

GAO

Report to the Honorable James M.  
Inhofe, Ranking Member, Committee on  
Environment and Public Works, U.S.  
Senate

July 2007

# ABOVEGROUND OIL STORAGE TANKS

## Observations on EPA's Economic Analyses of Amendments to the Spill Prevention, Control, and Countermeasure Rule





Highlights of [GAO-07-763](#), a report to the Honorable James M. Inhofe, Ranking Member, Committee on Environment and Public Works, U.S. Senate

## Why GAO Did This Study

Oil in aboveground tanks can leak into soil and nearby water, threatening human health and wildlife. To prevent certain oil spills, the Environmental Protection Agency (EPA) issued the Spill Prevention, Control, and Countermeasure (SPCC) rule in 1973. EPA estimated that, in 2005, about 571,000 facilities were regulated under this rule. When finalizing amendments to the rule in 2002 and 2006 to both strengthen the rule and reduce industry burden, EPA analyzed the amendments' potential impacts and concluded that the amendments were economically justified.

As requested, GAO assessed the reasonableness of EPA's economic analyses of the 2002 and 2006 SPCC amendments, using Office of Management and Budget (OMB) guidelines for federal agencies in determining regulatory impacts, among other criteria, and discussed EPA's analyses with EPA officials.

## What GAO Recommends

GAO recommends that EPA improve its analysis of future changes to the SPCC rule by more closely following OMB guidance. In commenting on a draft of this report, EPA generally agreed with this recommendation and stated that, consistent with it, the agency will continue gathering data to improve its understanding of the regulated universe and oil spill risks and to address uncertainty and quantify benefits.

[www.gao.gov/cgi-bin/getrpt?GAO-07-763](http://www.gao.gov/cgi-bin/getrpt?GAO-07-763).

To view the full product, including the scope and methodology, click on the link above. For more information, contact John B. Stephenson at (202) 512-3841 or [stephensonj@gao.gov](mailto:stephensonj@gao.gov).

# ABOVEGROUND OIL STORAGE TANKS

## Observations on EPA's Economic Analyses of Amendments to the Spill Prevention, Control, and Countermeasure Rule

### What GAO Found

EPA's economic analysis of the 2002 SPCC amendments had several limitations that reduced its usefulness for assessing the amendments' benefits and costs. In particular, EPA did not include in its analysis a number of the elements recommended by OMB guidelines for assessing regulatory impacts. For example, EPA did not assess the uncertainty of key assumptions and data. In the analysis, EPA assumed that certain facilities were already complying with at least some of the rule's provisions and, as a result, they would not incur any additional compliance costs because of the amendments. However, the extent of facility compliance with the rule was highly uncertain. EPA did not analyze the effects of alternative rates of industry compliance on the estimated costs and benefits of the revised rule and, therefore, potentially misstated these amounts. Furthermore, EPA's 2002 analysis was limited in that it

- did not analyze alternatives to the amendments, such as alternative lead times for industry to comply or alternative levels of stringency;
- did not present the compliance costs that EPA expects facilities to incur or save in the second and subsequent years under the amendments in comparable present value terms (through discounting); and
- provided only limited general information on the amendments' potential benefits in reducing the risk of an oil spill and its potential effects on human health and the environment.

EPA's economic analysis of the 2006 amendments addressed several of the limitations of its 2002 analysis, but it also had some limitations that made it less useful than it could have been for assessing the amendments' costs and benefits. For example, EPA's 2006 analysis assessed the potential effect of industry noncompliance on the estimated costs (or cost savings) and estimated the present value of costs (or cost savings) associated with different alternatives for burden reduction. Nevertheless, as with the 2002 analysis, EPA did not estimate the potential benefits of the 2006 amendments, such as the extent to which they would affect the risk of an oil spill and public health and welfare and the environment. In addition, EPA did not have available nationally representative samples for its analysis; therefore, its estimates of the number of facilities that would be affected by the 2006 amendments may not be accurate. In particular, for one category of facilities, EPA based its estimates of the number of facilities on data available from eight states. Because facilities in these states may not have been representative of facilities nationwide, EPA's use of these data in its analysis could have introduced bias into its estimates of the number of facilities and costs for this amendment. EPA acknowledged that its analysis of the 2006 amendments was not a full accounting of all social benefits and costs but stated that the results were based on the best available information given time and resource constraints.

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**Abbreviations**

EPA	Environmental Protection Agency
FRP	Federal Response Plan
NRC	National Response Center
OMB	Office of Management and Budget
PE	Professional Engineer
SPCC	Spill Prevention, Control, and Countermeasure

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United States Government Accountability Office  
Washington, DC 20548

July 27, 2007

The Honorable James M. Inhofe  
Ranking Member  
Committee on Environment and Public Works  
United States Senate

Dear Senator Inhofe:

Billions of gallons of oil, from petroleum products to cooking oils, are produced, distributed, and used each year in the United States. These oils—often stored in aboveground storage tanks at various types of facilities—have sometimes leaked into soil and nearby water, posing threats to public health and to wildlife and their habitats. 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. EPA estimated that, in 2005, about 571,000 facilities in industry sectors such as oil production, petroleum bulk storage, farming, electric utilities, and manufacturing were regulated under this rule. Facilities are subject to the rule, as amended, if they are nontransportation related and have a total capacity of greater than (1) 1,320 gallons in aboveground oil storage tanks or (2) 42,000 gallons in completely buried oil storage tanks, and if they could reasonably be expected, due to their location, to discharge harmful quantities of oil into or upon the navigable waters of the United States or adjoining shorelines.<sup>1</sup>

The SPCC rule requires each owner or operator of a regulated facility to prepare or amend and implement a plan that describes how the facility is designed, operated, and maintained to prevent the discharge of oil into

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<sup>1</sup>EPA defines *harmful quantity* as any quantity of discharged oil that violates applicable water quality standards, causes a film or sheen upon, or discoloration of, the surface of the water or adjoining shorelines, or causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines. 40 C.F.R. §110.3. Section 311 of the Clean Water Act prohibits the discharge of harmful quantities of oil or hazardous substances (1) into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone, or (2) in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States, including resources under the Magnuson-Stevens Fishery Conservation and Management Act 33 U.S.C. § 1321(b)(3).

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navigable waters or adjoining shorelines. The plan must also include measures to control, contain, clean up, and alleviate the effects of an oil spill so as to prevent such spills from reaching any navigable waters or adjoining shorelines. According to industry sectors covered by the rule, facilities may incur significant costs to develop, revise, and implement an SPCC plan, for such actions as modifying the facility and having an engineer review and certify these modifications. The extent of the costs depends on, among other things, the size and type of facility and whether the facility is a new or existing one.

In July 2002, as part of an overall government effort to reduce regulatory burden—and to respond to recommendations made by GAO and an EPA spills task force—EPA made over 100 amendments to the rule, including 30 that it considered major. Although the intent of some of the amendments was to strengthen the rule to better prevent oil spills as GAO and the task force had recommended, EPA also expected that some of these amendments would, among other things, reduce inefficiencies, eliminate duplication of effort, reduce the number of facilities regulated by the rule, and lower facilities' compliance costs.<sup>2</sup> For example, under the 2002 amendments to the rule, EPA no longer regulates certain completely buried tanks that are subject to underground storage tank regulations.<sup>3</sup> This change eliminated from the rule some completely buried containers and facilities that were previously covered by both sets of regulations and, therefore, duplicated compliance costs. In addition, the agency made changes that, in EPA's view, clarified the rule's language to better define which facilities are subject to the rule. However, many industry sectors consider several of these amendments to be changes to the requirements of the rule rather than clarifications and, in some cases, maintain that they had not previously considered themselves subject to the rule prior to these changes.

In 2006, partly in response to industry concerns about the cost of complying with the 2002 amendments, EPA made several major changes to the rule to further reduce burden and provide owners and operators of certain facilities a more cost-effective approach to prevent oil spills, which, according to EPA, could potentially impact about 62 percent of the

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<sup>2</sup>GAO, *Inland Oil Spills: Stronger Regulation and Enforcement Needed to Avoid Future Incidents*, [GAO/RCED-89-65](#) (Washington, D.C.: Feb. 22, 1989); The Oil Spill Prevention, Control, and Countermeasures Program Task Force, *Interim Final Report*, May 13, 1988.

<sup>3</sup>40 C.F.R. pts. 280, 281.

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regulated universe. For example, the 2006 amendments allowed qualified facilities, such as those with an oil storage capacity of 10,000 gallons or less and that meet a reportable discharge history criterion, to self-certify their SPCC plans rather than hire a professional engineer for certification. EPA has extended until July 1, 2009, the date by which facility owners and operators must prepare or amend and implement SPCC plans in accordance with the 2002 and 2006 amendments, provided that the owners and operators of facilities in existence on or before August 16, 2002, maintain their existing plans.

When finalizing the 2002 and 2006 amendments to the SPCC rule, EPA conducted economic analyses of the potential impacts that these amendments were expected to have on the regulated community. Federal agencies are generally required by statute and executive order to assess the costs and benefits of significant regulatory actions, including those that would have an annual effect on the economy of \$100 million or more.<sup>4</sup> Furthermore, the Office of Management and Budget (OMB) developed guidelines under Executive Order 12866 to encourage good regulatory impact analysis and to standardize the way that benefits and costs of federal regulations are measured and reported.<sup>5</sup> The OMB guidelines generally direct agencies, in analyzing the impacts of rules, to, among other things, (1) identify and quantitatively analyze key uncertainties in their analysis, (2) measure the potential social benefits and costs—including the effects on public health and welfare and the environment—of regulatory alternatives incremental to a “baseline,” (or the conditions that would exist in the absence of the proposed regulation), (3) identify the regulatory alternative that would maximize net social benefits (total benefits minus total costs), and (4) present benefits and costs that would occur in different time periods in comparable, present value terms. OMB guidelines further state that good regulatory analysis includes identifying the regulatory alternative with the largest net benefits (that is, that

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<sup>4</sup>Executive Order 12866 directs agencies to conduct economic analyses of significant regulatory actions and to select the policy that maximizes net benefits to society unless a statute requires otherwise. Further, the Unfunded Mandates Reform Act of 1995, Pub. L. No. 104-4, 109 Stat. 48 (1995) (codified at 2 U.S.C. § 1531 et seq.), requires agencies to choose the least costly, most cost-effective, or least burdensome option, unless inconsistent with law or the agency head explains why this option was not adopted.

<sup>5</sup>Office of Management and Budget (OMB): *Economic Analysis of Federal Regulations Under Executive Order 12866* (Jan. 11, 1996) (generally referred to as “best practices”); OMB, *Guidelines to Standardize Measures of Costs and Benefits and the Format of Accounting Statements* (May 22, 2000); and Circular A-4 (Sept. 17, 2003) (replacing earlier guidelines, effective for significant final rules on January 1, 2005).

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maximizes economic efficiency), and such information is useful for decision makers and the public, even when economic efficiency is not the only or the overriding public policy objective. EPA concluded, on the basis of its economic analyses, that the 2002 and 2006 amendments were economically justified.

In this context, you asked us to review the reasonableness of the economic analyses EPA performed in support of the 2002 and 2006 SPCC amendments. To respond to this objective, we evaluated EPA's economic analyses using, among other criteria, OMB guidelines for federal agencies in assessing regulatory impacts. In addition, we discussed EPA's analyses with senior officials in EPA's Office of Emergency Management, which was responsible for conducting the analyses. We performed our work from June 2006 to July 2007 in accordance with generally accepted government auditing standards. A more detailed discussion of our objectives, scope, and methodology is presented in appendix I.

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## Results in Brief

EPA's economic analysis of the 2002 SPCC amendments had limitations that reduced its usefulness for assessing the amendments' costs and benefits. In particular, EPA's analysis did not assess the uncertainty associated with key assumptions and data, as directed by OMB guidelines. For example, in conducting its analysis, EPA assumed that certain facilities were already complying with at least some of the 2002 amendments and, as a result, these facilities would not incur any additional compliance costs. In addition, EPA assumed that any compliance costs incurred by facilities that were not complying with at least some of the amendments should be attributed in its analysis to the baseline and not to the 2002 amendments. However, the extent to which facilities were in compliance—or would be in compliance in the future in the absence of the amendments—was highly uncertain. EPA stated that it was possible that some facilities misinterpreted the existing regulation and were not in full compliance with it but that there was no practical way to measure industry compliance. Nevertheless, OMB guidelines indicate that, when compliance with existing regulations is uncertain and different assumptions about compliance could significantly affect the estimated benefits and costs, agencies can assess, through uncertainty analysis, the effect of multiple baselines using different assumptions about the extent of compliance. Without such an analysis, EPA excluded from its assessment of the total costs and benefits associated with the 2002 amendments the potential impacts of the extent of facilities' compliance, thus potentially misstating these amounts. Furthermore, EPA's 2002 analysis was limited because it did not



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- analyze alternatives to the amendments, such as alternative lead times for industry to comply or alternative levels of stringency;
  - present in comparable present value terms (through discounting) the compliance costs that EPA expected facilities to incur or save over time as a result of the amendments; and
  - estimate the benefits associated with the amendments but rather provided only limited general qualitative information on the risk of an oil spill and the damages to public health and welfare and the environment that it might cause.

EPA's economic analysis of the 2006 amendments addressed several of the limitations of its 2002 analysis, but it also had some limitations that made it less useful than it could have been for assessing the economic trade-offs associated with the amendments. For example, in contrast with its analysis of the 2002 amendments, EPA's 2006 analysis used an alternative baseline to assess the potential effects of industry noncompliance on the estimated costs (or cost savings), considered some regulatory alternatives, and estimated the present value of costs (or cost savings) associated with different regulatory alternatives for burden reduction that the agency considered in its analysis. Nevertheless, as with the 2002 analysis, EPA did not estimate the potential benefits of the 2006 amendments, such as the extent to which they would affect the risk of an oil spill and public health and welfare and the environment. In addition, EPA did not have available nationally representative samples for its analysis; therefore, its estimates of the number of facilities that would be affected by the 2006 amendments may not be accurate. In particular, EPA based its estimates of the number of facilities that would be affected by one amendment that would reduce the burden for certain "qualified facilities" on data available from eight states. Because facilities in these states may not have been representative of facilities nationwide, EPA's use of these data in its analysis could have introduced bias into its estimates of the number of facilities and costs for this amendment. EPA acknowledged that its 2006 analysis was not a full accounting of all social benefits and costs, but stated that the results were useful and informative and were based on the best available information given time and resource constraints. However, without more substantive information on the extent to which the 2006 amendments might affect the risk of an oil spill and public health and welfare and the environment, it is difficult to confirm that the amendments were economically justified, as EPA concluded. EPA officials stated that the agency will continue to work to refine and improve its analytical methods to address uncertainties in the number of facilities affected, compliance rates, and benefits analysis, and

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to improve its economic analyses for future rule changes. In light of the limitations of EPA's analysis of the 2002 and 2006 SPCC amendments, we are recommending that EPA improve its economic analyses of future changes to the SPCC rule by ensuring that they include all of the key elements contained in OMB's guidelines.

In commenting on a draft of this report, EPA generally agreed with our recommendation. According to EPA, consistent with our recommendation, the agency is taking steps to improve its SPCC analyses and plans to continue gathering additional data to improve its understanding of the regulated universe and oil spill risks and to address uncertainty and quantify benefits.

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## Background

The Clean Water Act prohibits the discharge of oil into or upon navigable waters or adjoining shorelines and requires the President to establish regulations to prevent oil spills. The President subsequently delegated this responsibility to EPA. To fulfill this requirement, in 1973, EPA issued its Oil Pollution Prevention Regulation,<sup>6</sup> which outlined actions regulated facilities must take to prevent, prepare for, and respond to oil spills before they reach navigable waters or adjoining shorelines. Under this rule, as amended through 2006, EPA seeks to prevent oil spills from storage tanks at facilities that (1) have an aggregate aboveground storage tank capacity of more than 1,320 gallons or a total completely buried storage capacity greater than 42,000 gallons and (2) could reasonably be expected, due to their location, to discharge oil in quantities that may be harmful into or upon the navigable waters of the United States or onto adjoining shorelines.<sup>7</sup> EPA estimated that about 571,000 facilities were regulated under the SPCC rule as of 2005. Oil production facilities (an estimated 166,000 facilities or 29 percent of the total) and farms (an estimated 152,000 facilities or 27 percent of the total) account for the largest portion of these estimated facilities. The SPCC rule does not require facilities that are covered under the rule to report to EPA that they are covered.

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<sup>6</sup>Oil Pollution Prevention: Non-Transportation-Related Onshore and Offshore Facilities, 38 Fed. Reg. 34164 (December 11, 1973) (codified as amended at 40 C.F.R. pt. 112).

<sup>7</sup>As amended in 2002, total storage capacity excludes containers with capacity of less than 55 gallons, capacity of containers that are permanently closed, and facilities or parts of facilities used exclusively for wastewater treatment. In addition, it excludes completely buried tanks, associated underground piping, underground ancillary equipment, and containment systems that are subject to all of the technical requirements of the underground storage tank regulations.

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Therefore, the agency does not have an inventory of facilities that it regulates under the program. However, facilities are required to report discharges of oil in quantities that may be harmful to navigable waters or adjoining shorelines to the National Response Center (NRC), but EPA does not consider these and other data reliable enough for EPA to determine the number of facilities subject to the SPCC rule that have had oil spills.<sup>8</sup>

The SPCC rule is a cornerstone of EPA's strategy to prevent oil spills from reaching the nation's waters. The regulation requires each owner or operator of a regulated onshore or offshore facility to prepare or amend and implement an SPCC plan that describes the facility's design, operation, and maintenance procedures established to prevent spills from occurring, as well as countermeasures to control, contain, clean up, and mitigate the effects of an oil spill that could reach navigable waters or adjoining shorelines. Unlike oil spill contingency plans that typically address spill cleanup measures after a spill to navigable waters or adjoining shorelines has occurred, SPCC plans ensure that facilities put in place containment and other measures—such as regular visual inspection and integrity testing of bulk storage containers—to prevent oil spills that could reach navigable waters or adjoining shorelines. EPA's 10 regional offices administer an inspection program to ensure compliance with the regulations.

EPA proposed revisions to the SPCC rule in October 1991 and February 1993. In addition to clarifying previous regulatory language, these proposed revisions outlined additional requirements for regulated facilities. In December 1997, EPA proposed additional amendments to the SPCC requirements, focusing on measures to reduce the information collection burden on affected facilities. Many, but not all, of the amendments to the rule proposed by EPA in 1991, 1993, and 1997, were made final in July 2002.

EPA made over 100 amendments to the rule in 2002, including more than 30 that EPA considers to be major. Several of these amendments changed the scope of the rule's applicability. For example, the 2002 amendments

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<sup>8</sup>NRC is the federal government's national communications center and the national point of contact for spill reporting. NRC also distributes reported spill information to agencies—including EPA and the U.S. Coast Guard—tasked with responding to spills. It is staffed 24 hours a day by Coast Guard officers and marine science technicians.

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- exempted from the rule containers with a capacity of less than 55 gallons, completely buried storage tanks subject to all of the technical requirements of underground storage tank regulations, permanently closed oil tanks as defined in the regulation, and any facility or part thereof used exclusively for wastewater treatment; and
  - eliminated the provision triggering the requirement for an SPCC plan when any single container has a capacity of greater than 660 gallons but maintained the 1,320-gallon total capacity threshold.

The 2002 amendments also added to or changed the language of some definitions in the 1973 rule in order, according to EPA, to clarify which facilities are subject to the rule and facilities' responsibilities under the rule. For example, according to EPA, the 2002 amendments clarified the following:

- A "facility" may be as small as a piece of equipment—for example, a tank—or as large as a military base; "oil" includes not only petroleum oil, but such other products as animal fats, vegetable oils, and oil mixed with wastes, other than "dredged spoil"; and what "navigable waters" means for purposes of the rule.<sup>9</sup>
- The SPCC rule applies to facilities that "use" oil, such as in the operational use of oil-filled equipment.<sup>10</sup>
- EPA had always considered statements in the existing (1973) SPCC regulations that a facility "should" implement a specific rule provision as meaning that a facility was required to comply with that provision or, if circumstances warranted, undertake alternative methods to achieve environmental protection. As a result, EPA changed "should" to "must" to reflect this understanding and address any confusion that compliance with such provisions was optional.

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<sup>9</sup>In 1975, EPA first published a clarification of the rule's definition of oil, "affirm[ing] that non-petroleum oils, such as fats and oils from animals and vegetable sources," were subject to the rule. 40 *Fed. Reg.* 28,849 (July 9, 1975). Wastes can include oil mixed with water—known as produced water in the oil and gas production sector.

<sup>10</sup>Facilities that use oil operationally include electrical substations that contain electrical transformers and certain hydraulic systems. Oil-filled operational equipment includes an oil storage container in which the oil is present solely to support the function of the apparatus or device.

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According to EPA, the agency made several of these definitional changes to clarify the types of facilities that are included under the rule and facilities' requirements. However, many industry sectors consider several of these amendments to be changes to the requirements of the rule rather than clarifications and, in some cases, maintain that they had not previously considered themselves subject to the rule prior to these changes. (A summary of industries' views on the impacts that these and other amendments to the SPCC rule have had or are likely to have on the regulated community, and our analysis of these views, are included in apps. II and III, respectively.)

Several of the rule's amendments also changed requirements for preparing, implementing, reviewing, and amending SPCC plans. For example, the 2002 amendments to the rule

- decreased from once every 3 years to once every 5 years, the frequency with which a facility's SPCC plan must be reviewed; required that the plan include a diagram of the facility, and that completely buried storage tanks located on the facility—otherwise exempt from SPCC rules—be included on the facility diagram; and
- gave EPA regional administrators the authority to require that any facility within their jurisdiction amend the SPCC plan after on-site review of the plan and extend the period of time for facilities already in operation to amend or complete their plans.

Other amendments to the rule in 2002 changed facility requirements regarding the use and testing of containers, piping, and other equipment to prevent or mitigate the effects of oil spills from containers. For example, the 2002 amendments

- amended the integrity testing requirements for aboveground containers and required brittle fracture evaluation of field-constructed aboveground containers that may have a risk of discharge;
- added specificity to the description of secondary containment requirements, such as detailing that the containment system, including walls and floors, must be capable of containing oil and constructed so that any discharge from the primary containment system is prevented from

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escaping before cleanup occurs;<sup>11</sup> and

- required a facility to conduct periodic integrity testing of containers and piping, in addition to the other requirements—i.e., contingency planning and a written commitment of resources—when the owner/operator determines and clearly explains that the installation of specific secondary containment structures or equipment is not practicable.

In December 2006, EPA again made several changes to the SPCC rule, including several major amendments to provide additional burden relief to the regulated industries on specific rule provisions. For example, the scope of the rule’s applicability was changed, potentially reducing the number of facilities under the rule, by excluding motive power containers from the rule’s requirements.<sup>12</sup> In addition, the 2006 amendments also changed requirements for preparing SPCC plans by providing an option for “qualified facilities” to prepare a self-certified SPCC plan instead of one that is reviewed and certified by a professional engineer.<sup>13</sup> The 2006 amendments also decreased some secondary containment requirements to reduce the burden for facilities. For example, the 2006 amendments

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<sup>11</sup>At an SPCC-regulated facility, areas with the potential for a discharge are subject to either general or specific secondary containment requirements. Under SPCC, several methods can be used to contain oil from spilling into or upon navigable waters or adjoining shorelines, such as dikes and berms. As described in agency guidance, general secondary containment requirements are intended to address the most likely oil discharge in loading or unloading areas or areas (not associated with a rack) with containers and equipment, such as oil-filled operational and manufacturing equipment, or piping. Specific secondary containment requirements are intended to address a worst case container failure, such as for bulk storage containers, certain mobile portable containers, or loading/unloading racks. These specific provisions prescribe the size of secondary containment methods used.

<sup>12</sup>A “motive power” container is any onboard bulk storage container used primarily to power the movement of a motor vehicle or ancillary onboard oil-filled operational equipment. Examples of motive power containers include trucks, automobiles, aircraft, self-propelled cranes, and locomotives.

<sup>13</sup>A “qualified facility” is a facility with a limited oil storage capacity that is eligible for streamlined regulatory requirements. To be eligible, the facility must have 10,000 gallons or less in aggregate aboveground oil storage capacity and must not have (1) a single discharge of oil into or upon navigable waters or adjoining shorelines each exceeding 1,000 U.S. gallons or (2) two discharges of oil to navigable waters or adjoining shorelines exceeding 42 U.S. gallons within any 12-month period for the 3 years prior to the SPCC plan certification or since becoming subject to the rule if the facility has been in operation for less than 3 years. Oil spills that occur as a result of a natural disaster are not subject to these criteria.

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- exempted facilities from having to construct and meet requirements for specific sized secondary containment for mobile refuelers;<sup>14</sup> and
  - allowed facilities to use alternatives to general secondary containment requirements for qualified oil-filled operational equipment, such as preparing an oil spill contingency plan and a written commitment of resources to control and remove discharged oil, and requiring an inspection or monitoring program.

Although changes to the rule were finalized in 2002 and 2006, EPA extended the date of compliance in 2003, 2004, 2006, and 2007. Currently, owners and operators of facilities in existence on or before August 16, 2002, must continue to maintain their SPCC plans, and then must amend them to ensure compliance with current requirements, and implement the amended plan no later than July 1, 2009. Facilities beginning operations after August 16, 2002, must prepare and implement a plan by July 1, 2009. EPA made this latest extension to, among other things, allow owners and operators of facilities the time to fully understand the 2002 and 2006 amendments and the further revisions to the rule EPA plans to make in 2008 and to make changes to their facilities and SPCC plans.

EPA determined that the 2002 and 2006 amendments constituted significant regulatory actions under Executive Order 12866. For significant regulatory actions, Executive Order 12866 requires agencies to assess the benefits and costs of, and reasonably feasible alternatives to, the planned regulatory action.<sup>15</sup> In response, EPA conducted an economic analysis to provide estimates of the potential costs and benefits of the amendments.<sup>16</sup> In addition, the agency conducted economic analyses of the 2006 amendments, both as proposed in 2005 and as made final in December

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<sup>14</sup>Mobile refuelers are bulk storage containers onboard a vehicle or towed that are designed or used solely to store and transport fuel for transfer into or from an aircraft, motor vehicle, locomotive, vessel, ground service equipment, or other oil storage container.

<sup>15</sup>Social costs and benefits represent the opportunity costs of the resources used or the benefits forgone as a result of the regulatory action. Opportunity costs include private-sector compliance costs, government administrative costs, and losses in consumer or producer surpluses. EPA estimated only the compliance costs (or cost savings) associated with the rule changes.

<sup>16</sup>EPA, *Economic Analysis for the Final Revisions to the Oil Pollution Prevention Regulation (40 CFR Part 112)* (May 2002).

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2006.<sup>17</sup> EPA's Office of Solid Waste and Emergency Response conducted these analyses.

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## Limitations in EPA's Analysis of the 2002 SPCC Amendments Reduced Its Usefulness for Informing Decision Makers and the Public About Economic Trade-offs

EPA's economic analysis of the 2002 SPCC amendments had a number of limitations that reduced its usefulness for assessing the economic trade-offs associated with the amendments. Specifically, EPA's 2002 analysis was limited because it did not (1) assess the uncertainty associated with key data and assumptions, such as the degree to which facilities were already in compliance with the amendments, (2) analyze the effect of regulatory alternatives to the amendments, (3) provide the compliance costs that EPA expected facilities to incur or save as a result of the amendments in comparable present value terms, and (4) estimate the effect of the amendments on the risk of an oil spill and on public health and welfare and the environment. These limitations raise questions about the reasonableness of the estimates and limit their usefulness for informing decision makers, stakeholders, and the public about the potential effects of the 2002 amendments.

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## EPA's Methodology for Analyzing the 2002 SPCC Amendments

EPA estimated the compliance costs or cost savings to the regulated community of complying with the 2002 SPCC amendments using the following methodology:

- First, EPA established a baseline for the analysis, which it defines as a projection of regulated facility behavior in the absence of new regulatory provisions.<sup>18</sup> For the purposes of its analysis, EPA assumed that the baseline represented full compliance by regulated facilities with the existing (1973) regulation, as well as industry behavior, practices, or standards that exceed the existing regulation. After establishing the baseline, EPA classified each regulatory revision or amendment into one

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<sup>17</sup>EPA, *Regulatory Analysis for the Proposed Revisions to the Oil Pollution Prevention Regulations (40 CFR Part 112)*, (November 2005); *Regulatory Impact Analysis for the Final Revisions to the Oil Pollution Prevention Regulations (40 CFR Part 112)*, (November 2006).

<sup>18</sup>OMB guidelines recommend that the benefits and costs of regulatory alternatives be measured incrementally to a baseline, or the way the world would look in the absence of the proposed regulatory alternatives. Thus, the baseline provides a point of comparison for estimating the effects of different regulatory alternatives.



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of five categories: baseline, cost increase, negligible increase, cost savings, or negligible savings.<sup>19</sup>

- Second, EPA estimated the total number of potentially affected facilities covered by the regulation to account for differences in the total potential costs for different sizes of facilities. Because estimating the economic effects of the amendments first required information on the size of the regulated community, EPA used a 1995 survey that it had conducted to determine the estimated number and size of production and storage facilities in most regulated industry sectors.<sup>20</sup>
- Third, EPA estimated the costs of compliance for each regulated facility (that is, hours multiplied by the wage rate) for certain amendments, varying costs for each facility by its size. EPA developed costs for each facility for amendments considered to have cost increases or cost savings that were not negligible.<sup>21</sup>
- Finally, EPA estimated the annual total compliance costs (or cost savings) associated with the amendments by multiplying the estimated costs per facility by the estimated number of affected facilities, taking into account whether the facility was small, medium, or large. EPA then aggregated the first-year and subsequent-year costs or savings incurred by all facilities.

On the basis of this methodology, EPA estimated the costs that facilities will incur by implementing the 2002 amendments. As shown in table 1, EPA estimated that facilities will incur costs the first year and then save costs in the following years.

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<sup>19</sup>EPA assumed that revisions classified as baseline would produce no substantive change in the existing regulation or were already adhered to by facilities as good engineering practices or prevailing industry standards or practices.

<sup>20</sup>According to EPA's 1995 EPA survey, the survey was designed so that data on sampled facilities could be extrapolated to the nation as a whole for all facilities regulated by EPA's SPCC rule.

<sup>21</sup>To collect data for the estimation of costs, selected EPA and state officials and contractor staff with experience in the existing SPCC program and other spill prevention programs were contacted. EPA considered the cost estimates to be representative of the possible costs to be incurred by facilities, rather than precise estimates of the actual costs that will occur.

**Table 1: Estimated Economic Impacts Associated with EPA’s 2002 Amendments to the SPCC Regulation**

Dollars in millions		
Year amendments are in effect	Costs (cost savings) <sup>a</sup>	Benefits
First year	\$21.9	Not estimated
Second year	(60.2)	Not estimated
Each subsequent year	(45.0)	Not estimated

Source: EPA.

Note: EPA’s analysis does not indicate which year the dollars represent.

<sup>a</sup>The estimates represent costs for all facilities (small, medium, and large) and all amendments for which EPA estimated costs.

**EPA Did Not Assess the Uncertainty Associated with Key Assumptions and Data**

EPA’s estimates of the economic impacts of the 2002 SPCC amendments are based on assumptions and data that are subject to uncertainty. In conducting its analysis of the amendments, however, EPA did not evaluate these uncertainties, as OMB guidelines advise. For example, EPA did not consider the uncertainties relating to its assumptions about facilities’ compliance with the existing 1973 SPCC rule and the potential impacts of revisions that were intended to clarify what types of facilities are subject to the rule. According to EPA, many of the 2002 SPCC amendments are either clarifications or editorial in nature, or they do not represent a substantive change in the existing regulatory requirements. In assessing the economic impacts associated with these amendments, EPA maintained that the clarifications were making explicit provisions or requirements that were already implicit in the existing SPCC rule, rather than introducing new ones. Therefore, in its analysis, EPA assumed that all regulated facilities were in full compliance with these existing provisions and would not incur any additional compliance costs as a result of the amendments. In addition, to the extent that regulated facilities were not in compliance with the provisions being clarified, EPA assumed that any cost they would incur to comply should be attributed in its analysis to the baseline and not to the 2002 amendments. However, the extent to which facilities were in compliance—or would be in compliance in the future in the absence of the amendments—is highly uncertain. As a result, EPA’s cost estimates do not fully reflect the potential impacts of the amendments.

If, contrary to EPA’s assumption, facilities were not previously in compliance with the clarified provisions, but are brought into compliance by the 2002 amendments, the estimated costs (or cost savings) that should be attributed to the 2002 amendments would be higher (or lower), all else

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remaining the same. For example, in commenting to EPA and OMB on the proposed 2002 amendments, a representative of the electric utility industry stated that, until EPA clarified in the 2002 amendments that “users” of oil are subject to the rule, the electric utility industry did not believe that the SPCC rules applied to electrical equipment. Because of EPA’s clarification, however, facilities in this industry found that they were subject to the rule and EPA would consider them to have been out of compliance. As a result, the representative stated, the clarification would cause that industry to incur substantial costs to modify its facilities to meet the requirements of the amendments, such as installing secondary containment.

EPA’s economic analysis stated that it was possible that some facilities misinterpreted the existing regulation and were not in full compliance with it, but there was no practical way to measure industry compliance. OMB guidelines indicate, however, that agencies can use uncertainty analysis to assess the effect of multiple baselines with different assumptions about the degree of compliance, particularly when industry compliance with existing regulations is uncertain and when different assumptions about compliance could substantially affect the estimated benefits and costs. Without such an analysis, EPA excluded the potential impact of current industry practice from its assessment of the total costs and benefits associated with the 2002 amendments, thus potentially misstating these amounts.

In addition, EPA did not account for the uncertainty associated with its estimates of the number of facilities affected by the amendments. Because these estimates were subject to sampling error, EPA may not have accurately presented the number of facilities subject to the amendments. For example, for its estimates, EPA used a 1995 survey, which was based on a statistical sample of facilities in the 48 contiguous states. On the basis of this survey and subsequent adjustments agency officials made using their professional judgment, EPA estimated that 51,398 facilities would no longer be subject to the requirements of the SPCC rule as a result of the 2002 amendments. However, like estimates from all statistical samples, EPA’s estimates are subject to sampling error, which is the imprecision that results from surveying a sample of facilities rather than surveying every facility in the country. In its 2002 analysis, EPA acknowledged the sampling error, stating that its estimates of the number of facilities were accurate within plus or minus 10 percent. However, EPA did not account for this sampling error when estimating the costs associated with the

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amendments.<sup>22</sup> OMB guidelines direct that the agencies ensure that their estimates reflect the full probability distribution of potential results. Consequently, to account for the imprecision in the estimated facilities and costs, it would have been appropriate for EPA to analyze the uncertainty associated with these estimates.

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### EPA's 2002 Analysis Had Other Limitations

OMB guidelines direct agencies to consider the most important alternative approaches to some or all of a rule's provisions and provide their reasons for selecting the preferred regulatory action over such alternatives. However, EPA's 2002 analysis did not assess alternatives to the amendments, such as alternative levels of stringency or alternative lead times to comply. To provide decision makers and the public with information on how the costs and benefits might vary depending on the regulatory approach, it would have been appropriate for EPA to assess the effect of alternatives in its analysis of the 2002 amendments. Without information on the benefits and costs of alternative regulatory actions, it is difficult to confirm that EPA's preferred regulatory approach maximizes net benefits.

Moreover, OMB guidelines state that agencies should discount costs and benefits that accrue in different time periods to present values. As depicted in table 1, EPA did not present the total cost estimate (costs incurred minus cost savings) of the amendments in comparable, net present value terms. Instead, EPA estimated the costs that would be incurred in the first year that the rule is in effect and the cost savings that facilities would achieve in the second and subsequent years. EPA officials stated that the present value of estimated costs is not significantly different from the cost estimates in the simple analysis it conducted absent the discounting. Nonetheless, since EPA estimated costs incurred and cost savings in the first year and each subsequent year over the life of the amendments, it would have been appropriate for EPA to present the total net costs in comparable present value terms. To compute present value, the agencies are directed to discount the estimated benefits and costs using interest rates recommended by OMB.

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<sup>22</sup>For certain industrial categories, EPA did not obtain complete data. In these cases, it supplemented the 1995 survey data with data from a 1991 study of four states. However, we could not determine whether this caused additional error or bias.

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Finally, OMB guidelines direct agencies to quantify and monetize the benefits (including the benefits of risk reductions) associated with the regulatory action, whenever possible. Moreover, when benefits are difficult to monetize, the OMB guidelines state that acceptable quantitative estimates of benefits and costs are preferable to qualitative descriptions. In cases where quantification is difficult, the guidelines direct the agencies to present any relevant quantitative information and describe the unquantifiable effects. In its analysis of the 2002 amendments, however, EPA did not monetize or quantify the potential benefits expected to result from any of the amendments. In addition, EPA's qualitative discussion of the potential beneficial aspects of the 2002 amendments was very limited. For example, the agency discussed the general risk of an oil spill and the general damage that might be caused to public health and welfare and the environment. EPA stated that it assumed that the amendments would have minimal effects on the risks of a spill, lessen the burden to the regulated community, and maintain the existing level of protection to public health and welfare and the environment. Nonetheless, some of the 2002 amendments are more stringent than the existing SPCC rule, possibly reducing the risk of an oil spill, while other amendments are less stringent (that is, burden reducing), possibly increasing the risk of an oil spill. Without more substantive information on the potential effect of the amendments on the risk of an oil spill and the resulting effect on public health and welfare and the environment, it is difficult to confirm that the benefits of the amendments exceed their costs, as EPA concluded.

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### **EPA's Economic Analysis of the 2006 SPCC Amendments Improved on the Earlier Study but Also Had Limitations**

EPA's economic analysis of the 2006 amendments to the SPCC rule addressed several of the limitations in the agency's 2002 analysis. However, the 2006 analysis also had some limitations that made it less useful than it could have been for assessing the economic trade-offs associated with the amendments.

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### **EPA's 2006 Analysis Included Elements Absent from Its Earlier Study**

As shown in table 2, EPA estimated the compliance cost savings that would be generated by the 2006 amendments under (1) a baseline assuming full compliance with the existing SPCC rule including the 2002 amendments, (2) an alternative baseline assuming only 50 percent compliance with the existing SPCC rule including the 2002 amendments,

and (3) different assumptions about the number of facilities that would be affected by the 2006 amendments.

**Table 2: Estimated Economic Impacts Associated with EPA’s 2006 Amendments to the SPCC Regulation**

2005 dollars in millions

Major components of the 2006 final rule	Percentage of facilities assumed to be affected by rule	Cost savings expected under baseline of full compliance <sup>a</sup>	Cost savings expected under alternative baseline of 50 percent compliance <sup>a</sup>	Benefits expected under full compliance or 50 percent compliance baselines
Qualified facilities eligible for streamlined regulatory requirements	100%	\$38	\$19	Not estimated
Qualified oil-filled operational equipment <sup>b</sup>	25	39	19	Not estimated
	50	53	26	Not estimated
	75	67	33	Not estimated
Motive power	10	1	< 1	Not estimated
	25	3	1	Not estimated
	50	5	3	Not estimated
Mobile refuelers	25	17	9	Not estimated
	50	34	17	Not estimated
	75%	\$51	26	Not estimated

Source: EPA.

<sup>a</sup>Estimates are annualized cost savings using 7 percent discount rate; EPA also estimated savings using a 3 percent discount rate, per OMB’s Circular A-4 guidelines.

<sup>b</sup>Estimates apply to new facilities only. EPA assumed that existing facilities would already have secondary containment in place or an impracticality determination and, therefore, would not benefit from this burden reduction.

Under the alternative baseline, compliance cost savings would be roughly half as much as under the full compliance baseline because owners and operators of facilities that are not currently in compliance will not save costs as a result of the changes for burden reduction. In addition, because EPA did not have data on the precise number of facilities that would be affected by the amendments, EPA assessed the uncertainty associated with its estimates using arbitrarily developed scenarios for three of the major components of the rule. Based on this approach, EPA assumed that various percentages of the facilities would be affected by the regulatory changes in the rule. For example, for facilities with qualified oil-filled operational equipment, EPA analyzed the cost savings under different

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assumptions about the number of facilities that would be affected by the rule, ranging from 25 percent to 75 percent of the total number.

Moreover, unlike its 2002 analysis, EPA's 2006 analysis also analyzed and discussed some regulatory alternatives. For example, for the version of these amendments that were proposed in 2005, EPA proposed an exemption on the oil-filled operational equipment requirement for facilities that had no reportable discharges from their equipment within the prior 10 years of the date of their SPCC plan certification. Partly in response to comments on the proposed rule, EPA narrowed the restriction in the 2006 final rule to owners and operators that have not had a discharge exceeding 1,000 gallons or two discharges exceeding 42 gallons within a 12-month period in the 3 years prior to SPCC plan certification. Oil spills that are the result of natural disasters are not subject to these limitations. In its economic analysis of the 2006 final rule, EPA discussed the differences between the cost estimates for the restriction proposed in 2005 and the estimates for the restriction adopted in 2006. EPA estimated that the final rule cost savings would be greater under certain conditions (that is, if 75 percent of facilities are affected by the amendment), than estimated in the proposed version.

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### EPA's 2006 Analysis Also Had Limitations

Despite the improvements over its 2002 analysis, EPA's analysis of the 2006 amendments also had some limitations that made it less useful than it could have been for assessing the economic trade-offs associated with the amendments. For example, EPA did not quantify or monetize the potential impacts of the 2006 amendments on the risk of an oil spill and on public health and welfare and the environment. Instead, EPA provided only a very limited qualitative discussion of the general risk of an oil spill and the general potential damages that it might cause. EPA reported that the reduced compliance costs will translate to net social benefits, but that these benefits might be partially offset by the potential increase in the risk of an oil spill (because of the less stringent requirements of the 2006 amendments compared with the existing requirements).<sup>23</sup> EPA also stated

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<sup>23</sup>In its analysis of the 2006 amendments, EPA used compliance cost savings to approximate social benefits and considered the impact on public health and welfare and the environment as representing the potential social costs of the amendments. To be consistent with the agency's analysis of the 2002 amendments, we present EPA's 2006 estimates of the potential effect on private-sector compliance as costs (or negative costs) and on public health and the environment as benefits (or negative benefits). As with its 2002 analysis, EPA did not fully assess the social costs or social benefits associated with the amendments.

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that quantifying net benefits (benefits minus costs) associated with the 2006 amendments was not possible due to unknown future impacts of the rule, but it concluded that cost savings resulting from the amendments will not be offset by any significant losses in environmental protection. Nonetheless, it is difficult to affirm EPA's conclusion without more substantive information on the potential effect of the amendments on the risk of an oil spill and the resulting effect on public health and welfare and the environment.

In addition, because EPA's estimates of the number of facilities that would be affected by the 2006 amendments were not based on nationally representative samples, the results may not be accurate. In particular, for the one amendment that would reduce the burden for certain SPCC-regulated facilities, EPA based its estimates of the number of facilities that would be affected by this amendment on data drawn from eight states: Florida, Kansas, Maryland, Minnesota, New York, Oklahoma, Virginia, and Wisconsin. Because facilities in these states may not have been representative of facilities nationwide, EPA's use of these data in its analysis could have introduced bias into its estimates of the number of facilities and costs for this amendment. Furthermore, EPA excluded from its analysis more than half of the facilities in these eight states because the industrial category for these facilities could not be determined and could not be matched to an additional database. By not including such a high proportion of facilities on a nonrandom basis, additional error was likely introduced into EPA's estimates of the number of SPCC-regulated facilities. It is, therefore, unclear whether the facilities that EPA included in the analysis are even representative of the universe of facilities within these eight states. EPA acknowledged these limitations in its analysis and stated that the analysis provided the best possible results given time and resource constraints. However, the actual number of U.S. facilities, and hence the resulting cost impacts, could be greater or less than EPA estimated.

Overall, EPA reported that its analysis did not fully comply with OMB guidelines for conducting economic analyses of significant regulatory actions. It is difficult to confirm, however, that the regulatory changes are economically justified, as EPA concluded, without an estimate of both the costs and benefits associated with the amendments.

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## Conclusions

Because both the 2002 and 2006 amendments to the SPCC rule are significant regulatory actions, it is important for EPA to have a credible economic basis for selecting these as the agency's preferred regulatory



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actions. However, although EPA's 2006 analysis improved upon its 2002 analysis, both analyses had limitations that may make it difficult for decision makers, stakeholders, and the public to verify that the agency has fully analyzed the economic impacts of its regulatory actions. Specifically, because EPA did not analyze key uncertainties in its analysis of the 2002 amendments, including the degree to which facilities were in compliance with some of the revisions, the reliability of the estimated costs and cost savings is questionable. In addition, EPA did not assess regulatory alternatives in its analysis for the 2002 amendments, making it difficult to confirm that EPA's preferred regulatory approach is economically superior to other possible approaches. Moreover, because EPA did not estimate the impact of the amendments on the potential risk of an oil spill and on public health and welfare and the environment for either the 2002 or the 2006 amendments, EPA's economic analyses may not provide decision makers, stakeholders, and the public with a sufficient basis for concluding that the benefits of the amendments outweigh their costs, as EPA did. Although we recognize that evaluating regulatory impacts is a complex task, unless EPA conducts more thorough economic analyses consistent with OMB guidelines, decision makers, stakeholders, and the public may lack assurance that the agency has fully evaluated the economic trade-offs of its regulatory actions.

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## Recommendation for Executive Action

To improve the usefulness of the agency's economic analysis for informing decision makers and the public, we recommend that the Administrator, EPA, take action to ensure that the agency's economic analysis of future changes to the SPCC rule includes all of the key elements for such analyses contained in OMB's guidelines for complying with Executive Order 12866.

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## Agency Comments and Our Evaluation

GAO provided EPA with a draft of this report for its review and comment. The agency stated that it generally agreed with the recommendation in the report to improve the agency's economic analyses for future changes to the SPCC rule, consistent with OMB guidelines, and has undertaken several initiatives to improve its analyses. EPA noted that, consistent with our recommendation, the agency has (1) activated a core SPCC Economic Subgroup of economic and technical experts; (2) acquired additional expert contractor support; and (3) hired an experienced senior economist to guide these efforts, and plans to continue gathering additional data to improve its understanding of the regulated universe and oil spill risks, and to address uncertainty and quantify benefits.

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In addition, EPA commented that the agency believes that the economic analyses that it conducted for the 2002 and 2006 amendments to the SPCC rule are already consistent with, and meet the spirit and intent of, OMB guidelines, given the limited data, time, and resources available. However, because both the 2002 and 2006 amendments to the SPCC rule were significant regulatory actions potentially affecting thousands of facilities across a wide range of industries, it is important for EPA to have a credible economic basis for selecting its preferred regulatory actions. In particular, we found that EPA's analyses were generally not consistent with OMB guidelines in some key areas, including accounting for the extent to which facilities were in compliance with the existing 1973 rule and in assessing the impact of the amendments on the risk of an oil spill and public health and the environment. Decision makers, stakeholders, and the public may lack assurance that the agency has fully evaluated the economic trade-offs of its regulatory actions without more thorough economic analyses consistent with OMB guidelines.

Finally, EPA commented that it does not agree with GAO's characterization that the agency's sensitivity analysis of the 2006 amendments used "arbitrarily developed scenarios" for three of the major components affected by the rule. However, in its economic analysis of the 2006 amendments, EPA stated that it "arbitrarily developed three scenarios" to estimate the number of facilities that might be affected by these components. Furthermore, we did not comment on EPA's use of these scenarios because, according to the agency, data on the number of facilities that might be affected by the rule were not available.

EPA also provided technical comments on the draft report, which we have incorporated as appropriate. The full text of EPA's comments is included as appendix IV.

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As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 20 days from the report date. At that time, we will send copies to the Administrator of EPA and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

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If you or your staff has any questions about this report, please contact me at (202) 512-3841 or [stephensonj@gao.gov](mailto:stephensonj@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix V.

Sincerely yours,

A handwritten signature in black ink that reads "John B. Stephenson". The signature is written in a cursive style with a long horizontal flourish at the end.

John B. Stephenson  
Director, Natural Resources  
and Environment

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# Appendix I: Objectives, Scope, and Methodology

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We reviewed the reasonableness of the economic analyses that the Environmental Protection Agency (EPA) used in support of the 2002 and 2006 Spill Prevention, Control, and Countermeasure (SPCC) amendments. To determine the reasonableness of EPA's economic analyses, we assessed EPA's May 2002 *Economic Analysis for the Final Revisions to the Oil Pollution Prevention Regulation (40 CFR Part 112)*, November 2005 *Regulatory Analysis for the Proposed Revisions to the Oil Pollution Prevention Regulation (40 CFR Part 112)*, and November 2006 *Regulatory Impact Analysis for the Final Revisions to the Oil Pollution Prevention Regulations (40 CFR Part 112)*. As criteria for evaluating the reasonableness of the economic analyses, we used guidelines for federal agencies in assessing regulatory impacts that the Office of Management and Budget (OMB) developed under Executive Order 12866, including its Economic Analysis of Federal Regulations Under Executive Order 12966; Guidelines to Standardize Measures of Costs and Benefits and the Format of Accounting Statements; and Circular A-4. We also reviewed the Unfunded Mandates Reform Act of 1995. In addition, we discussed EPA's analyses with senior officials in EPA's Office of Emergency Management, Regulation, and Policy Development Division, which was responsible for conducting the analyses. We also spoke with officials representing major industry associations about their views on EPA's economic analyses and discussed any analysis they may have prepared regarding the SPCC amendments. Furthermore, we reviewed other documents related to the rule changes.

We also obtained stakeholders' views on any impacts that they believe the SPCC amendments will have on either the regulated community or on the risk of oil spills by administering a survey to key industry associations and environmental groups, respectively, regarding 43 key SPCC amendments. A summary of responses to survey questions appears in appendix II, and our analysis of the results of the survey appears in appendix III.

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## Selection of Survey Respondents

To administer our survey, we selected a nonprobability sample of 30 SPCC stakeholders, including 28 industry associations and two environmental groups. These organizations were either (1) members of EPA's SPCC stakeholder group, which was involved with the agency in discussions and periodic meetings before the rule amendments were made final, or (2) national organizations that submitted comments to EPA regarding proposed SPCC rule changes more than once in 1991, 1993, 1997, or 2002. The vast majority of comments were received from associations and businesses representing the major industry sectors—such as oil and natural gas products, petroleum refining, transportation, manufacturing,

electric utilities, and food and agriculture—most likely to be regulated under SPCC. Only a few environmental associations submitted comments. Results from this nonprobability sample cannot be used to make inferences about all industry or environmental associations because not all associations representing those affected by the SPCC rule had a chance of being selected as part of the sample.

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## Questionnaire Design and Pretesting

Our questionnaire asked stakeholders what impact they believe will result from each of 43 major amendments to the SPCC rule. We selected these amendments by reviewing the major changes EPA made to the SPCC rule in 2002 and 2006. Our questionnaire provided summaries of each of these amendments, which, in most instances, were derived from EPA's descriptions in the *Federal Register*. In some cases, we developed our summaries by reviewing the descriptions of the amendments in the rules, and reviewing comments on the amendments submitted to EPA by both industry and environmental groups. Of the 43 amendments selected, we included 29 amendments finalized in 2002 that EPA listed as major amendments in the *Federal Register*. In addition, we included six amendments from 2006 that EPA described in the *Federal Register* and several agency fact sheets as major amendments to the rule. The remaining eight amendments we included in our survey—six from 2002 and two from 2006—were frequently mentioned in industry comments that we reviewed. We asked respondents to assess the impact of each of these amendments on a five-point scale which ranged from “very negative impact” to “very positive impact.” We asked industry associations to assess the impact on their industry and environmental groups to assess the impact on the risk of oil spills. We also asked respondents to list the five amendments that would have the greatest positive impact and the five amendments that would have the greatest negative impact. However, we did not receive a sufficient number of responses to these questions and so did not include them in our analysis.

The practical difficulties of conducting any survey may introduce errors, commonly referred to as nonsampling errors. For example, respondents may have difficulty in interpreting a particular question or may lack information necessary to provide valid and reliable responses. In order to minimize these errors, we conducted pretests of the draft questionnaire with two industry associations by telephone. During these pretests, we checked whether (1) questions were clear and unambiguous, (2) terminology was used correctly, (3) the questionnaire did not place undue burden on respondents, (4) the information could feasibly be obtained, and (5) the survey was comprehensive and unbiased. In addition, the

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survey was peer reviewed by a GAO senior survey methodologist. We made changes to the content and the format of the questionnaire after each of the pretests based on the feedback we received.

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## Survey Administration

We administered our survey in January 2007. We first phoned each stakeholder group to identify the most appropriate individual to receive the questionnaire. We then e-mailed the questionnaire to each stakeholder as a Microsoft Word form that respondents could complete by marking checkboxes. In addition, we attached copies of the SPCC rule, as amended in 2002 and 2006, and EPA's 2002 economic analysis to provide stakeholders a more thorough description of the amendments than we provided in the survey. On January 17, 2007, we sent a reminder letter to all stakeholders who had not responded by that date, along with additional copies of the questionnaire, the SPCC rule, and EPA's economic analysis. Two days later, we telephoned all stakeholders who had not returned the questionnaire and asked them to participate in our survey. We received usable responses from 23 of the 28 industry associations and one of the two environmental groups by January 29, 2007. Following is a list of the associations from which we received completed questionnaires:

Agricultural Retailers Association  
Air Transport Association of America, Inc.  
Aircraft Owners & Pilots Association  
Airports Council International-North America  
Alliance of Automobile Manufacturers  
American Association of Airport Executives  
American Bakers Association  
American Feed Industry Association  
American Gas Association  
American Petroleum Institute  
American Trucking Associations, Inc.  
Domestic Petroleum Council  
Independent Petroleum Association of America  
Independent Liquid Terminals Association  
Independent Lubricant Manufacturers Association  
National Air Transportation Association  
National Automobile Dealers Association  
Natural Resources Defense Council  
National Stone, Sand, and Gravel Association  
Petroleum Marketers Association of America  
Synthetic Organic Chemical Manufacturers Association  
The Associated General Contractors of America

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USA Rice Federation  
Utility Solid Waste Activities Group

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## Content Analysis

In order to succinctly summarize responses to our survey, we performed a content analysis in which we grouped each of the 43 SPCC amendments into major categories. We first reviewed the summary of each of the amendments that we included in our questionnaire and inductively identified common groups. We then developed criteria to define which amendments would be included in each group. To ensure that this process was reliable, each amendment was independently categorized by three GAO analysts, and categorization decisions among the three analysts were compared. All initial disagreements regarding categorization decisions were discussed and reconciled by refining the criteria used to categorize the amendments. In a few cases, we were unable to determine the category into which to place an amendment based solely on the description of that amendment used in our survey. In these cases, we reviewed the complete description of the amendment in the *Federal Register* to determine the appropriate category. To see the exact wording of the final rule, please refer to the *Federal Register*.

We categorized each of the 43 amendments along two dimensions. The first dimension relates to the actions that regulated facilities are required to take. The categories within this dimension that we identified during our content analysis include the following: (1) requirements to develop an SPCC plan or to notify officials of oil spills; (2) changes to the scope of those facilities to which the rule applies; (3) requirements for containers and piping used by SPCC facilities; (4) requirements to test or inspect containers, piping, and other equipment; (5) requirements regarding training of SPCC facility employees; and (6) amendments that fit into more than one of the above categories or did not fit into one of the above categories.

The second dimension relates to whether the amendment increases or decreases requirements on facilities. We made this determination based on whether the amendment uses terms such as “adds new requirements” and “mandates,” which would be considered an increase in requirements, or terms such as “allows” or “exempts,” which would be considered a decrease in requirements. In some instances, we determined that an amendment does not imply either an increase or a decrease in requirements, or that an amendment included provisions that would both increase and decrease requirements. In these instances we categorized the amendment as having a “mixed” direction. In some instances we could not

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determine if the amendments increased or decreased requirements and, therefore, did not categorize the amendment along the second dimension.

By categorizing each amendment in terms of both of these dimensions—the facility actions to which the amendment applies and whether the amendment increases or decreases requirements on facilities—we identified 11 total categories of amendments. For example, we developed a category for amendments that increased requirements on planning and notification and another category for amendments that decreased requirements on the scope. Some combinations of categories in these two dimensions contained no amendments. For example, we did not identify any amendments that decreased requirements on inspections and testing. For a detailed description of our coding rules and specific amendments that we placed in each of these categories, please see appendix III.

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## Data Analysis

We calculated a score to summarize the industry stakeholders' views of the impact they believe each type of SPCC amendment will have on their industries. We collapsed the five-point response options in our survey into "very positive impact" and "somewhat positive impact" categories from the survey into one and removed the "no answer/no basis to judge" responses. We then calculated the average of the responses from all of the industry associations to questions regarding all of the amendments within a particular category and developed a score, ranging from -1.0 (entirely negative impact), to 0.0 (no impact), to 1.0 (entirely positive impact), for each of the categories of amendments. An entirely positive impact would indicate that every industry stakeholder reported that every amendment of a given type would have a positive impact on their industry. Similarly, an entirely negative impact would indicate that every industry stakeholder reported that every amendment of a given type would have a negative impact on their industry. No impact would indicate that either (1) every industry stakeholder reported that every amendment of a given type would have no impact on their industry, or (2) an equal number of responses reported a positive impact as reported a negative impact for all amendments of a given type. Using these three anchor points, we considered scores between -1.0 and -0.5 to be mostly negative, scores between -0.5 and 0.0 to be somewhat negative, scores between 0.0 and 0.5 to be somewhat positive, and scores between 0.5 and 1.0 to be mostly positive. Computer analysis programs were independently verified by a senior statistician. We also verified the accuracy of the underlying survey data keypunched by comparing them with their corresponding questionnaires and found that there were no errors. Our analysis is limited to the perceived impact of the amendments on industry. We did not



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receive sufficient responses from environmental groups to do a thorough analysis of the perceived impact of the amendments to the SPCC rule on protecting human health and the environment.

We performed our work from June 2006 to July 2007 in accordance with generally accepted government auditing standards.

# Appendix II: Summary of Survey Results

The following tables present a summary of our survey of 23 stakeholders to obtain their views on the impacts that the amendments to the SPCC rule have had or are likely to have on the regulated community. These stakeholders included the major associations representing industry that had submitted comments to EPA on the proposed rule changes and that EPA had also identified as key stakeholders. We also followed up with officials from several industry associations to clarify some of their survey responses.

## Survey Question 1

What impact does your association believe each of the following 2006 amendments to the SPCC rule will have on your industry? (We asked survey recipients to check one box per amendment.)

Reference letter	2006 Rule amendments	Very Positive Impact	Somewhat Positive Impact	No Impact	Somewhat Negative Impact	Very Negative Impact	No Answer or No Basis to Judge
<b>§ 112.1 General Applicability</b>							
a.	§ 112.1(d)(2)(ii), § 112.1(d)(7): excludes 'motive power containers' (defined in § 112.2) from the rule, but includes the transfer of fuel or other oil into a motive power container at an otherwise regulated facility.	10	7	4	2	0	0
<b>§ 112.2 Definitions</b>							
b.	§ 112.2: adds several definitions, including airport mobile refueler, farm, motive power container, and oil-filled operational equipment.	5	9	2	6	0	1
<b>§ 112.3 Requirement to prepare and implement a Spill Prevention, Control, and Countermeasure Plans</b>							
c.	§ 112.3(a)(2), § 112.3(b)(2): delays the compliance dates for farms until the effective date of a rule establishing SPCC requirements specifically for farms or dates that farms must comply with the provisions of this part.	1	3	10	2	0	7

Appendix II: Summary of Survey Results

Reference letter	2006 Rule amendments	Very Positive Impact	Somewhat Positive Impact	No Impact	Somewhat Negative Impact	Very Negative Impact	No Answer or No Basis to Judge
d.	§ 112.3(g): defines a qualified facility eligible to self-certify under the provisions set forth in § 112.6.	7	12	4	0	0	0
<b>§ 112.6 Qualified Facility Plan Requirements</b>							
e.	§ 112.6: allows qualified facilities (defined in § 112.3(g)) to self-certify and provides applicable requirements for self-certification.	10	7	5	1	0	0
<b>§ 112.7 General requirements for Spill Prevention, Control, and Countermeasure Plans</b>							
f.	§ 112.7(k): allows owners/operators of qualified oil-filled operational equipment (defined in (k)(1)) to meet alternate requirements (defined in (k)(2)) in lieu of the general secondary containment requirements.	5	16	2	0	0	0
<b>§ 112.8 Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities)</b>							
<b>§ 112.12 Spill Prevention, Control, and Countermeasure Plan requirements</b>							
g.	§ 112.8 (c)(2), § 112.8 (c)(11), § 112.12 (c)(2), § 112.12 (c)(11): provides an exception for mobile refuelers from constructing and meeting requirements for secondary containment.	10	10	3	0	0	0
<b>Subpart C – Requirements for Animal Fats and Oils and Greases, and Fish and Marine Mammal Oils; and for Vegetable Oils, including Oils from Seeds, Nuts Fruits, and Kernels</b>							
h.	§ 112.13 - § 112.15: removal of these sections because they do not apply to facilities that process, store, use, or transport animal fats and/or vegetable oils.	0	1	13	0	0	9

## Survey Question 2

What impact does your association believe each of the following 2002 amendments to the SPCC rule will have on your industry? (We asked survey recipients to check one box per amendment.)

Reference letter	2002 Rule amendments	Very Positive Impact	Somewhat Positive Impact	No Impact	Somewhat Negative Impact	Very Negative Impact	No Answer or No Basis to Judge
<b>§ 112.1 General Applicability</b>							
i.	§ 112.1(b): adds “users” of oil as a group subject to the rule and expands the jurisdiction of the rule as amended in the Clean Water Act.	0	0	3	3	14	3
j.	§ 112.1(d)(2)(i): does not count the capacity of completely buried tanks (defined in parts 280 or 281) or permanently closed tanks towards the threshold.	3	10	8	1	0	1
k.	§ 112.1(d)(2)(ii): eliminates the aboveground storage capacity threshold of greater than 660 gallons for a single container but maintains the greater than 1320 threshold and establishes a “de minimis” container capacity size of 55 gallons or greater to calculate capacity.	2	12	4	3	2	0
l.	§ 112.1(d)(4): requires completely buried storage tanks, otherwise exempt, to be included on the facility diagram.	0	0	8	11	1	3
m.	§ 112.1(d)(5), (6): exempts containers that are 55 gallons or less; exempts facilities (or parts thereof) used exclusively for wastewater treatment unless it is used to meet part 112 requirements.	5	12	2	0	2	2
n.	§ 112.1(f): gives the EPA Regional Administrators authority to require an SPCC plan for any facility within the jurisdiction in order to meet goals of the CWA.	0	0	11	6	3	3

Appendix II: Summary of Survey Results

Reference letter	2002 Rule amendments	Very Positive Impact	Somewhat Positive Impact	No Impact	Somewhat Negative Impact	Very Negative Impact	No Answer or No Basis to Judge
<b>§ 112.2 Definitions</b>							
o.	§ 112.2: adds new definitions, such as for 'facility', and expands the definition of 'oil', 'discharge', 'navigable waters', 'offshore facility', and 'United States'.	1	3	3	4	11	1
<b>§ 112.3 Requirement to prepare and implement Spill Prevention, Control, and Countermeasure Plan</b>							
p.	§ 112.3(a),(b): requires facilities in operation to prepare or revise an SPCC Plan within six months and implement the plan within another six months; new facilities must prepare and implement an SPCC Plan before beginning operations.	1	1	5	8	5	3
q.	§ 112.3(d): requires the professional engineer (PE) attestation to include that the PE considered applicable industry standards and certified that the Plan is in accordance with SPCC requirements; also allows an agent to examine a facility in place of the PE, but the PE must review the agent's work, and certify the SPCC Plan.	0	7	6	6	4	0
r.	§ 112.3(e): requires a copy of the SPCC Plan to be maintained at a facility attended for at least 4 hours a day instead of the current requirement of 8 hours.	0	1	17	4	0	1
s.	§ 112.3(f): provides for an extension of time to be granted by the Regional Administrators (RA) for amendments of the SPCC Plan, as well as the entire SPCC Plan.	1	13	7	1	0	1

**Appendix II: Summary of Survey Results**

Reference letter	2002 Rule amendments	Very Positive Impact	Somewhat Positive Impact	No Impact	Somewhat Negative Impact	Very Negative Impact	No Answer or No Basis to Judge
<b>§ 112.4 Amendment of Spill Prevention, Control, and Countermeasure Plan by Regional Administrator</b>							
t.	§ 112.4(a): raises the threshold for reporting two discharges to greater than 42 U.S. gallons (1 barrel) per discharge, but reduces the amount of information to be submitted to the RA.	6	11	2	2	0	2
u.	§ 112.4(b): does not require facilities to meet any requirements of this section (§ 112.4) until the new compliance deadlines to prepare an SPCC Plan (specified in section § 112.3).	5	11	5	1	0	1
v.	§ 112.4(c): changes the requirement from notification to the State agency in charge of <i>water</i> pollution control activities to notification to the State agency in charge of <i>oil</i> pollution control activities.	0	0	22	1	0	0
w.	§ 112.4(d): provides that the RA may require a Plan amendment after an on-site review of the Plan.	0	0	13	8	0	2
<b>§ 112.5 Amendment of Spill Prevention, Control, and Countermeasure Plan by owners or operators</b>							
x.	§ 112.5(a), (b): requires any amendment made under this section be prepared within six months and implemented in no more than six months from when the amendment was made.	0	2	11	8	1	1
y.	§ 112.5(b): changes the period of review for SPCC Plans from 3 to 5 years, and requires documentation of completion of the review and evaluation.	10	10	2	0	0	1
z.	§ 112.5(c): clarifies that a PE must certify only technical amendments, and not non-technical amendments (ex. names, phone numbers).	8	12	1	1	1	0

**Appendix II: Summary of Survey Results**

<b>Reference letter</b>	<b>2002 Rule amendments</b>	<b>Very Positive Impact</b>	<b>Somewhat Positive Impact</b>	<b>No Impact</b>	<b>Somewhat Negative Impact</b>	<b>Very Negative Impact</b>	<b>No Answer or No Basis to Judge</b>
<b>§ 112.7 General requirements for Spill Prevention, Control, and Countermeasure Plans</b>							
aa.	§ 112.7: allows differing formats for the Plan; other formats must be cross-referenced to the listed SPCC requirements and include all applicable SPCC requirements.	3	13	3	1	0	2
bb.	§ 112.7(a)(2): allows deviations from most of the rule's major requirements (except secondary containment), provided that the reasons for nonconformance are explained, and equivalent environmental protection is provided.	10	9	1	0	2	1
cc.	§ 112.7(a)(3): requires a description and a diagram of the facility layout in the SPCC Plan.	0	1	11	10	1	0
dd.	§ 112.7(a)(4): requires facilities to provide additional information and procedures for reporting a discharge; facility response plan (FRP) facilities (defined in § 112.20) are exempt.	0	1	9	10	0	3
ee.	§ 112.7(a)(5): requires facilities to organize the Plan in a readily usable format for an emergency; facility response plan (FRP) facilities (defined in § 112.20) are exempt.	0	2	18	1	0	2
ff.	§ 112.7(c): requires a containment system to be capable of containing oil and constructed to prevent any discharge from escaping from the facility and reaching navigable waters and adjoining shorelines.	0	0	12	5	6	0

**Appendix II: Summary of Survey Results**

<b>Reference letter</b>	<b>2002 Rule amendments</b>	<b>Very Positive Impact</b>	<b>Somewhat Positive Impact</b>	<b>No Impact</b>	<b>Somewhat Negative Impact</b>	<b>Very Negative Impact</b>	<b>No Answer or No Basis to Judge</b>
gg.	§ 112.7(d): adds new requirements for periodic integrity testing of containers, and periodic integrity and leak testing of valves and piping; exempts FRP facilities (as defined by section §112.20) from having a contingency plan.	0	1	2	9	10	1
hh.	§ 112.7(e): allows use of usual and customary business records to serve as a record of tests or inspections and records to be kept separate from the Plan; acknowledges the certifying engineer as having a role developing inspection procedures.	0	13	8	1	0	1
ii.	§ 112.7(f): mandates training for oil-handling employees only, and specifies training topics; also requires discharge prevention briefings at least once a year.	0	11	7	3	2	0
jj.	§ 112.7(i): specifies a brittle fracture requirement for field-constructed containers undergoing repairs, alteration, reconstruction or change in service that may affect the risk of discharge.	1	0	6	5	4	7
<b>§ 112.8 Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities)</b>							
kk.	§ 112.8(c)(3), § 112.9(b)(1): allows National Pollutant Discharge Elimination Systems (NPDES) records to be used for SPCC purposes in lieu of events records specifically prepared for this purpose.	0	12	6	2	0	3
ll.	§ 112.8(c)(6): requires integrity testing on aboveground containers on a regular schedule, and when material repairs are done; testing can be recorded using usual and customary business records.	0	3	2	8	9	1



Appendix II: Summary of Survey Results

Reference letter	2002 Rule amendments	Very Positive Impact	Somewhat Positive Impact	No Impact	Somewhat Negative Impact	Very Negative Impact	No Answer or No Basis to Judge
mm.	§ 112.8(d)(1): requires buried piping installed or replaced to have protective wrapping and coating and cathodic protection or otherwise satisfy the corrosion protection provisions for underground piping (40 CFR part 280 or 281).	0	1	5	6	8	3
nn.	§ 112.8(d)(4): requires integrity and leak testing of buried piping at the time of installation, construction, relocation or replacement.	0	2	4	11	4	2
<b>§ 112.9 Spill Prevention, Control, and Countermeasure Plan requirements for onshore oil production facilities</b>							
oo.	§ 112.9(c)(2): clarifies that secondary containment include sufficient freeboard to contain precipitation.	0	0	10	10	2	1
<b>§ 112.11 Spill Prevention, Control, and Countermeasure Plan requirements for offshore oil drilling, production, or workover facilities</b>							
pp.	§ 112.11(i): requires offshore oil drilling, production or workover facilities to simulate discharges for testing and inspecting pollution control and countermeasure systems.	0	0	10	0	2	11
<b>Subpart C—Requirements for Animal Fats and Oils and Greases, and Fish and Marine Mammal Oils; and for Vegetable Oils, including Oils from Seeds, Nuts, Fruits, and Kernels</b>							
qq.	§ 112.12 - § 112.15: adds sections to apply to Animal Fats and Vegetable Oils based on the Edible Oil Regulatory Reform Act (EORRA) requirements. Requirements are identical to Subpart B for petroleum and non-petroleum oils.	0	2	8	1	1	11

Our stakeholder survey also allowed respondents the opportunity to elaborate on their opinions of the SPCC amendments. Table 3 below presents some illustrative examples of the open-ended comments that we received from 22 of the 23 industry survey respondents. The examples include respondents' opinions on the SPCC amendments that they consider to have the most positive or negative impact on their industry

sectors. These comments provide the current opinions of the industry associations we surveyed, but they do not necessarily represent the views of the regulated community as a whole. In addition, these comments do not represent the views of EPA or GAO.

**Table 3: Examples from Industry Comments Regarding the 2002 and 2006 Amendments to the SPCC Regulation**

Reference letter and amendment addressed in survey	Comment
N/A. Preamble	<p>“The preamble ‘clarifications’ significantly broadened the scope and reduced the flexibility of the 1973 rule. Industry and certifying PEs [Professional Engineers] always interpreted, and EPA enforced, the rule containment requirements applying only to bulk storage tanks. The 2002 clarifications expanded these requirements to include ‘containers,’ piping, transfer operations, and equipment containing oil. As a result, integrity testing requirements were also applied to this equipment. Additionally, the ‘should to shall to must’ clarification in the 2002 amendments resulted in the requirements being more prescriptive.”</p>
i. § 112.1(b)	<p>“This provision expands the scope of the 1973 rule to include more than the storage of oil increasing the number of facilities and equipment regulated with no real benefit cited for the change.”</p> <p>“By adding fuel-containing equipment, the universe of sites that require secondary containment and SPCC plans increased significantly although engine crankcases rarely have significant oil leaks.”</p>
j. § 112.1(d)(2)(i)	<p>“The existing Underground Storage Tank (UST) regulations already control leaks and spills. Exempting USTs from the SPCC requirements is a significant burden reduction, particularly at gasoline service stations.”</p>
o. § 112.2	<p>“EPA significantly increased the number of facilities covered by the rule in changes of the definition text and preamble discussion. The ‘navigable waters’ definition was expanded to EPA’s broad interpretation without considering the recent court decisions. By defining ‘storage capacity’ as the ‘shell capacity’ of the container, the non-oil portions of a container are included in the applicability and containment capacity requirements. The definition of oil now includes virtually any substance that leaves a sheen.”</p> <p>“The definitions have made the rule more confusing. For example, the addition of a definition of oil and gas production facility complicates the applicability determination for multiple facilities in a single field.”</p> <p>“The definition of oil is also an issue [for us]. The definition in the rule is vague and causes uncertainty as to whether or not a material is considered oil under SPCC. As a result, materials (e.g. solvents, coolants) that would not be considered intuitively to be oil are pulled into the regulation. In addition, as mentioned above, there is no de minimis amount of oil under which a mixture stops being considered oil. One drop of oil in a thousand gallons of water would cause the entire mixture to be considered oil.”</p>
d. § 112.3(g)	<p>“The ability to self certify in certain instances will allow facilities to move forward without requiring the signature of a PE, which can be costly, and time consuming.”</p>
y. § 112.5(b)	<p>“Changing the required review period from 3 to 5 years is an improvement since most E&amp;P [Exploration and Production] facilities are modified infrequently.”</p>

**Appendix II: Summary of Survey Results**

Reference letter and amendment addressed in survey	Comment
bb. § 112.7(a)(2)	“Deviations for secondary containment should be allowed where secondary containment is not feasible, and ‘feasible’ should contain some element of expense, especially for flowlines.”
gg.,ll. § 112.7(d) § 112.8(c)(6)	“Integrity testing for small storage tanks is expensive – because it must be performed by a PE. EPA should reevaluate any mandate beyond visual inspection.” “Integrity testing should be left to the assessment of the operator and PE certifying the plan. Under the 1973 rule operators have used the flexibility of the rule to implement appropriate inspections and leak detections methods. The current system adequately protects waters of the U.S. from spills associated with E&P facilities.”
ll. § 112.8(c)(6)	“Integrity testing is unnecessary for small elevated tanks or those with release prevention barriers, as visual inspection will readily detect leaks. Visual inspection in lieu of integrity testing was agreed upon by EPA in litigation settlement and should be incorporated into the rule. Integrity testing is also not necessary for small containers and drums, or for mobile containers which are already regulated by DOT regulations.” “...the requirement to integrity test all containers/tanks is overly burdensome. Even applying the STI [Steel Tank Institute] industry standard (which was rewritten last year after the final rules were published) requires a great deal of recordkeeping and inspections for smaller tanks and containers. EPA has indicated in the past that tanks greater than 40,000 gallons present the greatest risk. [We believe] that the rules should require integrity testing only for tanks greater than 40,000 gallons.”
jj. § 112.7(i)	“Consistent with API [American Petroleum Institute] Standard 653, brittle fracture evaluations are a good industry practice to reduce the risk of releases from tanks.”
p., q., ff., gg., mm. § 112.3(a),(b) § 112.3(d) § 112.7(c) § 112.7(d) § 112.8(d)(1)	“[The amendments] will be extremely costly and time consuming. Farm tanks, especially those for irrigation, are not situated in centralized locations that are ideal for one SPCC plan, containment wall, etc. Instead they are spread out in different fields, parcels, farms (rented and owned) which, by interpretation, may require separate SPCC plans, containment, security, etc. Seasonal (planting, harvest) requirements mean that farmers cannot dedicate extensive time to upgrading multiple locations for rule compliance. There is also an expected shortage of Professional Engineers for the amount of tanks that may be regulated. Many tanks must also be mobile to some extent as wells dry up and new ones are dug. Short answer – the SPCC rule was made for heavy industry, not farming, and does not translate, as written, in a common sense manner to agriculture.”
i., o., ff., mm., gg. § 112.1(b) § 112.2 § 112.7(c) § 112.8(d)(1) § 112.7(d)	“We are concerned about the 2002 expansion of the rules to motive power and other oil-filled equipment that merely uses oil. These issues were also favorably addressed in the 2006 rule revision. Finally, we remain concerned about the EPA’s definition of ‘navigable waters,’ which broadly extends the Agency’s jurisdiction.”
i., o., ff., mm., gg. § 112.1(b) § 112.2 § 112.7(c) § 112.8(d)(1) § 112.7(d)	“[Our] chief concern with the 2002 amendments was the regulation of airport mobile refuelers, requiring them to have sized containment plans for the trucks when not in service. The 2006 amendments have essentially eliminated this requirement. [We also were] very concerned about the 2002 expansion of the rules to motive power and other oil-filled equipment that merely uses oil. These issues were also favorably addressed in the 2006 rule revision. Finally, [we remain] concerned about the EPA’s expansive and vague definition of ‘navigable waters,’ which broadly extends the agency’s jurisdiction. We look forward to additional rulemaking to address this concern.”

**Appendix II: Summary of Survey Results**

Reference letter and amendment addressed in survey	Comment
ll., mm., nn., oo. § 112.8(c)(6) § 112.8(d)(1) § 112.8(d)(4) § 112.9(c)(2)	<p>“Produced water storage tanks typically contain small volumes of oil that do not represent a significant source of oil storage. Water produced should be exempt from the SPCC regulations because there is a very low risk of a significant discharge of oil to Waters of the U.S. Additionally, by expanding the scope of the SPCC program to cover produced water, it has the effect of capturing hundreds of thousands of natural gas operations producing natural gas liquids that have previously fallen below the threshold for planning.”</p> <p>“The containment of produced fluids around oil and gas fired process vessels, such as heater treaters, can present a serious safety hazard and it is impractical for pressurized vessels. In addition, the rule treats process/operating equipment inconsistently for the different industrial sectors. At non-exploration and production sites, it is excluded from the definition of bulk storage containers, whereas at E&amp;P facilities, this type of equipment is considered bulk storage containers and subject to secondary containment requirements. The purpose of oil and gas process equipment such as heater treaters is to process oil/water mixtures. These vessels are flow-through process vessels rather than containment vessels.”</p> <p>“Requirements for containment around flow lines and gathering lines are excessive and impractical and will cause significant and unnecessary disturbance of the surrounding lands. Installing secondary containment (including double-walled piping) or retrofitting all existing flow lines and gathering lines is cost prohibitive. A more reasonable approach would be to allow operators to implement flexible and responsible, risk-based flow line inspection and maintenance programs to prevent spills. Flow lines are not and should not be considered oil storage containers.”</p>
N/A.	<p>“A recurring problem with the SPCC program has been inconsistent interpretation between EPA’s headquarters and its regions. Consequently, EPA needs to establish its requirements as regulations that can be consistently interpreted and applied equally throughout the country. Guidance documents fail to provide certainty; rather, they create the opportunity for different interpretations of the same requirements in different EPA offices. But, Guidance documents preclude formal challenges and therefore create the opportunity for arbitrary and unsubstantiated decisions by EPA inspectors. The SPCC programs needs reliability that can only be achieved in regulations.”</p>

Source: Responses to GAO’s survey on EPA’s SPCC rule.

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# Appendix III: Analysis of the Results of GAO's Survey on the Impacts of the SPCC Amendments on Industry

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## Stakeholders Had Mixed Views on the Impacts of the SPCC Amendments

Our analysis of the results of our survey of 23 key industry stakeholders regarding 43 major SPCC amendments indicates that they generally view increases in SPCC requirements as having a negative impact on their industries and decreases as having a positive impact.<sup>1</sup> However, their views on the extent of the anticipated impacts varied widely depending on the type of requirement. Overall, industry stakeholders responded that the 2006 amendments would have a positive impact on their industries and that the 2002 amendments would have a combination of both positive and negative impacts. We identified five categories of amendments that increase SPCC requirements. Of these five categories, we found that industry stakeholders view two as having a mostly negative impact on their industry, two as having a somewhat negative impact, and one as having a somewhat positive impact. In addition, we identified four categories of amendments that decrease SPCC requirements. Of these four types, we found that industry stakeholders view three as having a mostly positive impact on their industry and one as having a somewhat positive impact. Finally, we identified one category of amendments that both increase and decrease requirements and another category of amendments for which we could not determine whether the amendments either increase or decrease the requirements. We found that industry stakeholders view both of these categories as having a somewhat negative impact.<sup>2</sup>

We found that industry stakeholders anticipate a mostly negative impact from amendments that (1) increased requirements on testing, such as integrity testing of storage tanks; and (2) increased requirements on containment, such as secondary containment requirements.

By contrast, these stakeholders anticipate a mostly positive impact from amendments that decrease requirements on containment, facility oil spill prevention plans or notification procedures, and what we categorize as

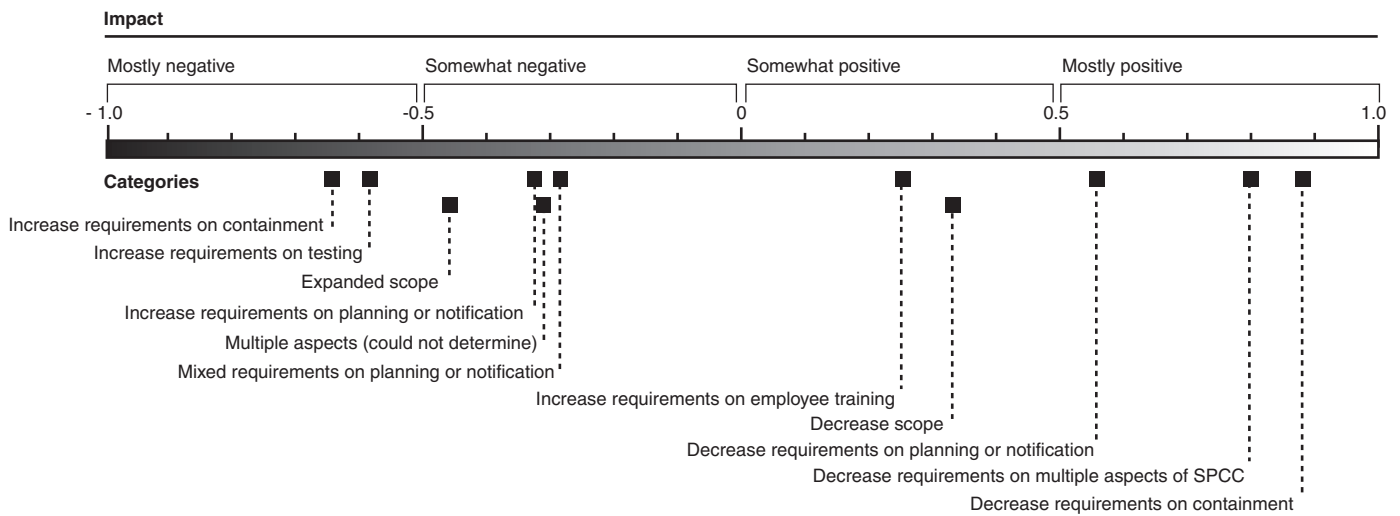
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<sup>1</sup>There was one exception to this general pattern: industry associations generally reported that increasing requirements on employee training will have a somewhat positive impact on their industry.

<sup>2</sup>According to EPA, Office of Emergency Management officials, the agency considers five of the amendments to be clarifications to the scope or definitions of the SPCC rule. The survey referred to these five amendments as additions or expansions. To assess the potential for bias among these questions we removed the questions related to these five amendments from our analysis and recomputed scores for each of the categories. After removing these five questions from the multiple aspects category, the score results were similar to those presented above and in figure 1.

multiple SPCC requirements. Finally, industry stakeholders indicated that six amendment categories will have a somewhat negative or somewhat positive impact on their industries compared with the other amendments. Figure 1 summarizes these views.

Figure 1: Summary of Industry Stakeholder Views on Impacts of 11 SPCC Amendment Categories



Source: GAO survey of industry stakeholders and analysis of SPCC amendments.

We received responses to our survey from only one environmental stakeholder and, therefore, we were unable to comprehensively analyze the views of environmental groups.

## Analysis Methodology

The following is a detailed description of the coding rules used and the 11 categories into which we placed the 2002 and 2006 SPCC amendments. We summarize the major rule amendments finalized in 2002 and 2006; to see the exact wording of the finalized rule, please refer to the regulation as published in the *Federal Register*. We determined whether the amendment increases or decreases requirements on facilities based on whether the amendment uses terms such as “adds new requirements” and “mandates,” which would be considered an increase in requirements, or terms such as “allows” or “exempts,” which would be considered a decrease in requirements. In some instances, we determined that an amendment does not imply either an increase or a decrease in requirements, or that an amendment included provisions that would both increase and decrease requirements. In addition, there were several instances where we could not determine if the amendment increased or decreased requirements. For

example, several of these types of amendments made definitional changes to words used in the rule, but it was unclear from reviewing the text of the amendment whether these changes were a clarification to the rule or increased or decreased requirements.<sup>3</sup>

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## Changes to Scope of the SPCC rule

In general, amendments in this category are changes to the criteria for eligibility or changes to thresholds for oil storage. These amendments affect either the number of facilities subject to the SPCC rule or the number of oil tanks at a given facility subject to the SPCC rule. In particular, the written description of the amendment in our survey should include words such as increases, adds, eliminate, or exempts. We identified one of the 43 amendments as expanding the scope of the SPCC rule, and six as decreasing the scope of the SPCC rule.

*2002 amendment that we categorized as expanding the scope of the rule:*

- 112.1(f): gives the EPA Regional Administrators authority to require an SPCC plan for any facility within the region, otherwise exempt from the rule, in order to carry out the purposes of the Clean Water Act.<sup>4</sup>

*2002 amendments that we categorized as decreasing the scope of the rule:*

- 112.1(d)(2)(i): excludes the capacity of completely buried tanks subject to all of the technical requirements of the underground storage tank regulations from calculation of the threshold, and states that permanently closed tanks also do not count in the calculation.
- 112.1(d)(2)(ii): eliminates the aboveground storage capacity threshold of greater than 660 gallons for a single container, but maintains the greater than 1,320 threshold and establishes a “de minimis” container capacity size of 55 gallons or greater to calculate capacity.

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<sup>3</sup>As previously stated in the report, according to EPA, the agency made several definitional changes to clarify the types of facilities that are included under the rule and facilities' requirements. However, many industry sectors consider these amendments to be increases to the requirements of the rule rather than clarifications.

<sup>4</sup>The summaries of amendments presented in this appendix were modified from the text of amendment summaries in the questionnaire. For the full text of amendments, see the *Federal Register*.

- 112.1(d)(4): exempts completely buried storage tanks that are subject to all of the technical requirements of the underground storage tank regulations from the rule requirements, but requires those tanks to be included on the facility diagram.
- 112.1(d)(5), (6): exempts containers that are less than 55 gallons; and facilities (or parts thereof) used exclusively for wastewater treatment unless it is used to meet part 112 requirements.  
2006 amendments that we categorized as decreasing the scope of the rule:
- 112.1(d)(2)(ii), § 112.1(d)(7): excludes “motive power containers” (defined in § 112.2) from the rule, but does not exclude the transfer of fuel or other oil into a motive power container at an otherwise regulated facility.
- 112.3(a)(2), § 112.3(b)(2): delays the compliance dates for farms until the effective date of a rule establishing SPCC requirements specifically for farms or dates that farms must comply with the provisions of this part.

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## Planning or Notification

In general, this category refers to requirements to prepare, implement, amend, or certify SPCC plans or other records or documents required of regulated facilities. The description of the amendment includes references to plans, records, diagrams, or any other documents that facilities are required to have under the SPCC rule. We identified 17 amendments from 2002 and 1 amendment from 2006 that fit this category. Of the 17 amendments from 2002, we categorized 5 amendments as increasing requirements on facility oil spill prevention plans or oil spill notification procedures, 9 as decreasing requirements, and 3 as either both increasing and decreasing requirements or neither increasing or decreasing requirements. The one amendment from 2006 decreased requirements.

*2002 amendments that we categorize as increasing planning or notification requirements:*

- 112.3(e): requires a copy of the SPCC plan to be maintained at a facility attended for at least 4 hours a day instead of the current requirement of 8 hours.
- 112.4(d): provides that the EPA Regional Administrator may require an amendment to the SPCC plan after an on-site review of the plan.
- 112.7(a)(3): requires a description and a diagram of the facility layout in the SPCC plan.



- 112.7(a)(4): requires facilities to provide additional information and procedures in the SPCC plan for reporting a discharge; facility response plan (FRP) facilities (defined in § 112.20) are exempt.
- 112.7(a)(5): requires facilities to organize the SPCC plan in a readily usable format for an emergency; FRP facilities (defined in § 112.20) are exempt.

*2002 amendments that we categorize as decreasing planning or notification requirements:*

- 112.3(f): allows the EPA Regional Administrator to grant an extension of time for amendments of the SPCC plan, as well as the entire SPCC plan.
- 112.4(a): raises the threshold for reporting under the program to two discharges of greater than 42 U.S. gallons (1 barrel) per discharge in any 12-month period, and reduces the amount of information to be submitted to the EPA Regional Administrator.
- 112.4(b): does not require new facilities to meet any requirements of this section (§ 112.4) until the compliance dates for the initial preparation and implementation of an SPCC plan.
- 112.5(a): requires any amendment made under this section be prepared within six months and implemented in no more than six months from when the amendment was prepared.
- 112.5(b): changes the period of review for SPCC plans from 3 to 5 years, and requires documentation of completion of the review and evaluation.
- 112.5(c): states that a professional engineer (PE) must certify only technical amendments, and not non-technical amendments (e.g. names, phone numbers).
- 112.7: allows differing formats for the SPCC plan; other formats must be cross-referenced to the listed SPCC requirements and include all applicable SPCC requirements.
- 112.7(e): allows use of usual and customary business records to serve as a record of tests or inspections and records to be kept separate from the SPCC plan; acknowledges the certifying engineer as having a role developing inspection procedures.

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- 112.8(c)(3), § 112.9(b)(1): allows National Pollutant Discharge Elimination Systems (NPDES) records to be used for SPCC purposes in lieu of events records specifically prepared for this purpose.

*2006 amendments that we categorize as decreasing planning or notification requirements:*

- 112.6: allows “qualified facilities” (defined in § 112.3(g)) to self-certify SPCC plans and provides applicable requirements for self-certification.

*2002 amendments that we categorize as both increasing and decreasing the planning or notification requirements, or that neither increasing nor decreasing the requirements:*

- 112.3(a),(b): requires facilities in operation to prepare or revise an SPCC plan within 6 months and implement the plan within one year; new facilities must prepare and implement an SPCC plan before beginning operations.
- 112.3(d): requires the PEs to attest that they considered applicable industry standards and that the SPCC plan is in accordance with SPCC requirements; also allows an agent to examine a facility in place of the PE, but the PE must review the agent's work, and certify the SPCC plan.
- 112.4(c): changes the requirement from notification to the state agency in charge of water pollution control activities to notification to the state agency in charge of oil pollution control activities.

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## Containment

In general, this category refers to requirements for containers or piping used by SPCC facilities. In particular, the amendment in our survey should use one or more of the following terms: container, containment, secondary containment, piping, or tanks to be included in this category. We identified one amendment from 2002 that increased requirements for containers or piping used by SPCC facilities and two amendments from 2006 that decreased the requirements.

*2002 amendment that we categorized as increasing containment requirements:*

- 112.8(d)(1): requires all buried piping installed or replaced on or after August 16, 2002, to have protective wrapping and coating and cathodic protection or otherwise satisfy the corrosion protection provisions for underground piping (40 C.F.R. pts. 280 or 281).

*2006 amendments that we categorized as decreasing containment requirements:*

- 112.7(k): allows owners/operators of qualified oil-filled operational equipment (defined in 112.7 (k)(1)) to meet alternate requirements (defined in 112.7(k)(2)) in lieu of the general secondary containment requirements.
- 112.8 (c)(2), § 112.8 (c)(11), § 112.12 (c)(2), § 112.12 (c)(11): provides an exception for mobile refuelers from constructing and meeting certain secondary containment requirements.

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## Testing

In general, this category refers to requirements to evaluate, inspect, and test containers, piping, or equipment to prevent oil spills. In particular, the written description of the amendment in our survey should include one or more of the following terms: test, integrity test, or inspect. We identified five amendments from 2002 that fit this category. All five of these amendments were categorized as increasing SPCC requirements.

*2002 amendments that we categorized as increasing testing requirements:*

- 112.7(d): adds new requirements for periodic integrity testing of containers, and periodic integrity and leak testing of valves and piping when secondary containment is impracticable; exempts FRP facilities (as defined by section §112.20) from having a contingency plan when secondary containment is impracticable.
- 112.7(i): specifies a brittle fracture evaluation requirement for field-constructed containers undergoing repairs, alteration, reconstruction, or change in service that may affect the risk of discharge.
- 112.8(c)(6): requires integrity testing on aboveground containers on a regular schedule (as opposed to periodically), and when material repairs are done; testing can be recorded using usual and customary business records.
- 112.8(d)(4): requires integrity and leak testing of buried piping at the time of installation, construction, relocation, or replacement.

- 112.11(i): requires offshore oil drilling, production, or workover facilities to simulate discharges for testing and inspecting pollution control and countermeasure systems.
- 

## Training

This category refers to training of employees that facilities are required to undertake. Amendments placed into this category must include the key word "training." We identified one amendment—from 2002—that fits this category. We categorized it as increasing requirements.

*2002 amendment that we categorized as increasing requirements:*

- 112.7(f): mandates training for oil-handling employees only, and specifies additional training topics; also requires discharge prevention briefings at least once a year.
- 

## Multiple Aspects

Amendments in this category either (1) do not fit into one of the above categories or (2) fit into more than one of the above categories. Two amendments—one each from 2002 and one from 2006—were categorized as decreasing requirements. In addition, seven amendments in this category did not fit into the above categories because we could not determine if the amendments increased or decreased requirements.

*2002 amendment that we categorized as decreasing requirements:*

- 112.7(a)(2): allows deviations from most of the rule's substantive requirements (except secondary containment), provided that the reasons for nonconformance are explained, and equivalent environmental protection is provided.

*2006 amendment that we categorized as decreasing requirements:*

- 112.3(g): defines a qualified facility eligible to self-certify under the provisions set forth in § 112.6.

*2002 amendments that we could not determine if they should be categorized as increasing or decreasing or neither increased or decreased requirements:*

- 112.1(b): adds "using" to the lists of activities at facilities subject to the rule and expands the scope of the rule to conform to the expanded jurisdiction in the Clean Water Act.

- 112.2: adds new definitions, such as for “facility,” and discharge; revises the text of the definitions of “oil” and “navigable waters”; and includes statutory definitions for “offshore facility,” and “United States” in the rule.
- 112.7(c): states that a containment system must be capable of containing oil and constructed to prevent any discharge from escaping from the facility before cleanup occurs.
- 112.9(c)(2): states that secondary containment must include sufficient freeboard to contain precipitation.
- 112.12 - § 112.15: adds sections to differentiate requirements for Animal Fats and Vegetables Oils based on the Edible Oil Regulatory Reform Act (EORRA) requirements. Requirements are identical to Subpart B for petroleum and non-petroleum oils.<sup>5</sup>

*2006 amendments that we could not determine if they should be categorized as increasing or decreasing or neither increased or decreased requirements:*

- 112.2: adds several definitions, including airport mobile refueler, farm, motive power container, and oil-filled operational equipment.
- 112.13 - § 112.15: removal of these sections because they are not appropriate for facilities that process, store, use, or transport animal fats and/or vegetable oils.

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<sup>5</sup>Sections 112.13-112.15 have been deleted per the December 2006 amendments. Section 112.12 was established to provide a platform for any further differentiation, if necessary. 71 FR 77285, 77293.

# Appendix IV: Comments from the Environmental Protection Agency



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JUL 13 2007

OFFICE OF  
SOLID WASTE AND  
EMERGENCY RESPONSE

Mr. John B. Stephenson, Director  
Natural Resources & Environment  
Government Accountability Office  
441 G Street, NW, Room 2135  
Washington, D.C. 20548

Dear Mr. Stephenson:

Thank you for the opportunity to comment on the draft report "Aboveground Oil Storage Tanks: Observations on EPA's Economic Analysis of the Amendments to the Spill Prevention, Control and Countermeasure Rule (GAO-07-763)." We appreciate the collegial working relationship and open dialog, while working with GAO on this report

Overall, we generally agree with the Recommendation in the report to improve our economic analyses for future changes to the Spill Prevention, Control, and Countermeasures (SPCC) rule, consistent with Office of Management and Budget (OMB) guidelines and in consideration of available data. EPA recognized this need last year and implemented three major initiatives: (1) activated a core SPCC Economic Subgroup of economic and technical experts; (2) acquired additional expert contractor support; and (3) hired an experienced senior economist to guide these efforts.


However, we also believe that the economic analyses that were conducted for the 2002 and 2006 amendments to the SPCC rule are already consistent with, and meet the spirit and intent of, OMB guidelines, given the limited data, time, and resources available. We are continuously working to gather additional data to improve our understanding of the regulated universe, oil spill risks, and to address uncertainty and quantify benefits. Although the Regulatory Impact Analysis (RIA) that supports the 2006 final rule amendments promulgated in December 2006 is constrained by limited data and uncertainty, we believe that the assumptions used in the analyses have a reasonable basis and that there was sufficient information to allow us to make policy and regulatory decisions underpinning these amendments that generate significant cost savings and burden reduction. We also maintain that these modifications serve to tailor and ease compliance for several industry sectors leading to protection of the environment from oil spills. As you noted in your report, the 2006 RIA addresses many of the issues identified in the RIA for the final 2002 amendments. Therefore, we request that you consider revising this portion of the report to note RIA consistency with OMB guidelines in light of limited data.

- 2 -

EPA also requests that the report be modified to address several technical corrections (see enclosure). In one section, in particular (page 20), the report characterizes the 2002 economic analysis, and to some extent, the 2006 economic analysis, with terminology that we believe does not accurately reflect the analysis. With respect to the choice of assumed rates of compliance for sensitivity analysis, the term "arbitrary" is used. Rather than arbitrary, EPA assumed 100% compliance under the baseline and the rule amendments for a proper "with and without" comparison of the economic impact. We then chose 25%, 50% and 75% rates of compliance for the sensitivity analysis to show the full range of impacts, depending upon any future, new information that would suggest otherwise. Therefore, we do not agree with GAO's characterization that the analysis used "arbitrarily developed scenarios."

Again, we appreciate the opportunity to work with your team on this review and your consideration of technical corrections. If you have other comments or questions about these corrections, please contact Deborah Dietrich, Director of the Office of Emergency Management at 202-564-8600.

Sincerely,

  
Susan Parker Bodine  
Assistant Administrator

Enclosure

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# Appendix V: GAO Contact and Staff Acknowledgments

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## GAO Contact

John B. Stephenson, (202) 512-3841, [stephensonj@gao.gov](mailto:stephensonj@gao.gov)

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## Staff Acknowledgments

In addition to the individual named above, Vincent P. Price, Assistant Director; Kevin Bray; Mark Braza; Greg Carroll; Jennifer DuBord; Timothy J. Guinane; Jennifer Huynh; Lisa Mirel; and Carol Herrnstadt Shulman made key contributions to this report.



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