

# Aboveground Oil Storage Tanks



Terrance I. Norton

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**TERRANCE I. NORTON**

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## **ABBREVIATIONS**

ASTSWMO	Association of State and Territorial Solid Waste Management Officials
EPA	Environmental Protection Agency
ESA	Expedited Settlement Agreement
FRP	Facility Response Plan
GIS	geographic information system
GPRA	Government Performance and Results Act
ICIS	Integrated Compliance Information System
NRC	National Response Center
OECA	Office of Enforcement and Compliance Assurance
OEM	Office of Emergency Management
OMB	Office of Management and Budget
OSCARS	On-Scene Coordinators Area Response System
SPCC	Spill Prevention, Control, and Countermeasure



## CORRESPONDENCE

April 30, 2008

The Honorable Barbara Boxer  
Chairman, Committee on Environment  
and Public Works  
United States Senate

The Honorable Arlen Specter  
United States Senate

Industrial and other facilities store billions of gallons of oil—from petroleum products to vegetable-based cooking oils—in aboveground storage tanks at various locations throughout the United States. These tanks have sometimes leaked oil that may migrate into soil, nearby waterways, and groundwater, potentially threatening human health, wildlife, and the environment. To prevent certain oil spills, the Environmental Protection Agency (EPA), under the authority of the Clean Water Act, issued the Spill Prevention, Control, and Countermeasure (SPCC) rule in 1973. The SPCC rule, as amended, requires each owner or operator of a regulated facility to prepare and implement a plan that describes how the facility is designed, operated, and maintained to prevent oil discharges into or upon U.S. navigable waters and adjoining shorelines. The plan must also include measures to control, contain, clean up, and mitigate the effects of these discharges.

EPA estimated that in 2005, about 571,000 facilities in a variety of industry sectors, such as oil and gas production, petroleum bulk storage, farming, electric utilities, and manufacturing, are regulated under the SPCC rule. Facilities are subject to the rule if they (1) are non-transportation-related, (2) have a total oil storage capacity of greater than 1,320 gallons in aboveground oil storage containers or a total oil storage capacity greater than 42,000 gallons in completely buried storage tanks, and (3) could reasonably be expected, due to their location, to discharge harmful quantities of oil into or upon U.S. navigable waters or adjoining

shorelines.<sup>1</sup> According to EPA, while some underground storage tanks are regulated under the SPCC rule, the majority of the regulated facilities consist of aboveground tanks.<sup>2</sup>

In 1974, EPA initiated the SPCC program to administer the rule. EPA directly administers the SPCC program, in contrast to some other EPA programs, which the agency authorizes the states to implement. The Clean Water Act does not provide EPA with the authority to authorize states to implement the program in its place. To ensure that facility owners and operators are meeting SPCC requirements, EPA regional personnel inspect regulated facilities to determine their compliance with regulations. EPA's Office of Emergency Management (OEM) and Office of Enforcement and Compliance Assurance (OECA) support the regions by developing and amending SPCC regulations and compliance assistance materials, providing general guidance on how to conduct inspections and enforcement actions, facilitating communication and coordination among regions, and conducting research on the incidence of oil spills, cleanups, and environmental harm. OEM and OECA provide general guidance to regional offices on how to implement the SPCC program, and regional offices decide which facilities to inspect and when and how to proceed with administrative or civil judicial enforcement actions consistent with national guidance.

In 1989, we reported that certain areas of the SPCC program lacked either the necessary data or procedures to ensure consistent and effective program implementation and recommended ways to strengthen the program.<sup>3</sup> Among other actions, we recommended that EPA (1) develop an inventory of aboveground oil storage facilities because it had little information on facilities that might be regulated by the SPCC rule and (2)

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<sup>1</sup>For purposes of the SPCC rule, non-transportation-related facilities include, among others, such facilities as fixed or mobile onshore and offshore oil drilling and production facilities; oil refining and storage facilities; industrial, commercial, agricultural, and public facilities that use and store oil; waste treatment facilities; loading racks, transfer hoses, loading arms, and other equipment used to transfer oil in bulk to or from highway vehicles or railroad cars; and highway vehicles, railroad cars, and pipelines used to transport oil within confines of a non-transportation-related facility. 40 C.F.R. pt. 112, app. A.

<sup>2</sup>While EPA refers to oil storage "containers" in the SPCC rule, with "tanks" as a subset of those containers, in this report we refer to those storage units described in the SPCC rule by the more commonly used term "tanks."

<sup>3</sup>GAO, *Inland Oil Spills: Stronger Regulation and Enforcement Needed to Avoid Future Incidents*, GAO/RCED-89-65 (Washington, D.C.: Feb. 22, 1989).

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provide uniform instructions to its regions for conducting and documenting inspections at SPCC facilities. In 1995, we reported that EPA had taken steps to address these recommendations but had not fully implemented them.<sup>4</sup>

While EPA is solely responsible for ensuring that facilities comply with SPCC regulations, a number of states have established their own parallel regulations and programs whose goal—preventing leaks from aboveground oil storage tanks—is similar to that of the SPCC program. These programs may differ from EPA’s program in type and extent of regulations and in their implementation. For example, while EPA’s program regulates those facilities that could discharge quantities of oil into or upon U.S. navigable waters and adjoining shorelines, some states regulate facilities that have the potential to spill oil into groundwater and surface waters. In addition, some states do not have separate, formal spill prevention programs, but may inspect aboveground storage tanks as part of other regulations, such as state fire prevention codes. Because states differ in their approaches to regulating aboveground storage tanks, in some states, both EPA and the state may inspect some facilities, while in other states, EPA may be the sole regulatory agency inspecting oil storage facilities.

To hold federal agencies systematically accountable for achieving results from their programs, such as EPA’s SPCC Program, the Congress passed the Government Performance and Results Act (GPRA) of 1993. The act requires EPA and other federal agencies to develop strategic plans covering at least 5 years and submit them to the Congress and the Director of the Office of Management and Budget (OMB). In addition, GPRA requires agencies to prepare annual performance plans that establish goals for the upcoming fiscal year that are aligned with the agencies’ long-term strategic goals that are described in their strategic plans. These annual performance plans must include results-oriented annual goals that are linked to program activities and indicators that the agency will use to measure performance against these goals.

In this context, you asked us to review EPA’s SPCC program. Specifically, we (1) determined how EPA regions implement the SPCC program, especially inspection and enforcement activities, (2) identified the data

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<sup>4</sup>GAO, *Aboveground Oil Storage Tanks: Status of EPA’s Efforts to Improve Regulation and Inspections*, GAO/RCED-95-180 (Washington, D.C.: July 18, 1995).

EPA has available to implement and evaluate the SPCC program, and (3) examined the extent to which tank programs in selected states offer examples of ways that EPA might improve its implementation of the SPCC program.

To review EPA regions' practices in implementing the SPCC program, we surveyed all 10 EPA regions to determine, among other things, how they identify facilities to inspect, the number of inspections each region has conducted in recent years, how many SPCC inspectors have received training, and the number of those inspected facilities that complied with SPCC regulations and, for those that did not comply, the number of enforcement actions taken. We also discussed the regions' responses to our survey in detail with regional officials. To determine what SPCC data EPA officials have available, we spoke with EPA officials to identify the agency's data sources for enforcing SPCC regulations, determine how the agency uses the data, and determine the data's overall limitations. Finally, we interviewed officials from aboveground oil storage tank programs in six states—Florida, Minnesota, Missouri, New Jersey, New Mexico, and Virginia—to understand the nature of their programs and how they are implemented, to identify practices that might be applied to EPA's program, and to learn about any coordination between these states' programs and EPA's SPCC program. We selected these six states because they (1) had aboveground storage tank programs, (2) were recommended by trade associations and other officials as states that had well-run storage tank programs, and (3) represented a cross section of geographical areas and EPA regions. Appendix I provides a more detailed explanation of our scope and methodology. We conducted this performance audit between August 2007 and April 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Results in Brief

EPA allows its regional offices flexibility in how they implement the SPCC program to fit their needs and address their unique challenges. EPA regional offices often have different numbers and types of regulated facilities and staffing arrangements, and face different geographic challenges in implementing the SPCC program. As a result, the regions have varied in their use of staff for inspections, the number of facilities inspected, and penalty assessments, although their budget allocations for SPCC activities have been similar in recent years. For example, Region 2—

responsible for New Jersey, New York, and Puerto Rico—uses only dedicated EPA SPCC program staff to inspect facilities subject to the SPCC rule. In contrast, Region 6—responsible for Arkansas, Louisiana, New Mexico, Oklahoma, and Texas—which is considered to have a large portion of the nation’s oil business, uses several contractors as well as regional staff to help inspect facilities in that region subject to the SPCC rule. Partly because of these regional differences, the number of facilities inspected and the level of enforcement actions taken have varied across regional offices in recent years. According to our survey, EPA regions inspected a total of 3,359 SPCC facilities from fiscal year 2004 through fiscal year 2006, representing less than 1 percent of EPA’s estimated total number of SPCC facilities nationwide. The number of facilities inspected during that 3-year period ranged from a low of 184 inspected in Region 10—responsible for Alaska, Idaho, Oregon, and Washington state—to a high of 745 inspected in Region 6. Similarly, the percentage of inspected facilities against which regions took enforcement actions varied. Furthermore, in enforcing the SPCC rule, regions are allowed to determine if, and when, they will use expedited settlement agreements, an enforcement action designed, according to EPA, to gain facility compliance more quickly than traditional approaches. While still allowing flexibility, EPA has begun implementing nationwide policies and procedures to promote more consistency in how the SPCC regulations are interpreted and enforced. For example, in 2005, EPA issued guidance to assist regional inspectors in understanding the SPCC rules and their roles when inspecting facilities. According to officials we interviewed, the regions are using this guidance to ensure that inspectors conduct complete inspections.

EPA has information on only a portion of the facilities potentially subject to the SPCC rule. This limited knowledge hinders the agency’s ability to effectively identify regulated facilities, establish inspection priorities, and evaluate whether the program is achieving its goals. Because EPA’s regulations do not require facilities to report to the agency that they are subject to the SPCC rule, EPA does not know the universe of SPCC-regulated facilities and must identify them by other means. EPA identifies potential SPCC facilities through sources such as available oil spill data, state referrals, Internet searches, and the *Yellow Pages*. Then, through an inspection, EPA confirms whether a facility is covered by the rule. While inspections of known SPCC facilities are generally risk-based, the risk assessments exclude the large number of estimated SPCC facilities that have not yet been identified, some of which may pose more serious threats than those targeted for inspection. EPA is creating a national database to improve its management of the SPCC program by promoting standard data

collection across regions and expanding the amount of facility information available to regional managers. However, this database is limited to facilities that have already been inspected and will not enable program managers to better identify additional SPCC facilities. Ultimately, incomplete information on which facilities are subject to the SPCC rule, and where and how often leaks may occur, prevents the agency from effectively targeting inspections to those facilities that potentially pose the highest risks. Furthermore, EPA does not have performance measures that can be used to examine the SPCC program's effectiveness in preventing oil spills. EPA is developing such measures, but without more complete data on the SPCC-regulated universe, these measures cannot gauge the program's accomplishments.

State officials we contacted told us that requiring tank owners to register their facilities and report data allows states to more effectively manage their tank programs, and that better coordination with EPA would benefit both the SPCC and state programs. Specifically, because they require tank owners to register and to report data, five of the six states we contacted have information on the full universe of facilities subject to state regulations. With comprehensive data, these states can either inspect all of their facilities or target those facilities that they believe present the highest risk of oil spills. Officials in the sixth state, Missouri, told us that they obtain information on tanks through voluntary compliance and their relationships with affiliated industries. Furthermore, state officials told us that because they have detailed knowledge of the regulated facilities in their jurisdictions, EPA could benefit from increased coordination with their offices, such as when identifying and targeting facilities for inspection. Currently, the extent and nature of such coordination between EPA and the six states vary. Officials in five of the six states told us that they have occasional discussions or no contact with their EPA regions, but that they are open to more coordination with EPA on identifying and targeting facilities for inspections and conducting outreach activities. The remaining state, Virginia, has a formal agreement with EPA Region 3 to coordinate its regulatory programs' activities, such as aboveground oil storage tank inspections.

To more effectively manage the SPCC program, we are recommending that EPA (1) analyze the costs and benefits of the options for obtaining data on the universe of SPCC-regulated facilities, including, among others, a tank registration program similar to that of some states; (2) in conjunction with states that have oil spill prevention programs, develop uniform guidance for EPA regional offices on how to better communicate and coordinate with those states on SPCC-related issues; and (3) complete the



development of performance measures and obtain the data needed to evaluate the effectiveness of the SPCC program.

In commenting on a draft of this report, EPA generally agreed with our recommendations. According to EPA, the report provided a good, comprehensive picture of a portion of the oil spill program implemented by EPA's Office of Emergency Management. With regard to our recommendation that EPA finish developing performance measures and obtain the data needed to evaluate SPCC program effectiveness, the agency noted—as we acknowledge in the report—that EPA has already initiated work to develop such measures and that the feedback the report provides will help to further shape the agency's actions in this regard. Beyond agreeing with our other two recommendations, EPA did not comment on them.

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## Background

The Clean Water Act prohibits the discharge of oil and hazardous substances into or upon U.S. navigable waters or adjoining shorelines and directs the President to issue regulations establishing procedures, methods, and equipment requirements to prevent such discharges. The President subsequently delegated this responsibility to EPA. In 1973, to meet this responsibility as it relates to oil discharges, EPA issued the Oil Pollution Prevention Regulation—also referred to as the SPCC rule—which outlined the actions oil storage facilities that store greater than certain quantities of oil must take to prevent, prepare for, and respond to oil spills before they reach U.S. navigable waters or adjoining shorelines. In 1974, the SPCC rule took effect and EPA initiated the SPCC program. Under this program, regulated facilities must implement procedures and methods and have certain equipment to prevent oil discharges from reaching U.S. navigable waters and adjoining shorelines. SPCC requires facilities to prepare oil spill prevention plans that spell out (1) design, operation, and maintenance procedures to prevent spills from occurring and (2) countermeasures to control, contain, clean up, and mitigate the effects of an oil spill.

In 1994, in response to directives in the Oil Pollution Act of 1990—which amended the Clean Water Act—EPA established specific requirements for a subclass of SPCC facilities, including that these facilities develop and implement Facility Response Plans (FRP). According to EPA, there are about 4,100 FRP facilities nationwide—less than 1 percent of the estimated SPCC-regulated facilities. FRP facilities are those that, because of their location, could reasonably be expected to cause substantial harm to the environment by discharging oil into or on U.S. navigable waters,

adjoining shorelines, or the exclusive economic zone.<sup>5</sup> Under EPA regulations, facilities are considered FRP facilities if they have (1) 42,000 gallons or more of oil storage capacity and transfer oil over water or (2) 1 million gallons or more of oil storage capacity and meet other specific criteria, such as risking injury to sensitive environments or the shutting down of public drinking water intake. Owing to the higher risk they pose, FRP facilities are subject to more stringent rules and regulations than other SPCC facilities, primarily focusing on response preparedness. For example, FRP facilities must submit for EPA's review and possible approval, plans that identify the individual having full authority to implement removal actions at the facility and the resources available to remove a discharge, and describe the training, testing, and response actions of persons at the facility, among other things. Even though FRP facilities are subject to more stringent requirements than other SPCC facilities, they are required to have SPCC plans and are also inspected through the SPCC program.

In response to some major oil spills, our 1989 report, and similar findings by an EPA taskforce, the agency proposed revisions to the SPCC rule in 1991, 1993, and 1997 and finalized these amendments in 2002.<sup>6</sup> These amendments made over 30 changes that EPA considers major to the SPCC rule, such as including new subparts outlining the requirements for various classes of oil; revising the applicability of the regulation; amending the requirements for completing SPCC plans; and strengthening tank integrity testing requirements, among other changes. The final rule also contained a number of provisions designed to decrease regulatory burden while preserving environmental protection. Since then, EPA

- in 2006, made several major changes to the SPCC rule to further reduce regulatory burden, including an amendment that allows certain smaller facilities, identified as "qualified facilities," storing up to 10,000 gallons of oil, to prepare self-certified SPCC plans and

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<sup>5</sup>The 1982 Convention on the Laws of the Seas granted coastal countries, such as the United States, exclusive economic zones that extend to a distance of 200 nautical miles out from a country's coast line. They provide a country with special rights over the exploration and use of marine sources within the zone.

<sup>6</sup>For example, 1 million gallons spilled into the Monongahela River from the collapse of an aboveground storage tank at the Ashland Oil Co. facility near Pittsburgh, Pennsylvania, in 1988.

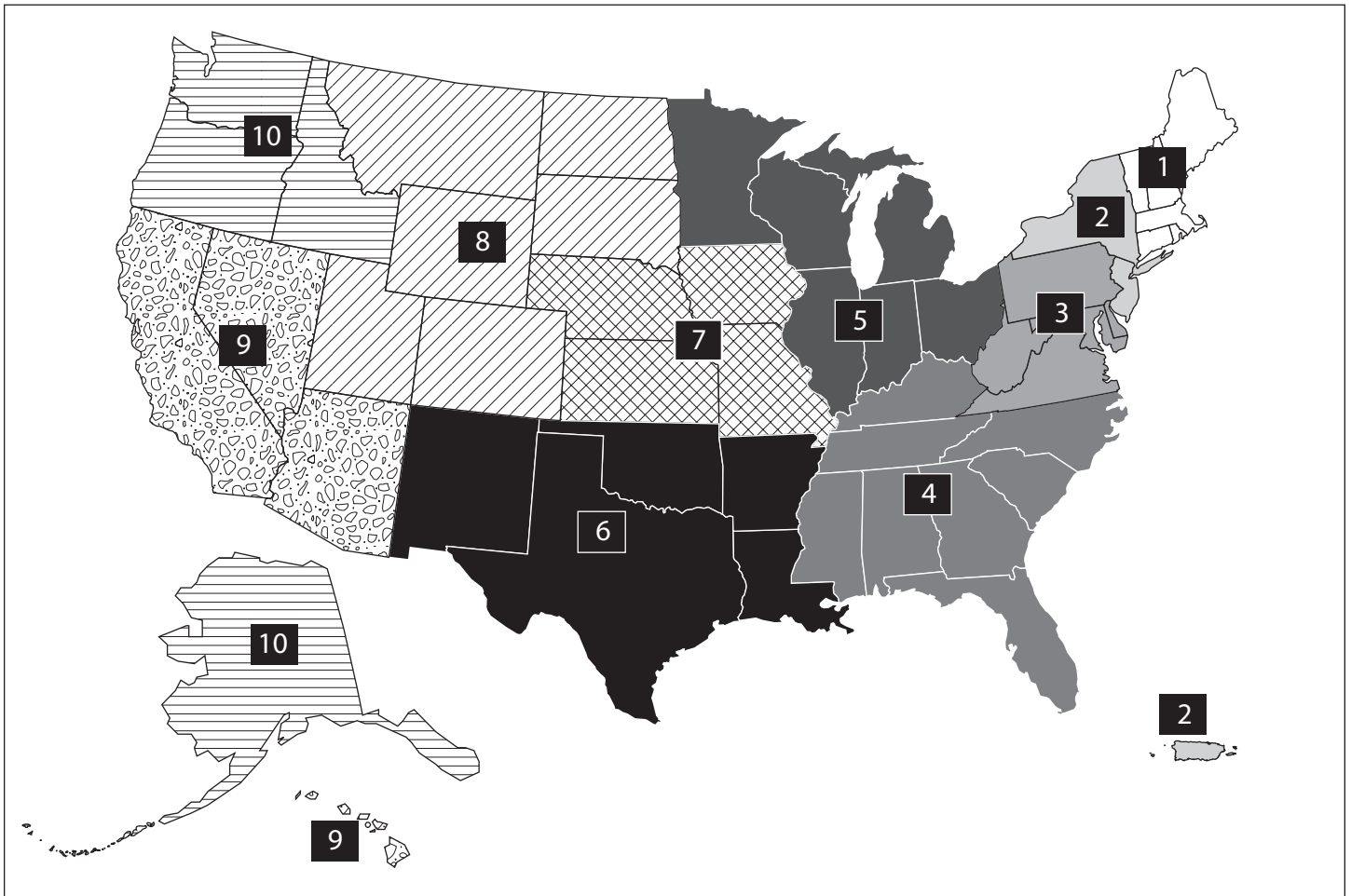
- in October 2007, proposed further changes to streamline the SPCC requirements to, among other things, reduce regulatory burden on industries such as farms and oil production facilities. The agency plans to make these changes final in late 2008.

Although EPA amended the SPCC rule in 2002 and 2006, the new requirements have not taken effect because EPA extended the date by which facilities were to come into compliance with these revised requirements in 2003, 2004, 2006, and 2007. That is, owners and operators of facilities operating on or before August 16, 2002, must continue to maintain their SPCC plans based on current SPCC requirements and then must amend them to ensure compliance with the amended requirements by July 1, 2009. Facilities beginning operations after August 16, 2002, have until July 1, 2009, to prepare and implement a plan. EPA made this latest extension to, among other things, give owners and operators of facilities the time to fully understand the 2002 and 2006 amendments and the further revisions that are planned for implementation in 2008, and to make changes to their facilities and plans. We reported on the reasonableness of the economic analyses EPA performed in support of the 2002 and 2006 amendments to the SPCC rule in July 2007.<sup>7</sup> We found that the economic analysis of the 2002 amendments had several limitations that reduced its usefulness for assessing the amendments' benefits and costs. We also found that although EPA's economic analysis of the 2006 amendments addressed several of the 2002 limitations, it also had some limitations that reduced its usefulness for assessing the amendments' benefits and costs.

EPA delegates implementation of the program to its 10 regional offices, which carry out inspection programs to ensure that the facilities are in compliance with the SPCC regulations. Figure 1 shows the locations of EPA's 10 regions.

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<sup>7</sup>GAO, *Aboveground Oil Storage Tanks: Observations on EPA's Economic Analyses of Amendments to the Spill Prevention, Control, and Countermeasure Rule*, GAO-07-763 (Washington, D.C.: July 27, 2007).

**Figure 1: EPA Regions**

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When EPA inspects a facility, it typically sends one or more inspectors from the region to the facility. These visits generally begin with a list of questions about the facility, such as confirming that the facility meets the criteria for the SPCC rule and asking whether it has an SPCC plan. The inspectors will then review the plan to see if it contains information required under the SPCC rule, including facility diagrams, training of employees, security measures, containment structures, and records of facility inspection and tests. The inspectors then tour the facility and examine how the plan is being implemented by, for example, inspecting equipment and taking notes and photographs. After the inspection, a