

**GAO**

**Testimony**

Before the Subcommittee on National Security,  
Emerging Threats, and International Relations,  
Committee on Government Reform, House of  
Representatives

---

For Release on Delivery  
Expected at 9:30 a.m. EST  
Monday, February 23, 2004

**HOMELAND SECURITY**

**Federal Action Needed to  
Address Security  
Challenges at Chemical  
Facilities**

Statement of John B. Stephenson, Director  
Natural Resources and Environment





Highlights of [GAO-04-482T](#), a testimony before the Committee on Government Reform, Subcommittee on National Security, Emerging Threats, and International Relations, House of Representatives

## Why GAO Did This Study

The events of September 11, 2001, triggered a national re-examination of the security of thousands of industrial facilities that use or store hazardous chemicals in quantities that could potentially put large numbers of Americans at risk of serious injury or death in the event of a terrorist-caused chemical release. GAO was asked to examine (1) available information on the threats and risks from terrorism faced by U.S. chemical facilities; (2) federal requirements for security preparedness and safety at facilities; (3) actions taken by federal agencies to assess the vulnerability of the industry; and (4) voluntary actions the chemical industry has taken to address security preparedness, and the challenges it faces in protecting its assets and operations. GAO issued a report on this work in March 2003 (GAO-03-439).

## What GAO Recommends

GAO's March 2003 report recommended that the Secretary of Homeland Security and the Administrator of EPA jointly develop a comprehensive national chemical security strategy that is both practical and cost effective, which includes assessing vulnerabilities to terrorist attacks and enhancing security preparedness.

Legislation is now before Congress that, if enacted, would direct DHS, or DHS and EPA, to adopt most of GAO's March 2003 recommendations.

[www.gao.gov/cgi-bin/getrpt?GAO-03-439](http://www.gao.gov/cgi-bin/getrpt?GAO-03-439).

To view the full report, 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).

# HOMELAND SECURITY

## Federal Action Needed to Address Security Challenges at Chemical Facilities

### What GAO Found

Chemical facilities may be attractive targets for terrorists intent on causing economic harm and loss of life. Many facilities exist in populated areas where a chemical release could threaten thousands. The Environmental Protection Agency (EPA) reports that 123 chemical plants located throughout the nation could each potentially expose more than a million people if a chemical release occurred. To date, no one has comprehensively assessed the security of chemical facilities.

No federal laws explicitly require that chemical facilities assess vulnerabilities or take security actions to safeguard their facilities from attack. However, a number of federal laws impose safety requirements on facilities that may help mitigate the effects of a terrorist-caused chemical release. Although EPA believes that the Clean Air Act could be interpreted to require security at certain chemical facilities, the agency has decided not to attempt to require these actions in light of the litigation risk and importance of an effective response to chemical security. Ultimately, no federal oversight or third-party verification ensures that voluntary industry assessments of vulnerability are adequate and that security vulnerabilities are addressed.

Currently, the federal government has not comprehensively assessed the chemical industry's vulnerabilities to terrorist attacks. EPA, the Department of Homeland Security (DHS), and the Department of Justice have taken preliminary steps to assist the industry in its preparedness efforts, but no agency monitors or documents the extent to which chemical facilities have implemented security measures. Consequently, federal, state, and local entities lack comprehensive information on the vulnerabilities facing the industry.

To its credit, the chemical manufacturing industry, led by its industry associations, has undertaken a number of voluntary initiatives to address security at facilities. For example, the American Chemistry Council, whose members own or operate approximately 1,000, or 7 percent, of the facilities subject to Clean Air Act risk management plan provisions, requires its members to conduct vulnerability assessments and implement security improvements. The industry faces a number of challenges in preparing facilities against attacks, including ensuring that all chemical facilities address security concerns. Despite the industry's voluntary efforts, the extent of security preparedness at U.S. chemical facilities is unknown. In October 2002 both the Secretary of Homeland Security and the Administrator of EPA stated that voluntary efforts alone are not sufficient to assure the public of the industry's preparedness. Legislation is now pending that would mandate chemical facilities to take security steps to protect against the risk of a terrorist attack.

---

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to discuss our work on the security of the nation's chemical facilities and the recommendations that we made to address this issue in our March 2003 report.<sup>1</sup>

As the events of September 11, 2001, showed, terrorists can cause enormous damage to our country by attacking infrastructure essential to our economy and jeopardizing public health and safety. Following these events, the President, in the National Strategy for Homeland Security, identified the chemical industry as one of 13 sectors critical to the nation's infrastructure. Across the nation, thousands of industrial facilities manufacture, use, or store hazardous chemicals in quantities that could potentially put large numbers of Americans at risk of injury or death in the event of a chemical release.

Even before September 11, 2001, protecting chemical facilities was the shared responsibility of federal, state, and local governments in partnership with the private sector. However, attention was focused largely on the risks of accidental, rather than intentional, chemical releases. Under the Clean Air Act, the Environmental Protection Agency (EPA) identified 140 toxic and flammable chemicals that pose the greatest risk to human health and the environment when present in certain quantities above threshold levels. According to EPA, approximately 15,000 facilities in a variety of industries produce, use, or store one or more of these chemicals beyond threshold amounts. Under the act, these facilities must take steps to prevent and prepare for an accidental chemical release, including developing risk management plans (RMP). These facilities are referred to as RMP facilities. The events of September 11, 2001, brought heightened attention to security at chemical facilities and the possibility of a chemical release caused by a terrorist attack.

The federal government's role in protecting chemical facilities from terrorist attacks has been much debated since September 11, 2001. Initially, EPA had the lead responsibility for chemical security; currently the Department of Homeland Security (DHS) is the lead federal agency. For both agencies, public debate has centered on whether the federal

---

<sup>1</sup>U.S. General Accounting Office, *Homeland Security: Voluntary Initiatives Are Under Way at Chemical Facilities, but the Extent of Security Preparedness Is Unknown*, [GAO-03-439](#) (Washington, D.C.: Mar. 14, 2003).

---

government should impose security requirements on chemical facilities or whether voluntary industry actions are sufficient. Several legislative proposals have been introduced that address security measures at chemical facilities, including provisions giving DHS, or EPA and DHS, authority to mandate security measures at chemical facilities.

My remarks today will focus on security preparedness at the nation's chemical facilities. In particular I will (1) summarize available information on the threats and risks from terrorism that U.S. chemical facilities face; (2) describe federal requirements for security preparedness and the safe management of chemicals at these facilities; (3) describe actions federal agencies have taken to assess the vulnerability of the chemical industry or to address security preparedness; and (4) describe voluntary actions the chemical industry has taken to address security preparedness, and the challenges it faces in protecting its assets and operations. Our 2003 report was based on our review of available reports, statutes and regulations, and industry association documents; interviews with officials from the Department of Defense, the Department of Justice, EPA, industry associations including the American Chemistry Council (ACC) and the Synthetic Organic Chemical Manufacturers Association (SOCMA), and other chemical industry officials; and selected chemical facility site visits. We limited our review to stationary chemical facilities and did not address security concerns surrounding transportation of hazardous chemicals.<sup>2</sup> Appendix I provides additional information on the processes covered under the Clean Air Act's for RMP facilities, by industry sector, and the residential population surrounding RMP facilities that could be threatened by a "worst-case" accidental chemical release.

---

## Summary

In summary, experts agree that the nation's chemical facilities may be attractive targets for terrorists intent on causing massive damage, but the extent of security preparedness since the events of September 11, 2001, is unknown. The risk of an attack varies among facilities depending upon several factors, including their location and the types of chemicals they use, store, or manufacture. No specific data exist on the actual effects of successful terrorist attacks on chemical facilities. However, according to

---

<sup>2</sup>For information on the transportation of hazardous material, see U.S. General Accounting Office, *Rail Safety and Security: Some Actions Already Taken to Enhance Rail Security, but Risk-based Plan Needed*, [GAO-03-435](#) (Washington, D.C.: April 2003) and U.S. General Accounting Office, *Transportation Security: Federal Action Needed to Help Address Security Challenges*, [GAO-03-843](#) (Washington, D.C.: June 2003).

---

EPA data on accidental toxic release “worst-case” scenarios, 123 chemical facilities located throughout the nation could each potentially expose more than one million people in the surrounding area if a toxic release occurred. Approximately 700 facilities could each potentially threaten at least 100,000 people in the surrounding area, and about 3,000 facilities could each potentially threaten at least 10,000 people. To date, no one has comprehensively assessed the security of chemical facilities; however, numerous studies and media accounts of reporters and environmental activists gaining access to facilities indicate that vulnerabilities exist.

Unlike water treatment facilities and nuclear power facilities, chemical facilities are not subject to any federal requirements to assess and address security vulnerabilities against terrorist attacks. However, a number of federal laws impose safety requirements that may help mitigate the effects of a chemical release resulting from a terrorist attack. A case in point is the Clean Air Act’s requirements that RMP facilities take safety precautions to detect and minimize the effects of accidental releases, as well as provide prompt emergency response to a release. Although EPA believes the Clean Air Act could be interpreted to require security actions at RMP facilities, the agency has decided not to attempt to require these actions in light of the litigation risk and importance of an effective response to chemical security. In addition, under the regulations for the Maritime Transportation Security Act of 2002, vessels and port facilities—some of which are chemical facilities—must develop security plans. However, no federal oversight or third-party verification ensures that voluntary industry assessments of vulnerability are adequate and that security vulnerabilities are addressed.

Currently, the federal government has not comprehensively assessed the chemical industry’s vulnerability to terrorist attacks. As a result, federal, state, and local entities lack comprehensive information on the vulnerabilities the industry faces. However, federal agencies have taken some preliminary steps to assist the industry in its preparedness efforts. For example, EPA has issued warning alerts to the industry and informally visited about 30 high-risk facilities to learn about and encourage security efforts. According to EPA officials, EPA has provided information to DHS about the 15,000 facilities and DHS is currently identifying high-risk facilities and conducting site visits. In May 2002, Justice submitted an interim report to Congress that described observations on security at 11 chemical manufacturing facilities. As we reported in October 2002, however, Justice has not prepared a more comprehensive final report to Congress on the industry’s vulnerabilities, which it was required by law to deliver in August 2002. In a February 2003 conference report on Justice’s

---

appropriations, Congress directed that funding be transferred to DHS for completing vulnerability assessments at chemical facilities.

Finally, although the chemical industry has undertaken a number of initiatives to address security concerns, the extent of security preparedness across the chemical industry is unknown. The American Chemistry Council—whose 145 member companies own or operate approximately 1,000 (7 percent) of the 15,000 RMP facilities—now requires, as a condition of membership, that facilities conduct security vulnerability assessments and implement security improvements. EPA officials estimate that voluntary initiatives led by industry associations only reach a portion of the 15,000 RMP facilities. Moreover, the industry faces a number of challenges in preparing facilities against terrorist attacks, including ensuring that facilities obtain adequate information on threats and determining the appropriate security measures given the level of risk. In October 2002, both the Secretary of Homeland Security and the then-Administrator of EPA stated that voluntary efforts alone are not sufficient to assure the public of the industry’s preparedness. They also stated that they would support bipartisan legislation to require the 15,000 chemical facilities nationwide that contain large quantities of hazardous chemicals to comprehensively assess their vulnerabilities and then act to reduce them.

In light of the challenges facing the industry and the gravity of the potential threat, we recommended in March 2003 that the Secretary of Homeland Security and the Administrator of EPA jointly develop a comprehensive national strategy for chemical security that is both practical and cost effective. This national strategy should

- identify high-risk facilities based on several factors, including the level of threat, and collect information on industry security preparedness;
- specify the roles and responsibilities of each federal agency partnering with the chemical industry;
- develop appropriate information-sharing mechanisms; and
- develop a legislative proposal, in consultation with industry and other appropriate groups, to require these chemical facilities to expeditiously assess their vulnerability to terrorist attacks and, where necessary, require these facilities to take corrective action.

Legislation is now before Congress that, if enacted, would direct DHS, or DHS and EPA, to adopt most of these recommendations.

---

## Background

Chemical facilities manufacture a host of products—including basic organic chemicals, plastic materials and resins, petrochemicals, and industrial gases, to name a few. Other facilities, such as fertilizer and pesticide facilities, pulp and paper manufacturers, water facilities, and refineries, also house large quantities of chemicals. EPA has a role in preventing and mitigating accidental releases at chemical facilities through, among other things, the RMP provisions of the Clean Air Act. Under these provisions, EPA identified 140 toxic and flammable chemicals that, when present above certain threshold amounts, would pose the greatest risk to human health and the environment if released. According to EPA, approximately 15,000 facilities in a variety of industries produce, use, or store one or more of these chemicals beyond threshold amounts.

The 2003 President's National Strategy for the Physical Protection of Critical Infrastructures and Key Assets sets forth actions that EPA and DHS will take to secure the chemical infrastructure. The strategy directs EPA and DHS to promote enhanced site security at chemical facilities and review current practices and statutory requirements on the distribution and sale of certain pesticides and industrial chemicals to help identify whether additional measures are necessary. DHS is also charged with continuing to develop the Chemical Sector Information Sharing and Analysis Center, a partnership with industry to facilitate the collection and sharing of threat information, by promoting the Center and recruiting chemical industry constituents to participate. A presidential directive issued in December 2003 designates DHS as the lead federal agency for chemical security, a change from national strategies issued in July 2002 and February 2003, which named EPA as the lead.

A number of other critical infrastructures have federal security requirements. All commercial nuclear power facilities licensed by the Nuclear Regulatory Commission are subject to a number of security requirements. The Aviation and Transportation Security Act of 2001 directed the Transportation Security Administration to take over responsibility for airport screening. The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 requires community water systems serving more than 3,300 people to conduct a vulnerability assessment, prepare an emergency response plan, certify to EPA that the vulnerability assessment and emergency response plan have been completed, and provide a copy of the assessment to EPA. To improve security in our nation's ports, the regulations implementing the Maritime

---

Transportation Security Act of 2002 direct vessels and facilities—some of which are chemical facilities—to develop security plans.<sup>3</sup>

Congress is considering several legislative proposals that would grant DHS, or DHS and EPA, the authority to require chemical facilities to take security steps. S. 994 requires the Secretary of Homeland Security to promulgate regulations specifying which facilities should be required to conduct vulnerability assessments and to prepare and implement site security plans, a timetable for completing the vulnerability assessments and security plans, the contents of plans, and limits on the disclosure of sensitive information. S. 157 would direct EPA to designate high-priority chemical facilities based on the threat posed by an unauthorized release and require these facilities to conduct vulnerability assessments, identify hazards that would result from a release, and prepare a prevention, preparedness, and response plan. S. 157 would also require facilities to send these assessments and plans to EPA. EPA and DHS would jointly review the assessments and plans to determine compliance. S. 157 would also require that facilities consider inherently safer practices (referred to as inherently safer technologies), such as substituting less toxic chemicals.

---

## An Attack Against Chemical Facilities Could Cause Economic Harm and Loss of Life

Experts agree that chemical facilities present an attractive target for terrorists intent on causing massive damage because many facilities house toxic chemicals that could become airborne and drift to surrounding areas if released. Chemical facilities could also be attractive targets for the theft of chemicals that could be used to create a weapon capable of causing harm. Justice has concluded that the risk of an attempt in the foreseeable future to cause an industrial chemical release is both real and credible. In fact, according to Justice, domestic terrorists plotted to use a destructive device against a U.S. facility that housed millions of gallons of propane in the late 1990s. In testimony on February 6, 2002, the Director of the Central Intelligence Agency warned of the potential for an attack by al Qaeda on chemical facilities.

Some chemical facilities may be at higher risk of a terrorist attack than others because they contain large amounts of toxic chemicals and are located near population centers. Attacks on such facilities could harm a

---

<sup>3</sup>In responding to our draft, EPA noted that approximately 2,000 RMP facilities may be covered under the Public Health Security and Bioterrorism Preparedness and Response Act of 2002.



---

large number of people, with health effects ranging from mild irritation to death, cause large-scale evacuations, and disrupt the local or regional economy. No specific data are available on what the actual effects of successful terrorist attacks on chemical facilities would be. However, RMP facilities must submit to EPA estimates, including the residential population located within the range of a toxic gas cloud produced by a “worst-case” chemical release, called the “vulnerable zone.” According to EPA, 123 chemical facilities located throughout the nation have toxic “worst-case” scenarios where more than one million people could be at risk of exposure to a cloud of toxic gas.<sup>4</sup> About 600 facilities could each potentially threaten between 100,000 and a million people, and about 2,300 facilities could each potentially threaten between 10,000 and 100,000 people within these facilities’ “vulnerable zones.”

According to EPA, “worst-case” scenarios do not consider the potential causes of a release or how different causes or other circumstances, such as safety features, could lessen the consequences of a release. Hence, the “worst-case” scenario calculations would likely be overstating the potential consequences. However, under the Clean Air Act, RMP facilities must estimate the effects of a toxic chemical release involving the greatest amount of the toxic chemical held in a single vessel or pipe—not the entire quantity on site. Therefore, for some facilities it is conceivable that an attack where multiple chemical vessels were breached simultaneously could result in an even larger release, potentially affecting a larger population than estimated in the RMP “worst-case” scenarios. Other factors besides location and the quantity of chemicals onsite could also make a facility a more attractive target. For example, a facility that is widely recognizable, located near a historic or iconic symbol, or critical to supporting other infrastructures could be at higher risk. A 2002 Brookings

---

<sup>4</sup>“Vulnerable zones” are determined by drawing a circle around a facility with the radius of the circle equal to the distance a toxic gas cloud would travel before dissipating to relatively harmless levels. Because, in an actual event, the toxic cloud would only cover a fraction of that circle, it is unlikely that the event would actually result in exposure of the entire population estimated in the “worst-case” scenario, according to EPA. The number of persons within a “vulnerable zone” is larger than the number of persons that would be affected by a “worst-case” scenario. In addition, EPA’s requirements for “worst-case” release analysis tend to result in consequence estimates that are significantly higher than what is likely to actually occur. For example, “worst-case” release analysis does not take into account active mitigation measures facilities often employ to reduce the consequences of releases.

---

Institution report ranks an attack on toxic chemical facilities behind only biological and atomic attacks in terms of possible fatalities.<sup>5</sup>

Currently, no one has comprehensively assessed security across the nation at facilities that house chemicals. According to a 1999 study by the Department of Health and Human Services' Agency for Toxic Substances and Disease Registry (ATSDR), security at chemical facilities in two communities was fair to very poor. ATSDR observed security vulnerabilities such as freely accessible chemical barge terminals and chemical rail cars parked near residential areas in communities where facilities are located. Following visits to 11 chemical facilities, Justice concluded that some facilities may need to implement more effective security systems and develop alternative means to reduce the potential consequences of a successful attack. The ease with which reporters and environmental activists gained access to chemical tanks and computer centers that control manufacturing processes at chemical facilities in recent years also raises doubts about security effectiveness at some facilities.

---

## No Federal Requirements Specifically Require Chemical Facilities to Address the Threat of Terrorism

No federal laws explicitly require all chemical facilities to take security actions to safeguard their facilities against a terrorist attack. Although the federal government requires certain chemical facilities to take security precautions directed to prevent trespassing or theft, these requirements do not cover a wide range of chemical facilities and may do little to actually prevent a terrorist attack. For example, under EPA's regulations implementing the Resource Conservation and Recovery Act of 1976, facilities that house hazardous waste generally must take certain security actions, such as posting warning signs and using a 24-hour surveillance system or surrounding the active portion of the facility with a barrier and controlled entry gates.<sup>6</sup> However, according to EPA, these requirements would be applicable to only approximately 21 percent of the 15,000 RMP facilities. Regulations implementing the Maritime Transportation Security Act of 2002 also require vessels and port facilities—some of which are chemical facilities—to develop security plans.

---

<sup>5</sup>The Brookings Institution, *Protecting the American Homeland: A Preliminary Analysis*, (Washington, D.C.: 2002).

<sup>6</sup>40 C.F.R. § 264.14.

---

A number of federal laws also impose safety requirements on chemical facilities, but these requirements do not specifically and directly address security preparedness against terrorism. Several statutes, including the Occupational Safety and Health Act, the Clean Air Act, and the Emergency Planning and Community Right-to-Know Act, impose safety and emergency response requirements on chemical facilities that may incidentally reduce the likelihood and mitigate the consequences of terrorist attacks.<sup>7</sup> All of these requirements could potentially mitigate a terrorist attack in a number of ways. First, because some of these requirements only apply to facilities with more than threshold quantities of certain chemicals, facility owners have an incentive to reduce or eliminate these chemicals, which may make the facility a less attractive target or minimize the impact of an attack. Second, both the Clean Air Act risk management plan provisions and the hazard analyses under the Occupational Safety and Health Act require facility operators to identify the areas of their facilities that are vulnerable to a chemical release. When facilities implement measures to improve the safety of these areas, such as installing sensors and sprinklers, the impact of a terrorist-caused release may be lessened. Third, the emergency response plans increase preparedness for a chemical release—whether intentional or unintentional. While these safety requirements could mitigate the effects of a terrorist attack, they do not impose any security requirements, such as conducting vulnerability assessments and addressing identified problems.

While no law explicitly requires facilities to address the threat of terrorism, EPA believes that the Clean Air Act could be interpreted to provide it with authority to address site security from terrorist attacks at chemical facilities. Section 112(r) of the Clean Air Act—added by the Clean Air Act Amendments of 1990—imposes certain requirements on chemical facilities with regard to “accidental releases.” The act defines an accidental release as an unanticipated emission of a regulated substance or other extremely hazardous substance into the air. Arguably, any chemical release caused by a terrorist attack would be unanticipated and thus could be covered under the Clean Air Act. An interpretation of an unanticipated emission as including an emission due to a terrorist attack would provide EPA with authority to require security measures or vulnerability assessments with regard to terrorism. However, EPA has not

---

<sup>7</sup>We focus our discussion in this testimony on those requirements dealing with assessments of hazards and emergency response. However, the Toxic Substances Control Act also may mitigate the consequences of a terrorist attack by limiting or eliminating certain toxic chemicals that a facility manufactures or uses.

---

attempted to use these Clean Air Act provisions. EPA is concerned that such an interpretation would pose significant litigation risk. As we reported in March 2003, there are a number of practical and legal arguments against this interpretation. We find that EPA could reasonably interpret its Clean Air Act authority to cover chemical security, but also agree with the agency that this interpretation could be open to challenges. At the time of our 2003 review, EPA supported passage of legislation to specifically address chemical security.

---

## Federal Agencies Have Not Comprehensively Assessed the Vulnerability of the Chemical Industry to Terrorism, but Have Taken Some Preliminary Steps

Despite a congressional mandate to do so, the federal government has not conducted the assessments necessary to develop comprehensive information on the chemical industry's vulnerabilities to terrorist attacks.<sup>8</sup> The Chemical Safety Information, Site Security and Fuels Regulatory Relief Act of 1999 required Justice to review and report on the vulnerability of chemical facilities to terrorist or criminal attack. In May 2002, nearly 2 years after it was due, Justice prepared and submitted an interim report to Congress that described observations on security at 11 chemical manufacturing facilities Justice visited to develop a methodology for assessing vulnerability, but its observations cannot be generalized to the industry as a whole. In its fiscal year 2003 budget, Justice asked for \$3 million to conduct chemical plant vulnerability assessments. In the February 2003 conference report on Justice's appropriation act for fiscal year 2003,<sup>9</sup> Congress directed that \$3 million of the funding being transferred to DHS to be used for the chemical plant vulnerability assessments. Justice believes that chemical plant vulnerability assessments are now part of DHS' mission.

Federal agencies have taken preliminary steps to assist the industry in its preparedness efforts. While Justice has not assessed the vulnerability of the chemical industry, it has provided the industry with a tool for individual facilities to use in assessing their vulnerabilities. Justice, together with the Department of Energy's Sandia National Laboratories, developed a vulnerability assessment methodology for evaluating the vulnerability to terrorist attack of facilities handling chemicals. The

---

<sup>8</sup>For a discussion on Justice's actions to assess the chemical industry's vulnerability to terrorist attack, see U.S. General Accounting Office, *Homeland Security: Department of Justice's Response to Its Congressional Mandate to Assess and Report on Chemical Industry Vulnerabilities*, [GAO-03-24R](#) (Washington, D.C.: Oct. 10, 2002).

<sup>9</sup>H.R. Conf. Rept. No. 108-10, at 600 (2003).

---

methodology helps facilities identify and assess threats, risks, and vulnerabilities and develop recommendations to reduce risk, where appropriate. As the lead federal agency for the operational response to terrorism, Justice's FBI is responsible for weapons of mass destruction threat assessment and communicating warnings. Finally, agents in the FBI's local field offices provide information and technical assistance to state and local jurisdictions and to some chemical facilities to bolster their preparedness to respond to terrorist incidents.

EPA has also taken some actions. Officials have analyzed the agency's database of RMP facilities to identify high-risk sites for DHS and Justice's Federal Bureau of Investigation (FBI). But these facilities are only a portion of the universe of all industrial facilities that house toxic or hazardous chemicals. At the time of our review, EPA had not analyzed non-RMP facilities to determine whether any of those facilities should be considered at high risk for a terrorist attack. EPA has also issued warning alerts to the industry, hosted training classes on vulnerability assessment methodologies, and informally visited about 30 high-risk facilities to learn about and encourage security efforts. Finally, DHS' Information Analysis and Infrastructure Protection directorate collects information from the U.S. intelligence community, other federal agencies, and the private sector. Working with ACC, an industry association representing chemical manufacturers, DHS also supports the Chemical Sector Information Sharing and Analysis Center to collect and share threat information for the chemical industry. In addition, according to EPA officials, DHS has begun identifying high-risk facilities and conducting site visits at facilities. However, neither EPA nor DHS is currently monitoring the extent to which the industry has implemented security measures.

---

## Chemical Industry Has Taken Voluntary Actions to Address Security Concerns but Faces Significant Challenges in Preparing Against Terrorist Attacks

The chemical manufacturing industry has undertaken a number of voluntary initiatives to address security concerns at chemical facilities, including developing security guidelines and tools to assess vulnerabilities, but major challenges remain. All of the industry groups with whom we met have taken actions such as forming security task forces, holding meetings and conferences to share security information with members, and participating in security briefings with federal agencies. In response to the terrorist attacks on September 11, 2001, ACC—whose members own or operate approximately 1,000 RMP facilities—now requires its members, as a condition of membership, to rank facilities using a screening tool to evaluate its facilities' risk level. It also requires facilities to identify, assess, and address vulnerabilities at facilities using one of several available

---

vulnerability assessment methodologies. In doing so, ACC member facilities generally follow a multistep process that includes

- evaluating on-site chemical hazards, existing safety and security features, and the attractiveness of the facility as a terrorist target;
- using hypothetical threat scenarios to identify how a facility is vulnerable to attack; and
- identifying security measures that create layers of protection around a facility's most vulnerable areas to detect, delay, or mitigate the consequences of an attack.

ACC established time frames for completing the vulnerability assessment and implementing security measures, based on the facility's risk ranking. ACC reports that the 120 facilities ranked as the highest risk and 372 facilities ranked as the next highest have completed vulnerability assessments. Most of ACC's lower-risk facilities are progressing on schedule. ACC generally requires third-party verification that the facility has made the improvements identified in its vulnerability assessment.<sup>10</sup>

While these are commendable actions, they do not provide a high level of assurance that chemical facilities have better protected their facilities from terrorist attack. First, ACC does not require third parties to verify that the facility has conducted the vulnerability assessment appropriately or that its actions adequately address security risks. Even though compliance with ACC's safety and security requirements is a condition of membership, we do not believe that its requirements for facilities to periodically report on compliance with these requirements is an effective enforcement measurement because ACC does not verify implementation or evaluate the adequacy of facility measures. Second, its member facilities comprise only 7 percent of the facilities required to submit risk management plans to EPA, leaving about 14,000 other RMP facilities that may not participate in voluntary security efforts. These facilities include agricultural suppliers, such as fertilizer facilities; petroleum and natural gas facilities; food storage facilities; water treatment facilities; and wastewater treatment facilities, among others. Third, other facilities house

---

<sup>10</sup>The lowest-risk facilities may use a less rigorous methodology to identify and make security enhancements and are not required to obtain third-party verification that improvements have been made. In addition, by December 2005, member companies will have to had their compliance with safety and security requirements certified by independent third-party auditors.

---

chemicals that EPA has identified as hazardous, but in quantities that are below the threshold level required to be categorized as RMP facilities.

Other industry groups are also developing security initiatives, but the extent of these efforts varies from issuing security guidance to requiring vulnerability assessments. For example, the American Petroleum Institute, which represents petroleum and natural gas facilities, published security guidelines developed in collaboration with the Department of Energy that are tailored to the differing security needs of industry sectors. Despite industry associations' efforts to encourage security actions at facilities, the extent of participation in voluntary initiatives is unclear. EPA officials estimate that voluntary initiatives led by industry associations only reach a portion of the 15,000 RMP facilities. Furthermore, EPA officials stated that these voluntary initiatives raise an issue of accountability, since the extent to which industry group members are implementing voluntary initiatives is unknown.

The chemical industry faces a number of challenges in preparing facilities against terrorist attacks, including ensuring that facilities obtain adequate information on threats and determining the appropriate security measures given the level of risk. Trade association and industry officials identified a number of concerns about preparing against terrorist attacks. First, industry officials noted that they need better threat information from law enforcement agencies, as well as better coordination among agencies providing threat information. Second, industry officials report that chemical companies face a challenge in achieving cost-effective security solutions, noting that companies must weigh the cost of implementing countermeasures against the perceived reduction in risk. Industry groups with whom we spoke indicated that their member companies face the challenge of effectively allocating limited security resources. Third, facilities face pressure from public interest groups to implement inherently safer practices (referred to in the industry as inherently safer technologies), such as lowering toxic chemical inventories and redesigning sites to reduce risks. Justice has also recognized that reducing the quantity of hazardous material may make facilities less attractive to terrorist attack and reduce the severity of an attack. While industry recognizes the contribution that inherently safer technologies can make to reducing the risk of a terrorist attack, industry officials noted that decisions about inherently safer technologies require thorough analysis and may shift, rather than reduce, risks. Finally, industry officials stated that the industry faces a challenge in engaging all chemical facilities in voluntary security efforts. ACC has made efforts to enlist facilities beyond its membership in voluntary security initiatives. The Synthetic Organic

---

Chemical Manufacturers' Association (SOCMA) adopted ACC's security code for its member facilities as a condition of membership. However, the extent to which all partnering companies and associations implement the requirements is unclear.

---

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions that you or Members of the Subcommittee may have.

---

## Contacts and Acknowledgements

For further information about this testimony, please contact me at (202) 512-3841. Joanna Owusu, Vince Price, Carol Herrnstadt Shulman, and Amy Webbink made key contributions to this statement.



# Appendix I: RMP-Covered Industrial Processes and Off-Site Consequences of Worst-Case Chemical Releases

This appendix presents information on the processes covered under the Clean Air Act's requirements for risk management plan (RMP) facilities by industry sector and the residential population surrounding RMP facilities that could be threatened by a "worst-case" accidental chemical release.

**Table 1: Number and Percent of RMP-Covered Processes by Industry Sector**

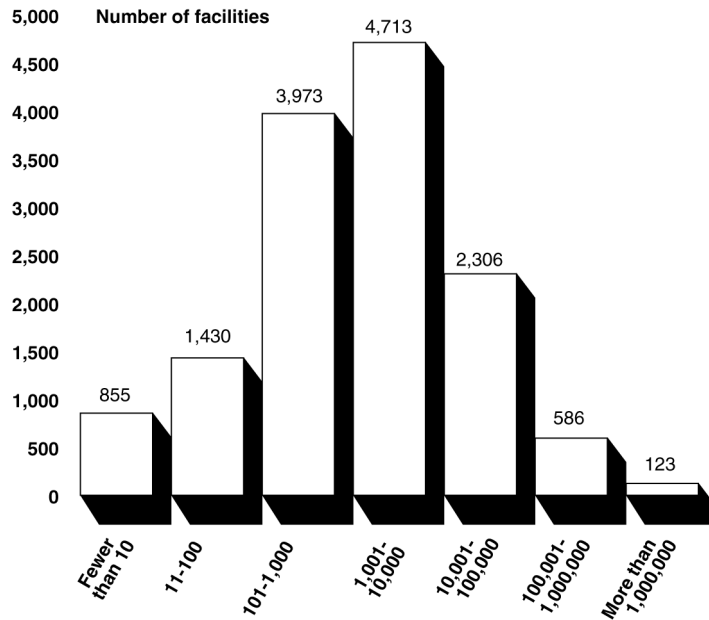
Industry sector	Number of processes	Percent of processes
Agriculture & farming, farm supply, fertilizer production, pesticides	6,317	31
Water supply and wastewater treatment	3,753	18
Chemical manufacturing	3,803	18
Energy production, transmission, transport, and sale	3,038	15
Food and beverage manufacturing & storage (including refrigerated warehousing)	2,366	11
Chemical warehousing (not including refrigerated warehousing)	318	2
Other <sup>a</sup>	1,075	5
<b>Total<sup>b</sup></b>	<b>20,670</b>	<b>100</b>

Source: EPA.

<sup>a</sup>Other represents a large variety of industry sectors including pulp mills, iron and steel mills, cement manufacturing, and computer manufacturing.

<sup>b</sup>The total number of covered processes is not equal to the 15,000 RMP facilities because some RMP facilities have more than one covered process (i.e., a process containing more than a threshold amount of a covered hazardous chemical).

**Figure 1: Number of Facilities with Worst-Case Accidental Release Scenarios by Residential Population Potentially Threatened**



Source: EPA.

Notes: EPA, Chemical Accident Risks in U.S. Industry – A Preliminary Analysis of Accident Risk Data from U.S. Hazardous Chemical Facilities, Washington, D.C.: September 25, 2000.

This figure includes only those facilities with toxic chemicals that could lead to a “worst-case” scenario. Facilities that only have flammable chemical “worst-case” scenarios are not included. Flammable chemicals affect fewer people because the distance the flammable substance travels tends to be significantly shorter.

---

---

This is a work of the U.S. government and is not subject to copyright protection in the United States. It may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.

---

## GAO's Mission

The General Accounting Office, the audit, evaluation and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

---

## Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through the Internet. GAO's Web site ([www.gao.gov](http://www.gao.gov)) contains abstracts and full-text files of current reports and testimony and an expanding archive of older products. The Web site features a search engine to help you locate documents using key words and phrases. You can print these documents in their entirety, including charts and other graphics.

Each day, GAO issues a list of newly released reports, testimony, and correspondence. GAO posts this list, known as "Today's Reports," on its Web site daily. The list contains links to the full-text document files. To have GAO e-mail this list to you every afternoon, go to [www.gao.gov](http://www.gao.gov) and select "Subscribe to e-mail alerts" under the "Order GAO Products" heading.

---

## Order by Mail or Phone

The first copy of each printed report is free. Additional copies are \$2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. General Accounting Office  
441 G Street NW, Room LM  
Washington, D.C. 20548

To order by Phone:   Voice:   (202) 512-6000  
                                  TDD:    (202) 512-2537  
                                  Fax:     (202) 512-6061

---

## To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: [www.gao.gov/fraudnet/fraudnet.htm](http://www.gao.gov/fraudnet/fraudnet.htm)

E-mail: [fraudnet@gao.gov](mailto:fraudnet@gao.gov)

Automated answering system: (800) 424-5454 or (202) 512-7470

---

## Public Affairs

Jeff Nelligan, Managing Director, [NelliganJ@gao.gov](mailto:NelliganJ@gao.gov) (202) 512-4800  
U.S. General Accounting Office, 441 G Street NW, Room 7149  
Washington, D.C. 20548