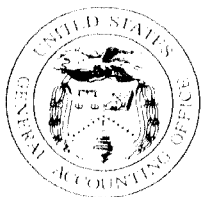


January 1991

# POLLUTION FROM PIPELINES

## DOT Lacks Prevention Program and Information for Timely Response



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**Resources, Community, and  
Economic Development Division**

B-240036

January 28, 1991

The Honorable Walter B. Jones  
Chairman, Committee on Merchant  
Marine and Fisheries  
House of Representatives

The Honorable Robert W. Davis  
Ranking Minority Member  
Committee on Merchant Marine and Fisheries  
House of Representatives

The Honorable W. J. (Billy) Tauzin  
Chairman, Subcommittee on Coast Guard  
and Navigation  
Committee on Merchant Marine and Fisheries  
House of Representatives

Between 1980 and 1989, 3,910 spills from land-based pipelines released nearly 20 million gallons of petroleum into U.S. waters, which is almost twice as much as was released in March 1989 by the Exxon Valdez in Alaska's Prince William Sound. Pipelines accounted for approximately 15 percent of all oil pollution during this period. Because almost all petroleum pipelines cross through or near bodies of water, according to Department of Transportation (DOT) officials, the potential for water pollution from pipeline accidents is ever present.

Your letter of February 2, 1990, asked us to examine federal efforts to protect the marine environment from petroleum pollution by pipelines and waterfront facilities that receive or ship petroleum by vessel. As agreed with your offices, we are addressing your request with two reports, the first of which is this evaluation of federal efforts to prevent and respond to water pollution from petroleum pipelines. Specifically, you asked us to determine (1) whether the federal agency responsible for preventing water pollution from pipelines has established an effective pollution prevention program and (2) whether federal agencies have adequate information about the locations and operators of pipelines to respond effectively to spills from petroleum pipelines. Our report on waterfront facilities will be issued during the summer of 1991.

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## Results in Brief

Although DOT is responsible for preventing water pollution from petroleum pipelines, it has not established a program to prevent water pollution caused by pipeline spills. DOT delegated its responsibility under the Clean Water Act for preventing water pollution from all transportation activities, such as vessels and pipelines, to the Coast Guard.<sup>1</sup> According to Coast Guard officials, the agency has a program to prevent water pollution from vessels, but not from pipelines, because it does not have the expertise and has not dedicated the resources necessary to establish such a program. Further, according to these officials, regulating pipelines may be inappropriate for the Coast Guard because it deals primarily with vessels. Another DOT agency, the Research and Special Programs Administration (RSPA), administers a program to reduce the risk of pipeline accidents. However, preventing water pollution is an incidental effect, not a specific goal of the RSPA program. DOT officials stated that the Coast Guard may not be the best agency to carry out DOT's pipeline pollution prevention responsibility and, during our review, began reevaluating DOT's delegation of this responsibility to decide how best to prevent water pollution from pipelines.

Although there is no federal program with the goal of preventing water pollution from pipelines, both the Coast Guard (acting for DOT) and the Environmental Protection Agency (EPA) have taken steps to plan for and respond to petroleum spills, including those from pipelines, as required by the Clean Water Act. However, because Coast Guard response officials generally do not know the specific locations and operators of pipelines, they cannot adequately plan for or ensure timely response to pipeline spills.

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## Background

Pipelines are a major means of transporting petroleum products. According to the latest estimate of the Association of Oil Pipe Lines,<sup>2</sup> pipelines carried nearly half of all petroleum and petroleum products moved domestically in 1987.<sup>3</sup> An estimated 500 operators ship petroleum through more than 225,000 miles of pipeline.

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<sup>1</sup>The Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251, *et seq.*), is popularly known as the Clean Water Act.

<sup>2</sup>A trade association whose members are operators of U.S. petroleum pipelines.

<sup>3</sup>Pipelines moved 586.8 billion ton/miles of the total 1,195.8 billion ton/miles of petroleum moved domestically in 1987 by all forms of transportation, including vessels and trucks. A ton/mile is the equivalent of 1 ton of product being moved 1 mile.

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Pipelines have experienced, on average, more than one water-polluting spill per day between 1980 and 1989. These spills ranged in size from less than 1 gallon to 3.5 million gallons, averaging more than 5,000 gallons each. Many of these spills were caused by the rupture of the pipe due to corrosion or damage by an outside force, or the failure of a valve or gasket.

Federal authority to prevent water-polluting petroleum spills dates back to the Water Quality Improvement Act of 1970 (P.L. 91-224), an amendment to the Clean Water Act. The Secretary of Transportation, who was delegated the act's authority to prevent water pollution from transportation activities, redelegated that authority to the Coast Guard in 1970. The authority to prevent pollution from nontransportation activities rests with EPA. A 1971 memorandum of understanding between the DOT and EPA further defined each agency's responsibilities. For example, the memorandum cited pipelines used in interstate or intrastate commerce as examples of activities under the Coast Guard's jurisdiction and storage tanks as activities under EPA's jurisdiction.<sup>4</sup>

The Clean Water Act also provides for a National Contingency Plan to coordinate the activities of various federal, state, and local agencies responsible for oil spill response. The National Contingency Plan designates the Coast Guard and EPA as responsible for coordinating federal efforts to respond to water-polluting petroleum spills. Unlike responsibility for pollution prevention, which is determined by the source of the spill, responsibility for spill response depends on the location of the spill. Generally, the Coast Guard coordinates the federal response to spills occurring in coastal waters, such as oceans, bays, and the Great Lakes, and EPA coordinates the response to spills in inland waters, such as rivers and streams.

The federal response to pipeline spills does not usually involve removal of pollutants by federal agencies. The Clean Water Act makes the spiller responsible for the removal of spilled oil. In those cases where the spiller is unknown, unwilling, or unable to clean up the spill, the responsible federal agency can assume responsibility for oil removal. Since most pipeline spills are contained and removed by the responsible party, federal response officials are mainly involved in identifying spills and monitoring removal efforts to ensure that they are done properly.

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<sup>4</sup>We reported on the effectiveness of EPA's oil spill prevention program in Inland Oil Spills: Stronger Regulation and Enforcement Needed to Avoid Future Incidents (GAO/RCED-89-65, Feb. 22, 1989).

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## DOT Has No Program With the Goal of Preventing Water Pollution From Pipelines

Although delegated DOT's responsibility for preventing water pollution from all transportation activities, the Coast Guard has not instituted a program to prevent pollution from petroleum pipelines. Coast Guard officials told us that no program has been implemented because the Coast Guard does not have the engineering expertise to establish appropriate technical regulations for pipelines and has not dedicated funds for a program to prevent pipeline pollution. Coast Guard officials added that the oversight of pipelines may not be appropriate for the Coast Guard because the activity does not involve its area of expertise, transportation by vessel. A DOT official from the Office of the Secretary said that the Coast Guard may not be the agency best suited to carry out DOT's authority to prevent pollution from pipelines and other forms of transportation not related to vessels. DOT is currently reevaluating whether the Coast Guard or another DOT agency, such as RSPA, is better suited to fulfill its responsibility for preventing pollution from pipelines. Agency officials could not estimate when this decision would be made.

To reduce the risk of spills prohibited under the Clean Water Act, a pipeline pollution prevention program could include

- a clear designation of the agency responsible for preventing pollution from pipelines;
- standards for pipeline construction, maintenance, operation, and inspection that reflect pollution prevention goals;
- verification procedures to ensure that pollution prevention goals are met; and
- procedures to evaluate the effectiveness of program implementation.

A pollution prevention program for pipelines should draw on the relevant experiences of two DOT agencies. One agency, the Coast Guard, has experience in preventing water pollution from other transportation activities. For example, the Coast Guard conducts a pollution prevention program for waterfront facilities that transfer petroleum to or from a vessel. The facilities covered by these regulations are required to observe certain equipment and maintenance standards and follow operating procedures designed to reduce the risk of pollution from petroleum spills. Specially trained Coast Guard personnel inspect these facilities at least annually to ensure that they comply with equipment and operating regulations.

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Another DOT agency, RSPA, through its Office of Pipeline Safety (OPS), regulates the safety of some pipelines under the Hazardous Liquid Pipeline Safety Act of 1979 (Title II of P.L. 96-129).<sup>5</sup> The goal of the OPS program is safety, which, according to program officials, the agency defines as the prevention of accidents that could harm life or property. Although OPS has not historically considered environmental damage a form of property damage, it has recently begun to consider the environment a form of property to be protected by its regulations. For pipelines under its jurisdiction, OPS sets design and construction standards for new pipelines and operation and maintenance procedures for existing pipelines. OPS inspectors periodically check records kept by pipeline operators to ensure compliance with its regulations.<sup>6</sup>

Although pollution prevention is not a specific goal of the OPS program, according to OPS officials, its activities prevent some water pollution from petroleum pipelines because they reduce the risk of pipeline accidents. According to these officials, pollution prevention is not a specific goal of the program because the Secretary has not delegated that responsibility to OPS. As the following examples illustrate, OPS' safety program is not designed to prevent spills prohibited by the Clean Water Act:

- Certain petroleum pipelines, such as those that operate at low pressure, are exempted from OPS regulations without regard to their potential for causing water pollution.
- OPS regulations require that new petroleum pipelines be located to avoid, as much as practicable, areas near private dwellings, industrial buildings, and places of public assembly. OPS does not, however, require that the locations of waterways be considered when new pipelines are constructed.
- OPS regulations require that the locations of petroleum pipelines be marked with warning signs at highway and railroad crossings, but they specifically exempt operators from placing warning signs at water crossings.
- OPS regulations require petroleum pipelines to have valves at either side of a water crossing that is more than 100 feet across, yet the Clean

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<sup>5</sup>As defined under the Pipeline Safety Act, hazardous liquids are petroleum, petroleum products, and anhydrous ammonia. Because ammonia accounts for a small percentage of the mileage of hazardous liquid pipelines, however, almost all hazardous liquid pipelines are actually petroleum pipelines.

<sup>6</sup>We reported on the effectiveness of the pipeline safety program in Need to Assess Federal Role in Regulating and Enforcing Pipeline Safety (GAO/RCED-84-102, July 10, 1984) and Pipeline Safety: New Risk Assessment Program Could Help Evaluate Inspection Cycle (GAO/RCED-89-107, Mar. 7, 1989).

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Water Act prohibits the pollution of virtually all bodies of surface water, regardless of size.

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## **Lack of Information Hinders Planning and Response to Petroleum Spills From Pipelines**

Federal efforts to plan a response to potential petroleum spills from pipelines, as well as efforts to quickly stop and contain ongoing spills, are hindered by lack of information on pipeline locations and pipeline operators. Unlike vessels or other sources of spills that can be seen, pipelines are usually buried, and their presence is not always apparent. This can make it difficult to identify pipelines that could cause water pollution or contact a pipeline's operator when a spill occurs.

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## **Federal Agencies Lack Information Needed to Plan Adequately for Pipeline Spills**

The National Contingency Plan requires the Coast Guard to prepare local response plans identifying the probable locations of spills and the resources available for responding to them. Additionally, Coast Guard policy requires, at a minimum, that local plans identify potential sources of pollution, one of which is pipelines. We found, however, that the local response plans for the ports we visited were inadequate because they did not contain specific information about pipelines that could cause pollution.

According to Coast Guard officials in three of the four major ports we visited, their local plans do not include the locations of pipelines that could cause pollution because specific information on the locations and owners of all pipelines is not readily available. In the fourth port—Chicago—the local plan identified the locations of pipelines that cross over major waterways, but did not generally indicate their operators or the products they transported. The only pipelines with identified products carried materials—water and natural gas—that would not cause water pollution if a spill occurred.

The National Contingency Plan requires EPA to prepare local response plans only where EPA determines that such plans are necessary and practical. None of the four EPA regions we visited had prepared such plans because, in the opinion of regional EPA officials, they were not required.



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## Federal Agencies Lack Information Needed to Quickly Stop and Contain Ongoing Spills

Comprehensive information about pipelines could aid federal efforts to quickly stop and contain an ongoing pipeline spill. Although response officials know the locations of some pipelines, none of the Coast Guard or EPA officials we spoke with could identify the locations and operators of all pipelines under their jurisdictions that could cause pollution.

Coast Guard officials in New York, Philadelphia, and New Orleans told us that comprehensive information on pipeline locations and operators would help their efforts to quickly identify the source and operator responsible for pipeline spills. Response officials need to identify and contact the operator of a leaking pipeline so that they can ensure that the pipeline is shut down and the operator is initiating cleanup. Two of the four regional EPA response officials we spoke with said that such information would be useful in their oversight of spill cleanup but would not affect the timeliness of their response. They usually do not become involved with a pipeline spill until it has already been stopped and its source identified by state officials.

The January 1990 pipeline leak in the Arthur Kill waterway separating New York and New Jersey demonstrates how lack of information can hinder efforts to locate and stop a pipeline spill. This spill, which was caused by a cracked underwater pipeline, released approximately 567,000 gallons of petroleum into the waterway. The Coast Guard and local response agencies were alerted to a possible spill at 3 a.m. on January 2 by employees of a nearby waterfront facility, who saw petroleum in the water. For nearly 7 hours, Coast Guard personnel and state and local authorities used helicopters, boats, and land-based response teams to search for the source of the spill. The authorities inspected waterfront facilities and vessels but did not consider searching for a pipeline leak because they were unaware of pipelines in the area. The source of the leak was not identified until a Coast Guard response team in a small boat witnessed petroleum bubbling to the surface following a pressure test of the pipeline conducted by its operator at 10:15 a.m. As of November 1990, this spill had cost the operator nearly \$20 million. In addition, the spill closed a commercial waterway for 4 days and damaged an important nesting area for shore and marsh birds in New York Harbor.

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## No Responsible Federal Agency Knows the Locations and Operators of All Petroleum Pipelines

Response officials need comprehensive information on pipelines for spill planning and response, but no one source currently collects such information. Although three federal agencies do collect some information on pipelines, their data do not identify the locations of all pipelines or the names of their current operators. For example, RSPA knows the operators of pipelines subject to its OPS safety regulations but does not know the exact locations of their pipelines. In addition, RSPA has no information on pipelines that could cause water pollution but are not covered by its safety regulations.

Another agency, the Army, issues construction permits (through its Corps of Engineers) for pipelines to cross navigable waterways and knows the locations of those pipelines for which it issues permits. It does not, however, know the locations of pipelines that do not cross navigable waterways but could cause pollution because they are located on land near such waterways. Moreover, the parties granted construction permits may no longer operate the pipelines.

The information collected by the Army during its permit process is used in the production of navigation charts. The Army indicates the locations of pipelines for which it has issued construction permits on the navigation charts its district engineers publish for the Mississippi, Missouri, Ohio, and Alabama River waterways. Some Army charts also include information on the party that constructed the pipeline and the product it carries. In addition, the Army shares its permit information with a third agency, the National Oceanic and Atmospheric Administration (NOAA), which is responsible for producing and distributing navigation charts for other inland waterways and coastal areas. NOAA charts show the general locations of pipelines that, in the agency's opinion, affect navigation, but they do not identify either the party granted a permit to construct the pipeline or the pipeline's current operator.

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## Information Is Available From Pipeline Operators

Although no responsible federal agency currently collects the information on pipelines that federal response officials need, a recently enacted law provides a means of collecting such information. Under the Oil Pollution Act of 1990 (P.L. 101-380), operators of pipelines and other facilities that could cause oil pollution are required to submit spill contingency plans for federal approval. Once pipeline operators are identified through their contingency plans, they could be asked to provide additional information about the locations of their pipelines.

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In New Jersey, for example, state officials have recently begun to add the locations of pipelines to a computer system used to store and analyze information on the location of natural resources and potential threats to the environment. This effort was initiated in the summer of 1990 when the state legislature enacted a law requiring all pipeline operators to report the locations of their pipelines to the state. Although the system is not yet operational, a state official told us that it will provide for better spill planning and faster state response because, when a spill occurs or pollution is suspected, the system will help identify the locations and operators of any pipelines in the area, as well as water supplies and natural resources that may be threatened.

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## Conclusions

Petroleum pipelines can cause significant water pollution, which the Clean Water Act states the federal government should prevent. DOT delegated its responsibility for preventing water pollution from pipelines to the Coast Guard, but the Coast Guard has not established a program to prevent these hazardous spills. Another DOT agency, RSPA, operates a program to protect life and property from damage by pipelines, but it has only recently begun to include environmental damage in its definition of property damage. To decide how best to fulfill its responsibility to prevent water pollution from pipelines, DOT is currently reevaluating its delegation of responsibility to the Coast Guard.

Although the Coast Guard does plan for and respond to petroleum spills from pipelines, we believe that it could plan better and respond more quickly to ongoing spills if information on pipeline locations and operators were readily available. This information, which no responsible federal agency currently collects, could be obtained from pipeline operators required to submit oil spill contingency plans for federal approval.

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## Recommendations to the Secretary of Transportation

We recommend that the Secretary ensure that DOT establish a program to prevent water-polluting spills from petroleum pipelines. When deciding which agency should implement such a program, the Secretary should consider the Coast Guard's experience in preventing pollution and OPS' expertise in regulating pipeline safety.

In addition, because information on pipeline locations and operators is needed for a timely response to petroleum spills, we recommend that the Secretary ensure that a DOT agency (1) collect information on the locations and operators of petroleum pipelines that could cause water pollution, (2) maintain the information in a form suitable for use in spill

response, and (3) make the information accessible to appropriate response officials.

## Scope and Methodology

We conducted our work between February and October 1990. During that time, we interviewed officials and reviewed documents at OPS, Coast Guard, and EPA headquarters and at Coast Guard, EPA, and Army Corps of Engineers offices in the ports of New York, New York; Philadelphia, Pennsylvania; New Orleans, Louisiana; and Chicago, Illinois. Our purposes were to determine what information is available to agencies responsible for federal pipeline pollution prevention and response and how this information affects their efforts. We also contacted officials at the National Oceanic and Atmospheric Administration headquarters and state officials in New Jersey to obtain information on the usefulness of existing pipeline information.

We discussed the contents of this report with responsible agency officials and incorporated their comments as appropriate. As requested, we did not obtain official agency comments. We performed our work in accordance with generally accepted government auditing standards.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to the Secretary of Transportation, the Commandant of the Coast Guard, the Administrator of EPA, and other interested parties.

This work was performed under the direction of Kenneth M. Mead, Director, Transportation Issues, (202) 275-1000. Other major contributors to this report are listed in appendix I.



J. Dexter Peach  
Assistant Comptroller General



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