel age and size. Many of the age-based deadlines have already passed. By 2015 at the latest, the law requires that all oil-carrying vessels operating in U.S. waters have double hulls.

Liability Issues. OPA unified the liability provisions of existing oil spill law, creating a freestanding liability regime. Section 1002 states that responsible parties are liable for any discharge of oil (or threat of discharge) from a vessel or facility[44] to navigable waters, adjoining shorelines, or the exclusive economic zone[45] of the United States (i.e., 200 miles beyond the shore).

Regarding the existing oil spill law prior to OPA, Congress recognized that "there is no comprehensive legislation in place that promptly and adequately compensates those who suffer other types of economic loss as a result of an oil pollution incident."[46] OPA broadened the scope of damages (i.e., costs) for which an oil spiller would be liable. Under OPA, a responsible party is liable for all cleanup costs incurred, not only by a government entity, but also by a private party.[47] In addition to cleanup costs, OPA significantly increased the range of liable damages to include the following:

- injury to natural resources,
- loss of personal property (and resultant economic losses),
- loss of subsistence use of natural resources,

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[40] U.S. Congress, Conference Report accompanying H.R. 1465, Oil Pollution Act of 1990, 1990, Conf.Rept. 101-653, 101st Cong., 2nd sess., pp. 140-141.

[41] OPA Section 4115, amending 46 U.S.C. 3703.

[42] This exception applied to many inland barges.

[43] Lightering is the process of transferring oil from a large vessel to a smaller vessel. This common practice occurs in designated areas that are typically many miles away from shore.

[44] The definition of "facility" is broadly worded and includes pipelines and motor vehicles. OPA Section 1001.

[45] Under the pre-OPA regime (primarily the CWA), a discharge 12 miles beyond shore had to affect the natural resources before liability attached. Under OPA Section 1002, the discharge itself triggers liability. Wilkinson, Cynthia et al., "Slick Work: An Analysis of the Oil Pollution Act of 1990," *Journal of Energy, Natural Resources, and Environmental Law*, 12 (1992), p. 201.

[46] U.S. Congress, House Committee on Merchant Marine and Fisheries, Report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, 1989, H.Rept. 101-242, Part 2, 101st Cong., 1st sess., p. 31.

[47] OPA Section 1002(b)(1).

- lost revenues resulting from destruction of property or natural resource injury,
- lost profits resulting from property loss or natural resource injury; and
- costs of providing extra public services during or after spill response.[48]

OPA provided several defenses from liability: act of God, act of war, and act or omission of a third party. Although these defenses are more narrow than those for oil spills under the pre-OPA framework (primarily the CWA),[49] they are similar to those of the Superfund statute,[50] established in 1980 for releases of hazardous substances.

Except for certain behavior, including acts of gross negligence or willful misconduct,[51] OPA set liability limits (or caps) for cleanup costs and other damages. Liability limits for vessels are based on vessel carrying capacity, generally $1,200 per gross ton. As an example, the liability limit for the 2004 *Athos* tanker spill in Delaware River was approximately $45 million.[52] Offshore facility liability is capped at $75 million; onshore facilities and deepwater port liability is limited to $350 million. These limits are much higher than under the pre-OPA liability structure.

OPA required the President to issue regulations to adjust the liability limits at least every three years to take into account changes in the consumer price index (CPI). Despite this requirement, adjustments to liability limits were not made until July 2006. The Coast Guard and Maritime Transportation Act of 2006 (P.L. 109-241) amended OPA, increasing limits to $1,900/gross ton for double-hulled vessels and $3,000/gross ton for single-hulled vessels.

The Oil Spill Liability Trust Fund. Prior to OPA, federal funding for oil spill response was generally considered inadequate,[53] and damage recovery was

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[48] OPA Section 1002(b)(2).

[49] Wilkinson, Cynthia et al., "Slick Work: An Analysis of the Oil Pollution Act of 1990," *Journal of Energy, Natural Resources, and Environmental Law*, 12 (1992), p. 205.

[50] Section 107(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, commonly known as Superfund), P.L. 96-510.

[51] In addition, liability limits are unavailable if the violation of a federal safety, construction, or operating requirement proximately caused the spill. Spillers must also report the incident and cooperate with response officials to take advantage of the liability caps. OPA Section 1004(c).

[52] 37,895 gross tons x $1,200/ton = $45.47 million. Vessel data from United States Coast Guard, *Investigation into the Striking of Submerged Objects by the Tank Vessel Athos I in the Delaware River on November 26, 2004 with a Major Discharge of Oil*, January 2006, p. 4.

[53] Wilkinson, Cynthia et al., "Slick Work: An Analysis of the Oil Pollution Act of 1990," *Journal of Energy, Natural Resources, and Environmental Law*, 12 (1992), p. 188.

difficult for private parties.[54] To help address these issues, Congress established the Oil Spill Liability Trust Fund (OSLTF).

Pursuant to Executive Order (EO) 12777, the USCG created the National Pollution Funds Center (NPFC) to manage the trust fund in 1991. The fund may be used for several purposes:

- prompt payment of costs for responding to and removing oil spills;
- payment of the costs incurred by the federal and state trustees of natural resources for assessing the injuries to natural resources caused by an oil spill, and developing and implementing the plans to restore or replace the injured natural resources;
- payment of parties' claims for uncompensated removal costs, and for uncompensated damages (e.g., financial losses of fishermen, hotels, and beachfront businesses);
- payment for the net loss of government revenue, and for increased public services by a state or its political subdivisions; and
- payment of federal administrative and operational costs, including research and development, and $25 million per year for the Coast Guard's operating expenses.

Although Congress created the OSLTF in 1986,[55] Congress did not authorize its use or provide its funding until after the *Exxon Valdez* incident. In 1990, OPA provided the statutory authorization necessary to put the fund in motion. Through OPA, Congress transferred other federal liability funds[56] into the OSLTF. In complementary legislation, Congress imposed a 5-cent-per-barrel tax on the oil industry to support the fund.[57] Collection of this fee ceased on December 31, 1994, due to a sunset provision in the law. However, in April 2006, the tax resumed as required by the Energy Policy Act of 2005 (P.L. 109-58). The level of funding in the trust fund is discussed below.

Financial Responsibility. To preserve the trust fund and ensure that responsible parties can be held accountable for oil spill cleanup and damages, OPA requires that vessels maintain evidence of financial responsibility (e.g., insurance).

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[54] U.S. Congress, House Committee on Merchant Marine and Fisheries, Report accompanying H.R. 1465, Oil Pollution Prevention, Removal, Liability, and Compensation Act of 1989, 1989, H.Rept. 101-242, Part 2, 101st Cong., 1st sess., p. 35.

[55] Omnibus Budget Reconciliation Act of 1986 (P.L. 99-510).

[56] The CWA Section 311(k) revolving fund; the Deepwater Port Liability Fund; the Trans-Alaska Pipeline Liability Fund; and the Offshore Oil Pollution Compensation Fund.

[57] Omnibus Budget Reconciliation Act of 1989 (P.L. 101-239). Other revenue sources for the fund include interest on the fund, cost recovery from the parties responsible for the spills, and any fines or civil penalties collected.

The National Pollution Funds Center carries out this mandate by issuing Certificates of Financial Responsibility (COFRs) to shipping vessel owners when owners demonstrate the ability to pay for oil spill cleanup and damages. In general, vessels over 300 gross tons are required to have a valid COFR to operate in U.S. waters.

Other Federal Laws. Although OPA is the primary domestic legislation for oil spills, other federal laws contain provisions that relate to oil spills. Many of these provisions were in place before OPA. The following list is not all-inclusive, but it highlights the main requirements authorized by laws other than OPA.

Clean Water Act. Section 311(j)(1) of the 1972 CWA called for regulations to prevent the discharge of oil from vessels, onshore facilities, and offshore facilities. Pursuant to this statutory requirement,[58] the EPA crafted regulations[59] for spill prevention control and countermeasure (SPCC) plans in 1973, some of which are scheduled to go into effect October 31, 2007.[60] SPCC plans address the "procedures, methods, and equipment and other requirements for equipment to prevent discharges."[61] The EPA's SPCC plans apply only to non-transportation, onshore facilities that exceed a certain oil storage capacity and that, in the event of a spill, can be reasonably expected, because of their location, to produce an oil discharge that would reach navigable waters or adjoining shorelines of the United States.[62] Unlike other oil spill preparedness provisions, SPCC plans focus more on prevention than on response activities, requiring, for example, secondary containment (e.g., dikes, berms) for oil-storage equipment.

Outer Continental Shelf Lands Act. The primary federal law governing oil development and operations in federal waters is the Outer Continental Shelf Lands Act (OCSLA) of 1953 and its subsequent amendments. The OCSLA provided the foundation for regulations (30 CFR Part 250) that are implemented by the Minerals Management Service (MMS). Sections of the MMS regulations address oil spill prevention and response issues by requiring that various equipment and procedures be in place at offshore facilities. For more information, see CRS Report RL33404, *Offshore Oil and Gas Development: Legal Framework*, by Jon O. Shimabukuro.

Pipeline Legislation. The U.S. pipeline network is extensive. Recent estimates indicate there are more than 33,000 miles of pipelines just in the Gulf of

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[58] And in accordance with Executive Order 11735 (Aug. 3, 1973), granting EPA the authority to regulate non-transportation-related onshore and offshore facilities.

[59] U.S. EPA, "Oil Pollution Prevention: Non-Transportation Related Onshore and Offshore Facilities," *Federal Register*, vol. 38, no. 237 (Dec. 11, 1973), pp. 34164-34170.

[60] EPA offered several regulatory amendments after the 1973 rulemaking. Following OPA in 1991, the agency proposed substantial changes and clarifications that were not made final until 2002. However, the effective date of the 2002 final rule has been extended four times; the current effective date is October 31, 2007.

[61] CWA Section 311(j)(1)(C).

[62] See 40 CFR Section 112.1.

Mexico.[63] Moreover, U.S. inland pipelines are concentrated in coastal areas, particularly in the Gulf states, and these pipelines may have an impact on coastal waters if spills reach waterways that empty into coastal waters.

Several laws govern oil pipelines. The Hazardous Liquid Pipeline Act of 1979 (P.L. 96-129) granted authority to the Department of Transportation (DOT) to regulate various issues regarding oil spills from pipelines. Within the DOT, the Office of Pipeline Safety (OPS) implements provisions concerning pipeline design, construction, operation and maintenance, and spill response planning. For further information on pipeline legislation, see CRS Report RL33347, *Pipeline Safety and Security: Federal Programs*, by Paul W. Parfomak.

Vessel Legislation. Several federal laws directly or indirectly deal with oil pollution from vessels.[64] Laws concerning navigation reduce the possibilities of vessel collision or hull breach by objects in the waterways.[65] Other laws call for particular vessel design standards. For example, the Ports and Waterways Safety Act of 1972,[66] amended by the Port and Tanker Safety Act of 1978,[67] called for specific construction and equipment design requirements for oil tankers. (As noted, OPA subsequently amended this statute in 1990 by establishing a phased-in schedule for double-hulled tankers.) Congress enacted the 1970s legislation to coincide with international initiatives. In fact, many of the federal laws concerning vessel standards and pollution control procedures were written to implement international conventions. These laws are discussed in the next section.

International Conventions

The relationship between international and domestic law can be complex. In general, international conventions (i.e., treaties), when signed by the United States and (if necessary) ratified by the Senate, are on equal footing with federal law. Parties to such conventions must often implement domestic legislation to carry out the provisions outlined in the convention. Several of the federal laws governing oil spills were fashioned in this manner.[68]

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[63] See, for example, MMS Press Release from Feb. 2, 2005, at [http://www.mms.gov/ooc/press/2005/press0202.htm].

[64] For a comprehensive list of federal maritime legislation see USCG, *Marine Safety Manual*, Vol. IX (undated), Chapter 1, available at [http://www.uscg.mil/hq/g-m/nmc/pubs/msm/vol9.pdf].

[65] For example, the Rivers and Harbors Act of 1899, as amended (33 U.S.C. 401, et seq.), and the International Regulations for Preventing Collisions at Sea, as amended (33 U.S.C. 1601, et seq.).

[66] P.L. 92-340, 33 U.S.C. 1221, et seq.

[67] P.L. 95-474, codified at 33 U.S.C. 1221-1232 and 46 U.S.C. 3701-3718.

[68] If a treaty is considered "self-executing," domestic legislation implementing the treaty is not necessary. For more details on these issues, see CRS Report RL32528, *International Law and Agreements: Their Effect Upon U.S. Law*, by Michael John Garcia and Arthur Traldi.

International conventions have played an important role in developing consistent standards for oil-carrying vessels from different nations. A primary player in this regard is the International Maritime Organization (IMO), a body of the United Nations, which sets international maritime vessel safety and marine pollution standards. The Coast Guard represents the United States at IMO meetings.

Multiple international conventions concern vessels and their impact on the marine environment. The two conventions described below are the most relevant to oil pollution in coastal waters.

MARPOL 73/78. The IMO implements the 1973 International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 (MARPOL 73/78).[69] Vessels whose nations are signatories to MARPOL are subject to its requirements, regardless of where they sail, and member nations are responsible for the vessels registered under their flag.

MARPOL 73/78 includes six annexes, each covering a different pollution type. Annex I (Prevention of Pollution by Oil) entered into force in 1983[70] and established requirements for controlling oil discharges to sea. Annex I requires vessels to have equipment that minimizes oil discharge, such as oil-water separators, and shipboard oil pollution emergency plans (SOPEPs). Although the SOPEP applicability is similar to that of the vessel response plan (VRP) required by OPA,[71] the purpose of the SOPEP is somewhat different. A SOPEP is intended to provide guidance to the vessel's officers regarding proper onboard emergency procedures when an oil spill occurs,[72] whereas the VRP is more focused on responding to the spill itself.

The United States implements Annex I through the Act to Prevent Pollution from Ships (APPS).[73] APPS applies to all U.S.-flagged ships, irrespective of location, and to all foreign-flagged vessels in U.S. waters or at ports under U.S. jurisdiction. The USCG issues and enforces regulations necessary to carry out the APPS provisions. The USCG inspection program is a key component of its oil spill prevention effort.

Intervention Convention. The 1967 *Torrey Canyon* spill off the coast of Great Britain was one of the first major spills to receive worldwide attention.[74] The

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[69] For convention texts and other materials, see [http://www.imo.org].

[70] The phrase "entry into force" signifies that the requisite number of nations have ratified the convention or annex, thus making the agreed upon requirements binding for all participating nations. For more discussion of the procedures of international conventions, see the IMO website at [http://www.imo.org].

[71] All vessels of any type over 400 gross tons traveling over international waters must have a SOPEP approved by their flag state. See USCG VRP/SOPEP "FAQs" at [http://www.uscg.mil/vrp].

[72] USCG, 1997, *Marine Safety Manual, Marine Environment Protection, Volume IX*, p. 4-24.

[73] P.L. 96-478, 33 U.S.C. 1901, et seq.

[74] The *Torrey Canyon*, a Liberian-flagged tanker, spilled approximately 35 million gallons (continued...)

incident raised many questions regarding oil spill response, particularly when dealing with vessels from other nations. For example, the incident prompted debate over actions allowable if a nation's waters and environment are threatened by a spill from another nation's vessel. The 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (the Intervention Convention) sought to address these issues.

To implement this convention in the United States, Congress passed the Intervention on the High Seas Act of 1974.[75] Under this act, if the USCG determines there to be a "grave and imminent danger to the coastline or related interests of the United States from pollution or threat of pollution of the sea by convention oil [i.e., as defined in the convention]," the USCG can take action to "prevent, mitigate, or eliminate that danger."

Federal Agencies Responsibilities

Unlike most countries, the United States shares jurisdiction over its territorial seas (0-12 nautical miles from shore) with its coastal states. The 1953 Submerged Lands Act (SLA) gave coastal states jurisdiction over the submerged lands, waters, and natural resources (e.g., oil deposits) located, in most cases, within three nautical miles off the coastline.[76] The waters, seabed, and natural resources beyond the states' waters are exclusively federal, and extend to the edge of the exclusive economic zone (200 nautical miles from shore). However, the federal government maintains the authority to regulate commerce, navigation, national defense, power production, and international affairs within state waters. For more discussion on state and federal jurisdictional issues, see CRS Report RL32912, *Federal-State Maritime Boundary Issues*, by Laura Welles, Aaron M. Flynn, and Eugene H. Buck.

The oil spill legal framework involves implementation by multiple federal agencies. Agency responsibilities can be divided into two categories: (1) oil spill response and cleanup and (2) oil spill prevention/preparedness. Responsibility for oil spill response is determined by the location of the spill: the USCG has response authority in coastal waters, and the EPA responds to inland oil spills.[77] As the

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[74] (...continued)
of crude oil.

[75] P.L. 93-248 , 33 U.S.C. 1471, et seq.

[76] Most state waters extend 3 nautical miles (1 nautical mile = 6,076 feet, or 1.15 miles) from shore. Louisiana waters extend 3 imperial nautical miles (1 imperial nautical mile = 6,080 feet). Texas and Gulf Coast of Florida waters extend 3 marine leagues (equating to 9 nautical miles). See the MMS, OCS, website ("Definitions and Jurisdictions") at [http://www.mms.gov/incidents/pollution.htm].

[77] The terms inland and coastal are defined in the National Contingency Plan (40 CFR Section 300.5). The coastal zone covers all waters subject to the tide, the Great Lakes, and all seaward waters (extending 200 nautical miles beyond shore). The inland zone covers all other U.S. waters. Spills in inland waters can potentially affect coastal waters and ecosystems, particularly if the spill occurs in water systems near the coast. In fact, a fine line may separate specific inland and coastal waters (e.g., consider the nexus between a bay
(continued...)

primary response authority in coastal waters, the USCG has the ultimate authority to ensure that an oil spill is effectively removed and actions are taken to prevent further discharge from the source. During response operations, the USCG coordinates the efforts of federal, state, and private parties.

Regarding oil spill prevention and preparedness duties, jurisdiction is determined by the potential sources (e.g., vessels, facilities, pipelines) of oil spills. A series of executive orders (EOs), coupled with memoranda of understanding (MOU), have established the various agency responsibilities.[78] **Table 1** identifies the agencies responsible for implementing prevention and preparedness regulations for the potential sources of oil spills.

Table 1: Federal Agency Jurisdiction for Oil Spill Prevention and Preparedness Duties, by Source

Potential Source of Oil Spill	Responsible Agency
Vessels	USCG
Onshore, non-transportation facilities	EPA
Onshore, transportation facilities	USCG and Department of Transportation (DOT)
Deepwater ports[79]	USCG and DOT
Offshore facilities (oil/gas extraction)	Minerals Management Service (MMS) within the Department of Interior
Offshore pipelines directly associated with oil extraction activities (i.e., "production lines")[80]	MMS
Offshore pipelines *not* directly associated with oil extraction activities (i.e., "transmission lines")	Office of Pipeline Safety (OPS) within the DOT
Inland pipelines	OPS

[77] (...continued)
and a river).

[78] Executive Order (EO) 12777 (Oct. 18, 1991) delegates authorities pursuant to the Oil Pollution Act of 1990. This order was amended by EO 13286 (Mar. 5, 2003), which reorganized duties in response to the creation of the Department of Homeland Security.

[79] There is only one deepwater port in U.S. coastal waters: the Louisiana Offshore Oil Port (LOOP).

[80] For further discussion on federal pipeline jurisdiction, see National Research Council, *Improving the Safety of Marine Pipelines*, National Academies of Science, 1994, pp. 86-89.

Prevention responsibilities include, among other things, assessing whether facilities or vessels have the necessary equipment in place. As discussed above, vessels may be required to have double hulls; facilities may need secondary containment. Preparedness duties involve oversight tasks, such as evaluating facility and vessel response plans. In addition, OPA requires agencies to conduct internal examinations to test preparedness.[81] As part of this requirement, the USCG conducts Spills of National Significance (SONS) exercises to analyze the Coast Guard's ability to respond to a major oil spill.

Federal Funding for the Oil Spill Liability Trust Fund

In recent years, the level of funding for the trust fund has created some concern. Prior to two separate actions by the 109th Congress, the trust fund was particularly vulnerable. In the first session, Congress reinstated the 5-cent-per-barrel tax on oil, thus providing a dedicated source of revenue for the trust fund.[82] In the second session, Congress raised the vessel liability limits, thus requiring the responsible party to pay a greater proportion of the oil spill costs.[83] Before these changes, fund managers projected the fund would be completely depleted by FY2009.[84] With the recent legislation in effect, the most current projection indicates that the fund will reach $1 billion by FY2014, the year the tax is currently set to expire (**Figure 3**). However, this projection does not account for possible claims arising from oil spills associated with Hurricane Katrina. Although the federal response costs were covered under the Disaster Relief Fund,[85] private parties can seek reimbursement from the trust fund for cleanup or other costs (e.g., damage to property) that exceed their liability limits. The possible number and value of these potential claims remain uncertain.[86]

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[81] As required by OPA Section 4202(a), which amended CWA Section 311(j)(7), codified in 33 U.S.C. 1321(j)(7).

[82] Energy Policy Act of 2005 (P.L. 109-58). Congress also raised the ceiling from $1 billion to $2.7 billion for when the tax would temporarily expire. Under the original tax legislation (Omnibus Budget Reconciliation Act of 1989 (P.L. 101-239), the per-barrel tax would be suspended in any calendar quarter if the fund balance reached $1 billion, restarting again if it dipped below that number. The 2005 act increased this threshold to $2.7 billion.

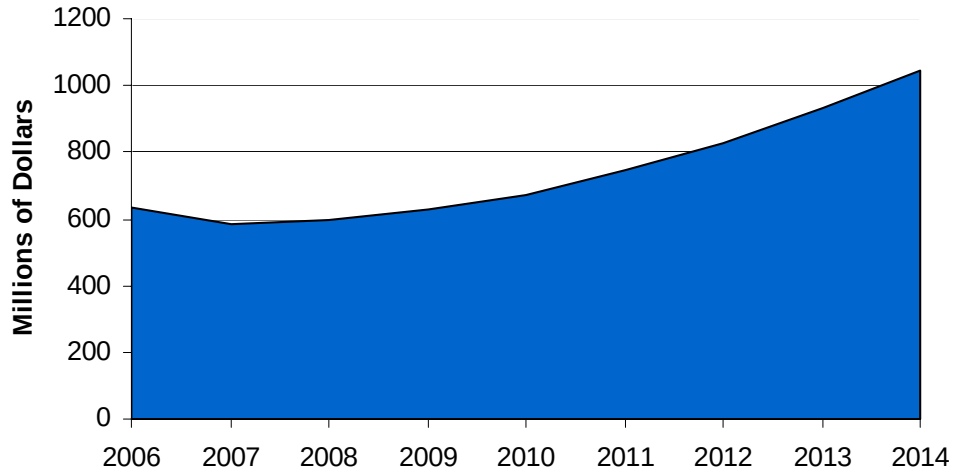
[83] Coast Guard and Maritime Transportation Act of 2006 (P.L. 109-241).

[84] USCG, *Report on the Oil Spill Liability Trust Fund*, May 2005, p. 11.

[85] The President may issue a major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act) and invoke federal authorities and resources, as occurred in response to Hurricane Katrina. For more on this issue, see CRS Report RL33053, *Federal Stafford Act Disaster Assistance: Presidential Declarations, Eligible Activities, and Funding*, by Keith Bea.

[86] The most recent publications from the NPFC, which manages the OSLTF, do not provide an estimate because of this uncertainty. However, a background document that was offered at an April 27, 2006, hearing stated, "the Coast Guard had estimated these costs could exceed $800 million" (House Subcommittee on Coast Guard and Maritime Transportation, Hearing on the Implementation of the Oil Pollution Act). A recent discussion (Sept. 22, 2006) with an NPFC official suggests this estimate is possibly overstated.

Figure 3: Oil Spill Liability Trust Fund: Projected Annual Balances, FY2006-FY2014



Source: Prepared by CRS with data from the National Pollution Funds Center (as of Aug. 17, 2006).

Note: The projections assume there will not be any claims associated with spills caused by Hurricane Katrina.

Regardless of the possible Katrina-related claims, and even considering the substantial enhancements made by the 109th Congress, the trust fund remains vulnerable to a major spill. After conducting the two most recent Spills of National Significance (SONS) exercises (in 2002 and 2004), the Coast Guard observed that a major spill can exceed the available resources in the trust fund.[87] As a reference point, the *Exxon Valdez* spill tallied approximately $2 billion in cleanup costs and $1 billion in natural resource damages. If an accidental oil spill from a vessel matching the size of the *Exxon Valdez* (95,000 gross tons)[88] were to occur, the vessel liability (under the new limits) would be capped at either $285 million (single-hull) or $181 million (double hull).[89] Cleanup costs and damages in excess of the liability limits could be covered by the trust fund.[90] OPA Section 9001[91] established per-incident

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[87] See U.S. Department of Homeland Security, U.S. Coast Guard, *California SONS 2004: After Action Report*, pp. 46 and A-7.

[88] The *Exxon Valdez* has been renamed the *Sea River Mediterranean*, and its logistics can be found at the USCG Port State Information Exchange database at [http://cgmix.uscg.mil/PSIX/].

[89] This assumes that the owner/operator can take advantage of the liability limits provided by OPA (e.g., obeyed relevant regulations and did not act with "gross negligence or willful misconduct "). OPA Section 1004(c).

[90] Except for emergency funds available to federal officials, the trust fund distributes monies through a claims process. Persons who have incurred cleanup costs or suffered damages from an oil spill may submit a claim for reimbursement from the trust fund. This includes responsible parties who have reached their respective liability limits. For more details on

(continued...)

expenditure caps: no more than $1 billion (or the maximum amount available in the fund) for all eligible costs, and no more than $500 million for natural resource damages. The fund currently has about $637 million and is projected to have slightly more than $1 billion by 2014 (see **Figure 3**). Thus, a major spill, particularly one in a sensitive environment, could threaten the viability of the fund, possibly depleting it entirely.

There are several options that Congress might consider to address this possibility. First, Congress could maintain the status quo. If a major oil spill depleted the fund, Congress could replenish the fund through the appropriations process. Thus, general treasury revenues would finance a (possibly significant) portion of the spill response and natural resource restoration. Second, Congress could increase the 5-cent-per-barrel oil tax to more quickly raise the fund's balance closer to its ceiling of $2.7 billion. A fully funded OSLTF would be more capable of absorbing the costs in excess of a spiller's liability limit. Third, Congress could further increase the liability limits for vessels, so that the responsible party would be required to pay a greater portion of the total spill cost before accessing trust fund dollars.

The above options spotlight a central consideration for policymakers: who should pay for the costs associated with a major, accidental oil spill? The first option spreads the costs among all taxpayers. Some groups may contend this conflicts with the "polluter pays" principle. However, there are two interpretations of this principle. The broader view holds that the relevant industry should bear the environmental costs that may develop during the course of business. A different interpretation of the "polluter pays" principle finds that only the responsible party should pay. One with such a view might conclude that the second option is overreaching and unfair, because it spreads the costs across the entire industry instead of on the actual responsible party.[92]

There are likely many economic policy arguments both for and against an additional per-barrel tax on oil. For instance, some groups may claim that an additional oil barrel tax will be reflected in higher energy costs (gasoline, home heating oil) for consumers, which could disproportionately affect lower-income households. (In general, these types of tax policy debates are beyond the scope of this report.) However, policymakers might consider whether any negative consequences from an additional tax on industry would outweigh the potential benefits of allocating the costs to the oil industry.

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[90] (...continued)
this process, see the National Pollution Fund Center's website at [http://www.uscg.mil/npfc/About%20Us/claims_adjudication.htm].

[91] Codified in 26 U.S.C. 9509.

[92] The Bush Administration maintained an analogous view of the "polluter pays" principle in the context of whether or not to reinstate the Superfund tax on the chemical and oil industry. See CRS Report RL31410, *Superfund Taxes or General Revenues: Future Funding Issues for the Superfund Program*, by Jonathan L. Ramseur, Mark Reisch, and James E. McCarthy.

The third option would help preserve the trust fund by increasing the liability limit of the spiller. Setting liability limits is a challenge because lawmakers must apportion the risk of a costly, accidental spill fairly between the responsible party and the trust fund. The shipping industry would likely argue that a further increase would be disruptive due to the cost of maintaining additional financial assurance. Considering that the limits were increased substantially in July 2006, this option might be the least feasible.

State Laws

Prior to the passage of OPA in 1990, 28 states had oil spill liability laws, 19 of which imposed unlimited liability.[93] During the 15 years prior to OPA's passage, the issue of whether or not to preempt state liability laws was perhaps the primary obstacle to enacting unified oil spill legislation. Proponents of preemption argued that differing state laws — particularly the various levels of liability — frustrate the shipping industry and are contrary to the goal of comprehensive federal legislation. Preemption opponents maintained that states should be allowed (as with most other federal environmental statutes) to set stiffer standards regarding liability, compensation, and cleanup.[94] In the aftermath of the *Exxon Valdez* spill, the scales tipped to the side of anti-preemption. According to OPA Section 1018 (referred to as a "savings clause"), the act will not preempt any state from imposing additional liability or requirements with respect to the discharge of oil or related response activity (e.g., cleanup standards).

There was some concern that the language of OPA's savings clause would allow states to regulate matters typically reserved for the federal government, such as oil tanker construction. To address this issue, the conference report stated that the savings clause would not disturb a 1978 Supreme Court decision that dealt with the intersection of federal and state authority to regulate the shipping industry.[95] In that case, the Court invalidated a Washington State law that had attempted to govern oil tanker design, size, and movement in Puget Sound.[96]

Regardless of the clarification in the conference report, the line between federal and state jurisdiction continues to be tested. In 2000, the Supreme Court struck down a Washington State rule calling for various personnel requirements, such as training, on oil tankers.[97] Similarly, in July 2006, a federal district court in Massachusetts

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[93] CRS Report (out-of-print), *Liability Provisions in State Oil Spill Laws: A Brief Summary*, Oct. 1, 1990.

[94] In fact, one argument against preemption was that existing requirements under particular state laws would be diminished or negated entirely. See Benjamin Grumbles and Joan Manley, "The Oil Pollution Act of 1990: Legislation in the Wake of a Crisis," *Natural Resources and Environment*, 10:2 (1995), p. 38.

[95] U.S. Congress, Conference Report accompanying H.R. 1465, Oil Pollution Act of 1990, 1990, Conf.Rept. 101-653, 101st Cong., 2nd sess., p. 122.

[96] *Ray v. Atlantic Richfield*, 435 U.S. 151 (1978).

[97] *United States v. Locke*, 529 U.S. 89 (2000).

ruled against a state law that would govern logistics, such as tanker design, personnel qualifications, and navigation.[98]

Threat of Future Oil Spills in U.S. Coastal Waters

This section examines the threat of future oil spills in coastal waters by assessing the possibilities for such spills, including spill location and oil type (crude versus refined product) and the nation's level of preparedness (or readiness) for responding to a major spill.

Possibilities for Future Oil Spills

Oil is expected to remain the dominant source of energy in the United States for at least the next several decades.[99] Oil consumption is expected to increase: the Department of Energy estimates that daily petroleum consumption in the United States will rise from 20.76 million gallons to 27.57 million gallons by 2030 (**Figure 4**).[100] With this steady rise in oil consumption, more oil will be transported from the well (domestic or international) to the refinery, and ultimately to the consumer. The increased oil transportation suggests that the possibilities for oil spills may increase.

Nonetheless, a greater potential for spills does not necessarily correspond with a higher spill frequency. U.S. oil consumption has been steadily rising for at least two decades,[101] during which time the number of oil spills in coastal waters has declined (see **Figure 1**). However, the most recent annual data suggest that the decline has halted, as annual numbers have remained fairly consistent. Between 1997 and 2001 (the most recent five-year span for which data are available), the annual number of spills in coastal waters from all combined sources remained consistent, averaging 393 incidents per year.[102] Assuming other variables (e.g., level of prevention and preparedness) remain constant, the annual numbers of spills may take an upward turn.

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[98] *United States v. Massachusetts*, 440 F. Supp. 2d 24 (D. Mass. 2006).

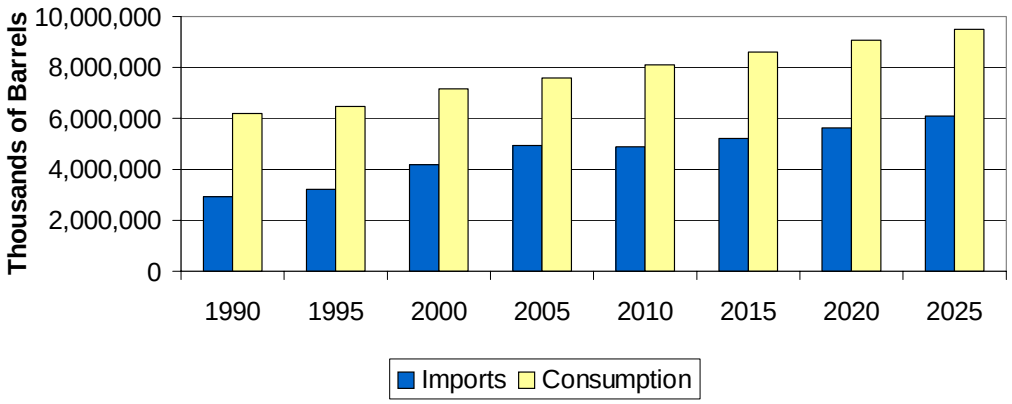
[99] Energy Information Administration (EIA), *Annual Energy Outlook 2006* (hereinafter EIA 2006 Report), February 2006, p. 6, at [http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2006).pdf].

[100] EIA 2006 Report, p. 11.

[101] The increase in U.S. oil consumption may have started even earlier. The EIA historical data only go back to 1981. EIA online petroleum statistics, "Total Crude and Petroleum Products Supplied," (historical data), at [http://www.eia.doe.gov].

[102] See USCG Oil Spill Compendium.

Figure 4: U.S. Oil Imports and Consumption: Actual (1990-2005) and Projected (2010-2025)



Source: Prepared by CRS with data from the following: actual import data (1990-2005) from Energy Information Administration (EIA) online statistics, at [http://www.eia.doe.gov], and projected import data (2010-2025) and all consumption data from EIA *Annual Energy Outlook 2006* (tables 11 and 91, respectively).

However, these other variables are not constant and are likely to play a role in the oil spill equation. Oil vessel upgrades (i.e., double hulls) are still ongoing: two important deadlines, 2010 and 2015,[103] will yield a higher percentage of double-hulled vessels in U.S. waters. These improvements should help keep the number of spills low. On the other hand, the nation's oil pipeline infrastructure is old, and in some (perhaps many) areas, pipelines are operating well beyond their intended service life.[104] The United States will obtain its oil from a combination of domestic and foreign sources. The ratio of this mix and the method of its delivery could play a role in the number and volume of oil spills in the coming years. The following sections discuss this delivery system and its implications for oil spills in greater detail.

U.S. Oil Imports and Possible Spills. The volume and proportion of imported oil, compared with oil produced domestically, may play a role in the frequency and location of oil spills. Transportation of oil into the United States from foreign nations has steadily risen and is projected to continue increasing (**Figure 4**).

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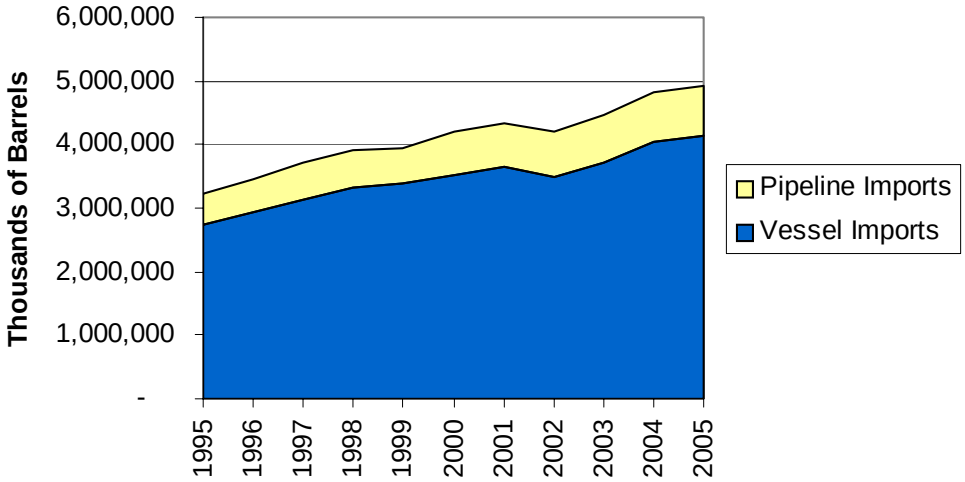
[103] Barring a few exceptions, single-hull vessels over 5,000 gross tons may not operate in U.S. waters after January 1, 2010. Single-hull vessels below 5,000 gross tons (chiefly barges) and other previously excepted vessels (e.g., lightering vessels or those upgraded with double-sides or bottoms) must have double hulls by January 1, 2015. OPA Section 4115 (codified at 46 U.S.C. 3703a).

[104] See, for example, National Research Council, *Improving the Safety of Marine Pipelines*, National Academies of Science, 1994, p. 45, and Epstein, Paul (editor), *Oil: A Life Cycle Analysis of its Health and Environmental Impacts*, Harvard Medical School's Center for Health and the Global Environment, March 2002, p. 21.

Oil imports are expected to increase, not only in volume but also in proportion to domestically produced oil. Most of this increase will be reflected in increased tank vessel traffic. Only Canada delivers oil by pipeline to the United States. Although Canada is the leading single source of U.S. oil imports,[105] the vast majority of U.S. oil imports arrive via vessel. (See **Figure 5**.)

Figure 5: U.S. Imports by Mode of Transportation, 1995-2005



Source: Prepared by CRS with data from EIA online statistics (U.S. Imports by Country of Origin), at [http://www.eia.doe.gov].

Notes: Pipeline imports represent imports from Canada; vessel imports are from all other nations.

Most of the U.S. oil imports (55%) arrive via the Gulf Coast (**Figure 6**).[106] Of the oil spills within the Coast Guard's jurisdiction (i.e., marine and coastal areas), approximately 50% of the incidents and the volume spilled have occurred in the Gulf of Mexico and its shoreline states.[107] The Gulf will likely remain an area of special attention, because the number of vessels arriving with oil will increase in coming years.

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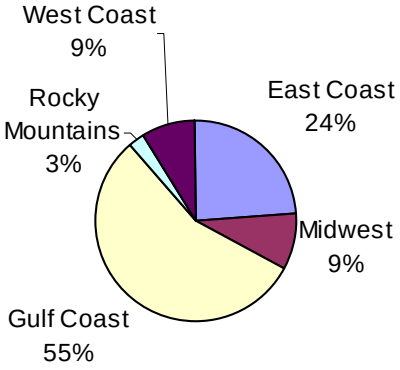
[105] Approximately 16% of total U.S. oil imports come from Canada. Energy Information Association, Petroleum Statistics, U.S. Imports by Country of Origin, available at [http://www.eia.doe.gov].

[106] Although most crude oil (62%) enters the United States through the Gulf, most of the petroleum products (70%) enter through ports on the east coast. EIA online statistics (Imports by Area of Entry), available at [http://www.eia.doe.gov].

[107] USCG Spill Compendium, Cumulative Data And Graphics For Oil Spills (1973-2001), at [http://www.uscg.mil/hq/g-cp/comrel/factfile/index.htm].

Figure 6: Average Annual Distribution of U.S. Oil Imports, by Geographic Region



Source: Prepared by CRS with data from EIA online statistics (Imports by Area of Entry), available via [http://www.eia.doe.gov].

Note: The above reflects an average of the years 2000-2005.

Domestic Oil Transportation and Possible Spills. Although U.S. imports and consumption increased over the past 15 years, *total* domestic transportation of crude oil and petroleum products (measured in billions of ton miles)[108] declined by 16% during this time (**Figure 7**). At first glance, this information appears incongruous; however, further analysis reveals that the overall decline is attributable to a 50% decrease in Alaskan oil production that has occurred over the past 15 years.[109] Alaskan oil travels long distances via pipeline (across Alaska) and vessel (to the West Coast of the United States) and has historically accounted for a significant percentage of oil in domestic transportation. Therefore, the production of Alaskan oil and its distance traveled will have a strong influence on the overall measure of domestic transportation of oil.

In recent years, total domestic transportation has shown a modest increase (**Figure 7**). Although the total increase is relatively small,[110] transportation for the continental United States is likely increasing more substantially, considering the context of a continuous decline from Alaskan oil production.[111] As mentioned

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[108] Note that using this unit of measure is different from using volume alone. With this measure, distance traveled is as important a factor as volume.

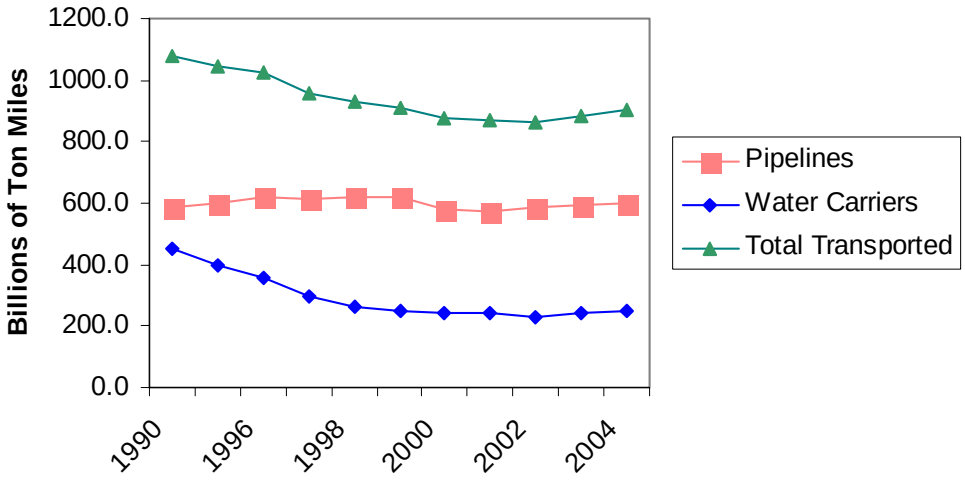
[109] Alaskan crude oil production yielded 647,309 barrels in 1990 but declined to 315,420 barrels by 2005 (EIA website, Petroleum, "Crude Oil Production").

[110] The total value increased from 873 billion ton miles in 2000 to 903 billion ton miles in 2004.

[111] The degree of increase for oil transportation within the continental United States is uncertai, because the segregated data are not readily available.

previously, an increase in oil transportation will not necessarily yield more oil spills, but it may increase the possibilities for spills to occur.

Figure 7: Domestic Transportation of Crude Oil and Petroleum Products, 1990-2004



Source: Prepared by CRS with data from Association of Oil Pipelines, *Shifts in Petroleum Transportation*, June 2006, available at [http://www.aopl.org].

Level of Preparedness

Although many consider the United States' spill record over the last 15 years, particularly for major spills, to have been favorable, the absence of a major spill raises at least one issue. Because the nation has not been forced to respond to a major oil spill for such a long period, some have voiced concern that the nation might have lost the expertise and institutional knowledge necessary for quick and effective response action. The USCG found evidence to support this concern after the 2004 Spill of National Significance (SONS) exercise.[112] The After Action Report concluded:

> Oil spill response personnel did not appear to have even a basic knowledge of the equipment required to support salvage or spill cleanup operations.... There was a shortage of personnel with experience to fill key positions. Many middle-level spill management staff had never worked a large spill and some had never been involved in an exercise. As a result, some issues and complex processes unique to spill response were not effectively addressed.[113]

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[112] The California SONS 2004 was conducted in April 2004 and was the fourth SONS exercise performed by the USCG. The purpose of the SONS exercises is to ensure and evaluate the readiness of personnel to respond to a major oil spill. The 2004 SONS exercise was the largest to date and the first international SONS (involving Mexico).

[113] U.S. Department of Homeland Security, U.S. Coast Guard, *California SONS 2004: After Action Report*, September 2004, p. 46.

Congress might consider oversight to monitor this situation as the USCG conducts periodic SONS exercises. The next national exercise is scheduled for June 2007.

Recent Legislative Activity

From 1990 to the 109th Congress, oil spill issues received relatively little congressional attention, most likely because a major spill (more than 1 million gallons) has not had an impact on the nation's shores and sensitive natural resources since 1990. However, the 109th Congress enacted two important provisions affecting cleanup funding and liability. In addition, members introduced several bills that would address or include provisions concerning oil pollution issues.

- P.L. 109-58, H.R. 6, The Energy Policy Act of 2005: This comprehensive energy legislation was introduced by Representative Barton on April 18, 2005. The final version included a provision to reinstate the 5-cent-per-barrel tax on domestic and imported oil that had expired on December 31, 1994. As with the original tax, it provides direct funding to the OSLTF but would be suspended for any period in which the fund's quarterly balance exceeded $2.7 billion (the original suspension trigger was $1 billion). H.R. 6 was signed by the President August on 8, 2005.

- P.L. 109-241, H.R. 889, The Coast Guard and Maritime Transportation Act of 2006: This legislation, introduced by Representative Young on February 17, 2005, included language from H.R. 1412 (the Delaware River Protection Act) that proposed to increase the oil spill liability limits for vessels under OPA. The final version of H.R. 889, which was signed into law on July 12, 2006, increased limits to $1,900/gross ton for double-hulled vessels and $3,000/gross ton for single-hulled vessels.

- S. 2023: Senator Inhofe introduced S. 2023 on November 16, 2005. The current version of the bill would require a biennial audit of OSLTF monies distributed by the National Pollution Funds Center, the federal entity in charge of managing the fund. In addition, the federal agencies that receive funding from the OSLTF would be required to submit an annual report describing how the money was spent. S. 2023 was reported out of the Committee on Environment and Public Works on June 29, 2006 (S.Rept. 109-272).

- H.R. 4724: Representative Inslee introduced this bill on February 8, 2006. It would require specific personnel and equipment requirements when oil tankers transfer oil to other tankers or facilities. The bill has not received committee action.

- S. 2440: Senator Cantwell introduced legislation on March 16, 2006, that would strengthen the current prevention, response, and spill

tracking duties of the USCG. The bill has not received committee action.

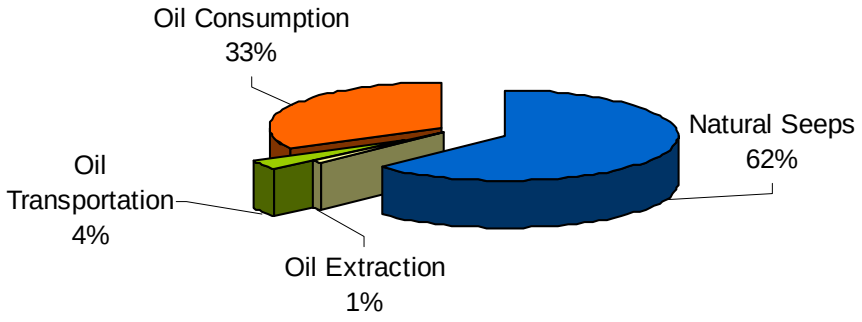
- H.R. 5782: Representative Young offered a bill on July 13, 2006, that would strengthen the requirements for pipeline operators. The bill has not received committee action. For more information on this legislation and other pipeline governance issues, see CRS Report RL33347, *Pipeline Safety and Security: Federal Programs*, by Paul W. Parfomak.

Appendix: Additional Statistical Information Regarding Oil Spills

Sources of Oil Inputs to U.S. Coastal Waters

Oil enters the coastal waters of the United States from a wide variety of sources. These sources comprise four major categories: natural seeps, oil consumption, oil transportation, and oil extraction.[114] The majority of oil inputs are from natural seeps — geologic openings on the ocean floor. (See **Figure A1**.) Well-known natural seeps are found in the Gulf of Mexico and off the coast of southern California, regions with extensive oil exploration and production. Although the seeps release large volumes of oil each year,[115] the surrounding ecosystem can adapt, and even thrive, because the rate of release is relatively slow.[116]

Figure A1. Percentage Contribution of Oil Inputs into North American Coastal Waters, by Major Source Categories (based on average annual releases, 1990-1999)



Source: Prepared by the Congressional Research Service (CRS) with data from the National Research Council (NRC) of the National Academies of Science, 2003, *Oil in the Sea III: Inputs, Fates, and Effects*, p. 69.

Releases associated with petroleum consumption activities account for the vast majority of oil introduced to the coastal environment through human behavior. Rivers and man-made conveyances, such as storm-water drains, receive oil from

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[114] NRC report, pp. 67-88.

[115] The NRC report (p. 69) estimates that natural seeps off North America release 47 million gallons of oil each year (converted from tonnes).

[116] NRC report, p. 2.

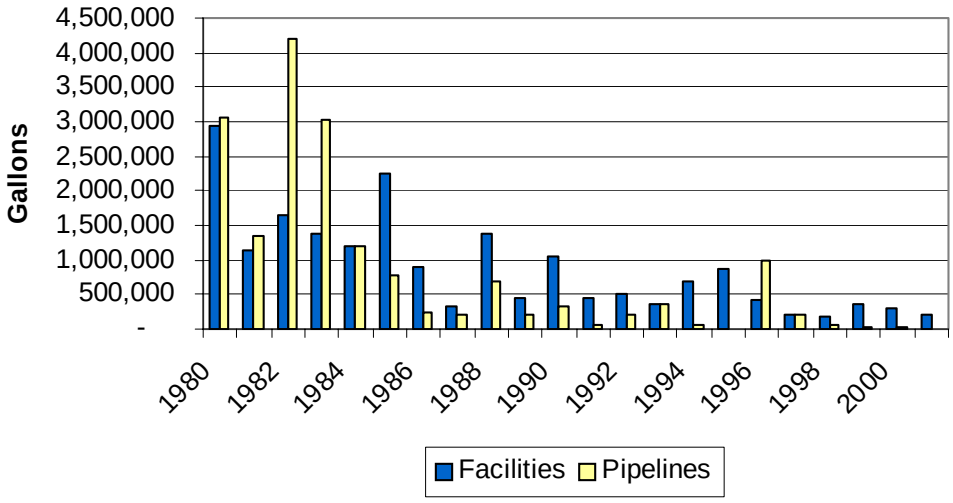
numerous non-point sources (e.g., urban runoff) and carry the oil to coastal waters. These sources are frequent and widespread, but their rates of release are relatively slow and occur over a long period of time. Moreover, both the quantitative value and the environmental fate of these sources are poorly understood.[117]

Oil transportation and oil extraction represent, on an annual average basis, a minor input to coastal waters. (See **Figure A1**.) Unlike the other categories, which generally release oil at a slow rate over a wider geographic area, transportation and extraction releases can occur as major spills. Statistics for oil vessel transportation are provided in **Figure 2** at the beginning of this report. Spills from oil extraction operations are discussed later in this Appendix.

Spills from Facilities and Pipelines

As **Figure A2** shows, the volume of oil spills from facilities and pipelines has declined since the 1980s. Over the most recent five-year span of data (1997-2001), pipeline spill volume was especially low (compared with previous years), averaging only 68,000 gallons of spilled oil per year; during the first five-year span (1980-1984), the average annual pipeline spill volume was 2.5 million gallons.

Figure A2: Volume of Oil Spills into U.S. Coastal Waters from Facilities and Pipelines, 1980-2001



Source: Prepared by CRS with data from USCG Oil Spill Compendium.

Note: The above USCG data includes incidents from land-based facilities and pipelines, as well as oil industry facilities and pipelines in state (nearshore) and federal (offshore) waters.

The number of spills from pipelines in U.S. waters began to decline in the mid-1980s, averaging 32 spills per year from 1997 through 2001 (**Figure A3**). The trend

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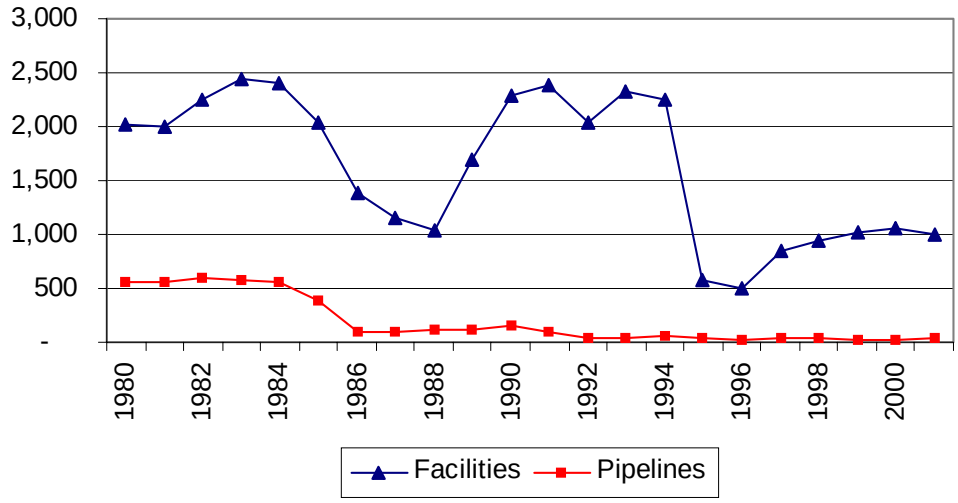
[117] The range of uncertainty of land-based runoff is substantial, from a minimum estimate of 5.6 million gallons to 588 million gallons (based on average, annual releases from 1990-1999). NRC report, pp. 69, 87.

of spill incidents from facilities and other non-vessels is more difficult to characterize. It has not followed a pattern of steady decline since 1980, but has fluctuated over the last two decades. The most recent five-year interval (1997-2001) has been relatively stable, showing annual incident numbers that are generally lower than previous years.

Figure A3: Annual Number of Spills to U.S. Waters from Facilities and Pipelines, 1980-2001



Source: Prepared by CRS with data from the USCG Oil Spill Compendium.

Spills from Oil Extraction Operations

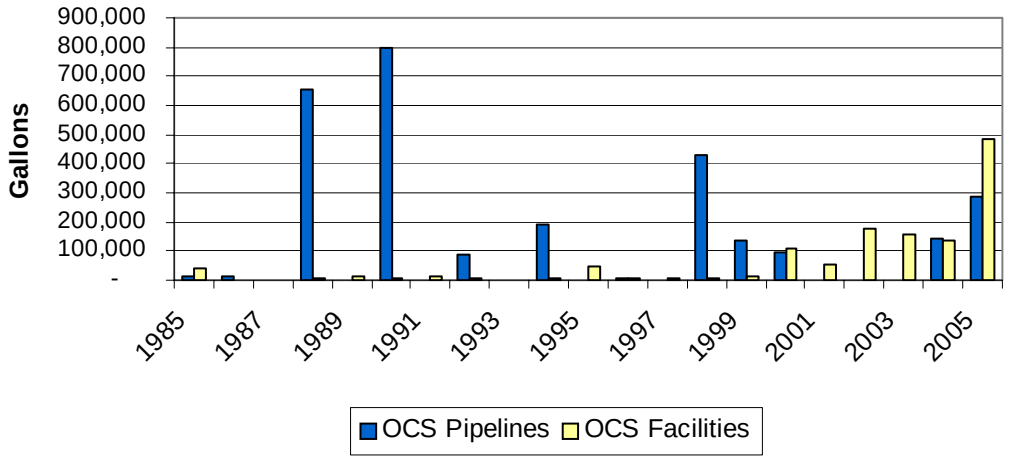
As depicted in **Figure A1**, oil extraction activities contribute approximately 1% of the total oil input to North American waters. The vast majority (95%) of this (1%) oil extraction input comes from operational discharges, which are regulated by a Clean Water Act permit system. Thus, oil extraction spills represent, on an annual basis, only a relatively minor (only 0.05%) component of the total input to North American waters.

However, oil well blowouts from offshore oil extraction operations have historically been a source of major oil spills. The largest accidental oil spill in world history — the IXTOC I, estimated at 140 million gallons — was due to an oil well blowout in Mexican Gulf Coast waters in 1979.[118] A 1969 well blowout off the coast of Santa Barbara released approximately 4 million gallons into the environment and has been credited with catalyzing some of the landmark environmental legislation of the 1970s.

[118] NRC report, p. 33.

The spill record for offshore platforms in federal waters[119] was noteworthy during the 1980s and 1990s. According to the Minerals Management Service (MMS)[120] oil spill database, there were no oil spills over 1,000 barrels[121] from federally regulated offshore facilities between 1981 and 2001 (**Figure A4**). This effort was achieved in the context of increasing oil production on the outer continental shelf (OCS).[122]

Figure A4: Annual Oil Spill Volume for Spills Greater than 50 Gallons from Oil Exploration and Extraction Activities in the Federal Waters on the Outer Continental Shelf, 1985-2005



Source: Prepared by CRS with data from the Minerals Management Service (MMS) spill database, at [http://www.mms.gov/incidents/pollution.htm].

Note: The MMS database includes spills from chemicals (e.g., methanol), but the above only includes spills of crude oil and petroleum products.

Since 2002, there have been six offshore facility spills in federal waters over 1,000 barrels, the largest estimated at 2,000 barrels (84,000 gallons). Annual spill volumes from offshore facilities in federal waters have increased in recent years (**Figure A4**). Part of the recent increase in facility spill volume is attributable to a

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[119] Federal waters extend 200 nautical miles from shore but do not include the waters adjacent to shore that are under state control (as discussed earlier in this report).

[120] The MMS, in the U.S. Department of Interior, is the federal agency responsible for managing the oil and gas resources on the outer continental shelf.

[121] 1,000 barrels = 42,000 gallons.

[122] The annual crude oil production in the Gulf of Mexico (the primary source of offshore crude oil) increased by 112% from 1981 to 2001. Energy Information Administration, Crude Oil Production statistics, at [http://www.eia.doe.gov/].

more comprehensive reporting regime. For example, tanks or machines with oil that are lost at sea during hurricanes are now counted as spills.[123]

As **Figure A4** indicates, there were several years in which offshore pipelines contributed a relatively minor (or zero) spill volume. However, periodic large spills generated the vast majority of the spill volume from offshore operations between 1985 and 2000. For example, in 1988, there was only one pipeline spill over 1,000 barrels, but that one incident released 15,576 barrels into the environment (654,192 gallons).

The vast majority of the offshore spills in federal waters have taken place in the Gulf of Mexico. In fact, there have been only four spills greater than 50 barrels (2,100 gallons) in the Pacific Region since 1985, none occurring after 1996.[124]

Although **Figure A4** and the above discussion pertain only to federal waters, there are numerous platforms and pipelines in state waters as well. The majority of the oil extraction operations are located in state waters off the coast of Louisiana and Texas. The precise volume and incident frequency in state waters are difficult to determine. The NRC report describes the data as "generally lacking,"[125] but the report estimates that oil spills from operations in state waters account for twice the oil discharges of activities in federal waters.[126] This estimate is noteworthy considering that spills in state waters present a potentially greater threat to the more sensitive shoreline environments.

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[123] Per Aug. 15, 2006, telephone conversation with MMS official.

[124] MMS Oil Spill database, at [http://www.mms.gov/incidents/pollution.htm].

[125] NRC report, p. 193.

[126] NRC report, p. 38.