

**GAO**

Testimony

Before the Committee on Environment  
and Public Works, U.S. Senate

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# ENVIRONMENTAL INFORMATION

## EPA Actions Could Reduce the Availability of Environmental Information to the Public

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





Highlights of [GAO-07-464T](#), a testimony before the Committee on Environment and Public Works, U.S. Senate

## Why GAO Did This Study

U.S. industry uses billions of pounds of chemicals to produce the nation's goods and services. Releases of these chemicals during use or disposal can harm human health and the environment. The Emergency Planning and Community Right-to-Know Act of 1986 requires facilities that manufacture, process, or otherwise use more than specified amounts of nearly 650 toxic chemicals to report their releases to water, air, and land. The Environmental Protection Agency (EPA) makes this data available to the public in the Toxics Release Inventory (TRI). Since 1995, facilities may submit a brief certification statement (Form A), in lieu of the detailed Form R report, if their releases of specific chemicals do not exceed 500 pounds a year. In January 2007, EPA finalized a proposal to increase that threshold to 2,000 pounds, quadrupling what facilities can release before they must disclose their releases and other waste management practices.

Today's testimony addresses (1) EPA's development of the proposal to change the TRI Form A threshold from 500 to 2,000 pounds and (2) the impact these changes may have on data available to the public. It also provides an update to our 2005 report recommendations on perchlorate.

GAO's preliminary observations on TRI are based on ongoing work performed from June 2006 through January 2007.

[www.gao.gov/cgi-bin/getrpt?GAO-07-464T](http://www.gao.gov/cgi-bin/getrpt?GAO-07-464T).

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

## ENVIRONMENTAL INFORMATION

# EPA Actions Could Reduce the Availability of Environmental Information to the Public

## What GAO Found

Although we have not yet completed our evaluation, our preliminary observations indicate that EPA did not adhere to its own rulemaking guidelines in all respects when developing the proposal to change TRI reporting requirements. We have identified several significant differences between the guidelines and the process EPA followed. First, late in the process, senior EPA management directed the inclusion of a burden reduction option that raised the Form R reporting threshold, an option that the TRI workgroup charged with analyzing potential options, had dropped from consideration early in the process. Second, EPA developed this option on an expedited schedule that appears to have provided a limited amount of time for conducting various impact analyses. Third, the decision to expedite final agency review, when EPA's internal and regional offices determine whether they concur with the final proposal, appears to have limited the amount of input they could provide to senior EPA management.

We believe that the TRI reporting changes will likely have a significant impact on information available to the public about dozens of toxic chemicals from thousands of facilities in states and communities across the country. First, we estimate that detailed information from more than 22,000 Form Rs could no longer be reported to the TRI if all eligible facilities choose to use Form A, affecting more than 33 percent of reports in California, Massachusetts, and New Jersey. Second, we estimate that states could lose all quantitative information about releases of some chemicals, ranging from 3 in South Dakota to 60 in Georgia. Third, we estimate that 3,565 facilities—including 50 in Oklahoma, 101 in New Jersey, and 302 in California—would no longer have to report any quantitative information to the TRI. In addition, preliminary results from our survey of state TRI coordinators indicate that many believe the changes will negatively impact information available to the public and efforts to protect the environment. Finally, EPA estimates facilities could save a total of \$5.9 million as a result of the increased Form A eligibility—about 4 percent of the total annual cost of TRI reporting. According to our estimates, facilities will save less than \$900 a year, on average. Because not all eligible facilities will utilize the increased eligibility, actual savings to industry are likely to be less.

In our May 2005 perchlorate report, we identified over 400 sites in 35 states where perchlorate has been found in concentrations ranging from 4 parts per billion to more than 3.7 million parts per billion. We concluded that EPA needed more reliable information on the extent of contaminated sites and the status of cleanup efforts, and recommended that EPA work with the Department of Defense and the states to establish a way to track perchlorate information. In December 2006, EPA reiterated its disagreement with our recommendation. We continue to believe that the inconsistency and omissions in available perchlorate data underscore the need for a tracking system to better inform the public and others about the locations of perchlorate releases and the status of cleanups.

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Madam Chairman and Members of the Committee:

I am pleased to appear here today before the Committee to discuss our ongoing work regarding the Environmental Protection Agency's (EPA) Toxics Release Inventory (TRI) and to provide you with an update on our 2005 report on ammonium perchlorate (perchlorate), a primary ingredient in solid rocket propellant that recent studies have shown to affect human health.<sup>1</sup>

Each year, U.S. industry uses billions of pounds of toxic chemicals to produce the nation's goods and services. However, the release of these chemicals during transport, storage, use, or disposal as waste can potentially harm human health and the environment. Congress passed the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) to inform citizens about releases of toxic chemicals to the environment; to assist governmental agencies, researchers, and other persons in the conduct of research and data gathering; and to aid in the development of appropriate regulations, guidelines, and standards. Section 313 of EPCRA generally requires certain facilities that manufacture, process, or otherwise more specified amounts of any of 581 individual chemicals and 30 additional chemical categories to annually report the amount of those chemicals that they released to the environment, including whether those chemicals were released to the air, soil, or water. EPCRA also requires EPA to make this information available to the public, which the agency does through the TRI database. The Pollution Prevention Act of 1990 (PPA) expanded the TRI by requiring facilities to report certain data about their waste management practices, including amounts of TRI chemicals recycled or treated.

Facilities comply with TRI reporting requirements by submitting to EPA, and their respective state, information for each TRI-listed chemical that they use in excess of certain thresholds using what are referred to as a Form R report or a Form A Certification Statement. Form R captures information about the facility, such as address, parent company, industry type, and detailed information about the chemicals it released, such as quantity of the chemical disposed or released onsite to the air, water, land, and injected underground, or transferred for disposal or release off-site. Since 1995, EPA has allowed certain facilities to submit information on a

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<sup>1</sup>GAO, *Perchlorate: A System to Track Sampling and Cleanup Results is Needed*, [GAO-05-462](#) (Washington, D.C.: May 20, 2005).

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brief Form A in lieu of the detailed Form R report if they release or manage no more than 500 pounds of a chemical that is not persistent, bioaccumulative, and toxic (non-PBT) during the year. Form A provides nearly the same facility identification information as Form R, along with basic information about the chemical's identity, but it does not contain any of the detailed information about the quantities of chemicals used, released, or managed as waste found on Form R.

During the past several years, EPA has engaged in a multi-phased effort to reduce the burden on industry by revising TRI regulations and increasing Form A eligibility. EPA's Action Development Process (ADP) outlines a series of steps that the agency is to follow when developing actions such as regulations, policy statements, and risk assessments. The purpose of the ADP is ensure that scientific, economic, and policy issues are adequately addressed at the appropriate stages of action development and to ensure cross-agency participation until the final action is completed. ADP steps include (1) chartering a workgroup comprised of representatives from various internal and regional offices who will develop the action, (2) preparing and executing an analytic blueprint for analyses needed to support the action, and (3) conducting final agency review. On December 22, 2006, EPA issued the TRI Burden Reduction proposed rule, an action that increased the Form A threshold for certain facilities to 2,000 pounds of releases for a non-PBT chemical. The action also allows, for the first time, certain facilities to use Form A for non-dioxin, persistent bioaccumulative toxic (PBT) chemicals, such as lead and mercury, provided that they release none of the PBT chemical to the environment.

My testimony is based on ongoing work that we expect to complete in June 2007 and, therefore, the information I am presenting is preliminary. My statement today addresses two areas related to EPA's changes in TRI reporting requirements: (1) the extent to which EPA followed internal rulemaking guidelines when developing its December 2006 TRI burden reduction rule and (2) our preliminary estimates of the impact that these changes will have on TRI data available to the public and on costs to industry. In addition, as you requested, my statement includes a brief summary of our May 2005 report on perchlorate and EPA's December 2006 response to our recommendation that the agency develop a tracking system for perchlorate releases and cleanup efforts across the federal government and state agencies.

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## Summary

Although we have not yet completed our review, our preliminary observations are that EPA did not adhere to all aspects of its rulemaking

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guidelines when developing the new TRI reporting requirements. EPA's Action Development Process outlines a series of steps to help guide the development of new environmental regulations. Throughout this process, however, the senior EPA management has the authority to accelerate the rule development process. Nevertheless, while we continue to pursue a clearer understanding of EPA's actions, we have identified several significant differences between the guidelines and the process EPA followed in this case: (1) late in the rulemaking process, senior EPA management directed consideration of a burden reduction option that the TRI workgroup had previously dropped from consideration; (2) EPA developed this option on an expedited schedule that appears to have provided a limited amount of time for conducting various impact analyses; and (3) EPA's decision to expedite Final Agency Review, when EPA's internal and regional offices determine whether they concur with the final proposal appears to have limited the amount of input they could provide to senior EPA management. First, the TRI workgroup charged with identifying options to reduce reporting burdens on industry identified three possible options for senior management to consider. The first two options allowed facilities to use Form A in lieu of Form R for PBT chemicals, provided the facility has no releases to the environment, and the third created a "no significant change" reporting option in lieu of Form R for facilities with releases that changed little from the previous year. Information from a June 2005 briefing for the Administrator indicated that, while the Office of Management and Budget (OMB) had suggested increasing the Form A eligibility for non-PBT chemicals from 500 to 5,000 pounds, the TRI workgroup dropped that option from consideration. Second, although we could not determine from the documents provided by EPA what actions the agency took between the June 2005 briefing for the EPA Administrator and the October 2005 issuance of the TRI proposal in the *Federal Register*, the Administrator provided direction after the briefing to expedite the process in order to meet a commitment to OMB to provide burden reduction by the end of December 2006.<sup>2</sup> Subsequently, EPA revised its economic analysis to include consideration of the impact of raising the Form A eligibility threshold. However, that analysis was not completed before EPA sent the proposed rule to OMB for review and was only completed just prior to the proposal being signed by the Administrator and published in the *Federal Register* for public comment.

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<sup>2</sup>Executive Office of the President of the United States, Office of Management and Budget, *Progress in Regulatory Reform: 2004 Report to Congress on the Costs and Benefits of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities*, 2004.

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Third, the extent to which senior EPA management sought or received input from internal stakeholders, including the TRI workgroup, after directing reconsideration of the option to increase the Form A reporting threshold from 500 to 5,000 pounds for non-PBT chemicals remains unclear. We have been unable to determine the extent to which EPA's internal and regional offices had the opportunity during Final Agency Review to determine whether they concurred with the proposal to increase the Form A threshold. We will continue to pursue the answer to this and other questions as we complete our work. Finally, in response to the public comments on the proposal, nearly all of which were negative, EPA considered alternative options and revised the proposal, thereby allowing facilities to report releases of up to 2,000 rather than 5,000 pounds on Form A.

We believe that the TRI reporting changes will likely have a significant impact on information available to the public about dozens of toxic chemicals from thousands of facilities in states and communities across the country. EPA estimated that the TRI reporting changes will affect reporting on less than 1 percent of the total chemical releases reported to the TRI annually. While our analysis supports EPA's estimate of this impact at a national level, it also suggests that changes to TRI reporting requirements will have a significant impact on the amount and nature of toxic release data available to some communities, information that is ultimately much more meaningful to citizens. In addition, preliminary results from our January 2007 survey of state TRI coordinators indicates that as many as 23 states believe that EPA's changes to TRI reporting requirements will have a negative impact on various aspects of TRI. To develop a more specific picture of the impact of the TRI reporting changes at a local level, we used 2005 TRI data to estimate, by state, the impact of EPA's changes. First, we estimated that the detailed information from more than 22,000 Form R reports may no longer be included in the TRI if all eligible facilities begin using Form A. More specifically, Alaska, California, Connecticut, Hawaii, Massachusetts, New Jersey, and Rhode Island could have 33 percent fewer chemical reports. Second, we estimated that the number of chemicals for which no information could be reported under the new rule ranges from 3 chemicals in South Dakota to 60 chemicals in Georgia. Thirteen states—including Delaware, Georgia, Maryland, Missouri, Oklahoma, Tennessee, and Vermont—could have no detailed reports on more than 20 percent of reported chemicals. Third, we estimated that a total of 3,565 facilities would no longer have to report quantitative information about their chemical use to the TRI. In fact, more than 20 percent of facilities in Colorado, Connecticut, Hawaii, Massachusetts, and Rhode Island, could have no detailed information

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about their chemical use. Furthermore, citizens living in 75 counties in the United States—including 11 in Texas, 10 in Virginia, and 6 in Georgia—could have no quantitative TRI information about local toxic pollution. Finally, with regard to the impact of the rule change on industry’s reporting burden, EPA estimated that, if all eligible facilities take advantage of the reporting changes, they could save a total of about \$5.9 million—about 4 percent of the annual cost of TRI reporting. This is the equivalent of less than \$900 per facility. However, based on past experience, not all eligible facilities will use Form A, so the actual savings to industry are likely to be less.

With regard to your request for an update on our May 2005 report on perchlorate, it should be noted that perchlorate releases are not reported to the TRI. Perchlorate, a primary ingredient in propellant, has been used for decades in the manufacture and firing of rockets and missiles. Other uses include fireworks, flares, and explosives. Perchlorate is a salt that is easily dissolved and transported in water and has been found in groundwater, surface water, drinking water, soil, and food products such as milk and lettuce across the country. Health studies have shown that perchlorate can affect the thyroid gland and may cause developmental delays. We identified more than 400 sites in 35 states where perchlorate had been found in concentrations ranging from 4 parts per billion to more than 3.7 million parts per billion, and that more than one-half of the sites were in California and Texas. However, federal and state agencies are not required to routinely report perchlorate findings to EPA, and EPA does not centrally track or monitor perchlorate detections or the status of cleanup efforts. As a result, a greater number of contaminated sites than we reported may exist. Although concern over potential health risks from perchlorate has increased, and at least 9 states have established non-regulatory action levels or advisories, EPA has not established a national drinking water standard citing the need for more research on health effects. We concluded in our report that EPA needed more reliable information on the extent of sites contaminated with perchlorate and the status of cleanup efforts, and recommended that EPA work with the Department of Defense and the states to establish a formal structure for tracking perchlorate information. In December 2006, EPA reiterated its disagreement with the recommendation stating that perchlorate information already exists from a variety of other sources. However, we continue to believe that the inconsistency and omissions in available data that we found during the course of our study underscore the need for a more structured and formal tracking system.

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## Background

In 1984, a catastrophic accident caused the release of methyl isocyanate—a toxic chemical used to make pesticides—at a Union Carbide plant in Bhopal, India, killing thousands of people, injuring many others, and displacing many more from their homes and businesses. One month later, it was disclosed that the same chemical had leaked at least 28 times from a similar Union Carbide facility in Institute, West Virginia. Eight months later, 3,800 pounds of chemicals again leaked from the West Virginia facility, sending dozens of injured people to local hospitals. In the wake of these events, Congress passed the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA). Among other things, EPCRA provides access by individuals and communities to information regarding hazardous materials in their communities. Section 313 of EPCRA generally requires certain facilities that manufacture, process, or otherwise use any of 581 individual chemicals and 30 additional chemical categories to annually report the amount of those chemicals that they released to the environment, including information about where they released those chemicals. EPCRA also requires EPA to make this information available to the public, which the agency does in a national database known as the Toxics Release Inventory. The public may access TRI data on EPA’s website and aggregate it by zip code, county, state, industry, and chemical. EPA also publishes an annual report that summarizes national, state, and industry data.<sup>3</sup>

Figure 1 illustrates TRI reporting using a typical, large coal-fired electric power plant as an example.<sup>4</sup> The figure notes the chemicals that the facility may have to report to the TRI. The primary input to this facility is coal that contains small amounts of a number of toxic chemicals such as arsenic, chromium, and lead. The facility pulverizes coal and burns it to generate electricity. As part of its standard operations, the facility releases TRI chemicals such as hydrochloric acid and sulfuric acid to the air through its stack. The facility may also send ash from the burning process to an ash pond or landfill, including TRI chemicals such as arsenic, lead, and zinc. In addition, the facility may release chemicals in the water it uses for cooling. The facility will have to complete a TRI report for air, land, and water releases of each chemical it uses above a certain threshold.

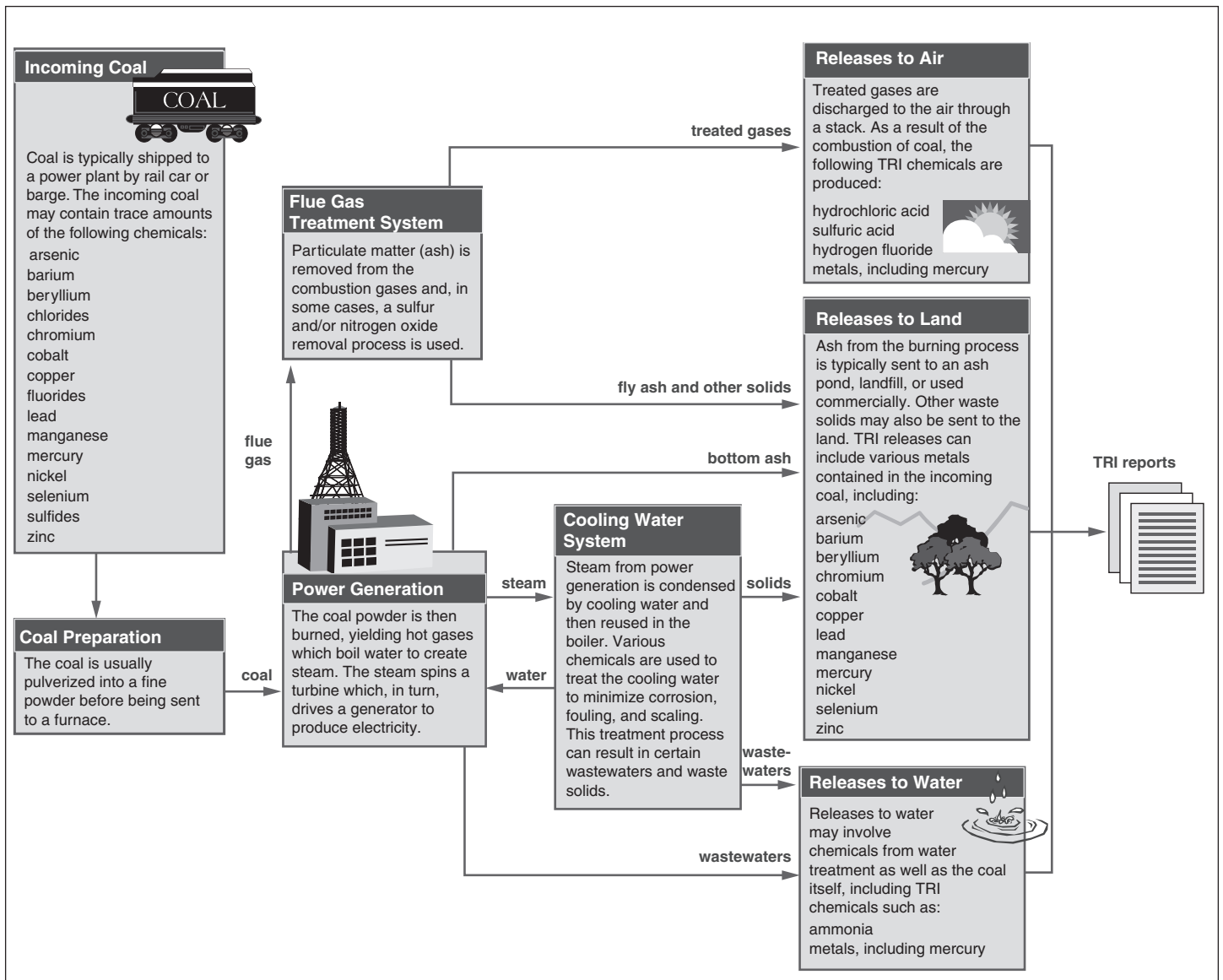
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<sup>3</sup><http://www.epa.gov/triexplorer> and <http://www.epa.gov/enviro>

<sup>4</sup>These facilities were not included in the original manufacturing industries, but EPA began requiring TRI reports from seven new industries—including electric utilities that burn coal and/or oil for the purpose of generating electricity—starting in 1998.



**Figure 1: TRI Reporting at a Typical Coal-fired Electric Generation Facility**



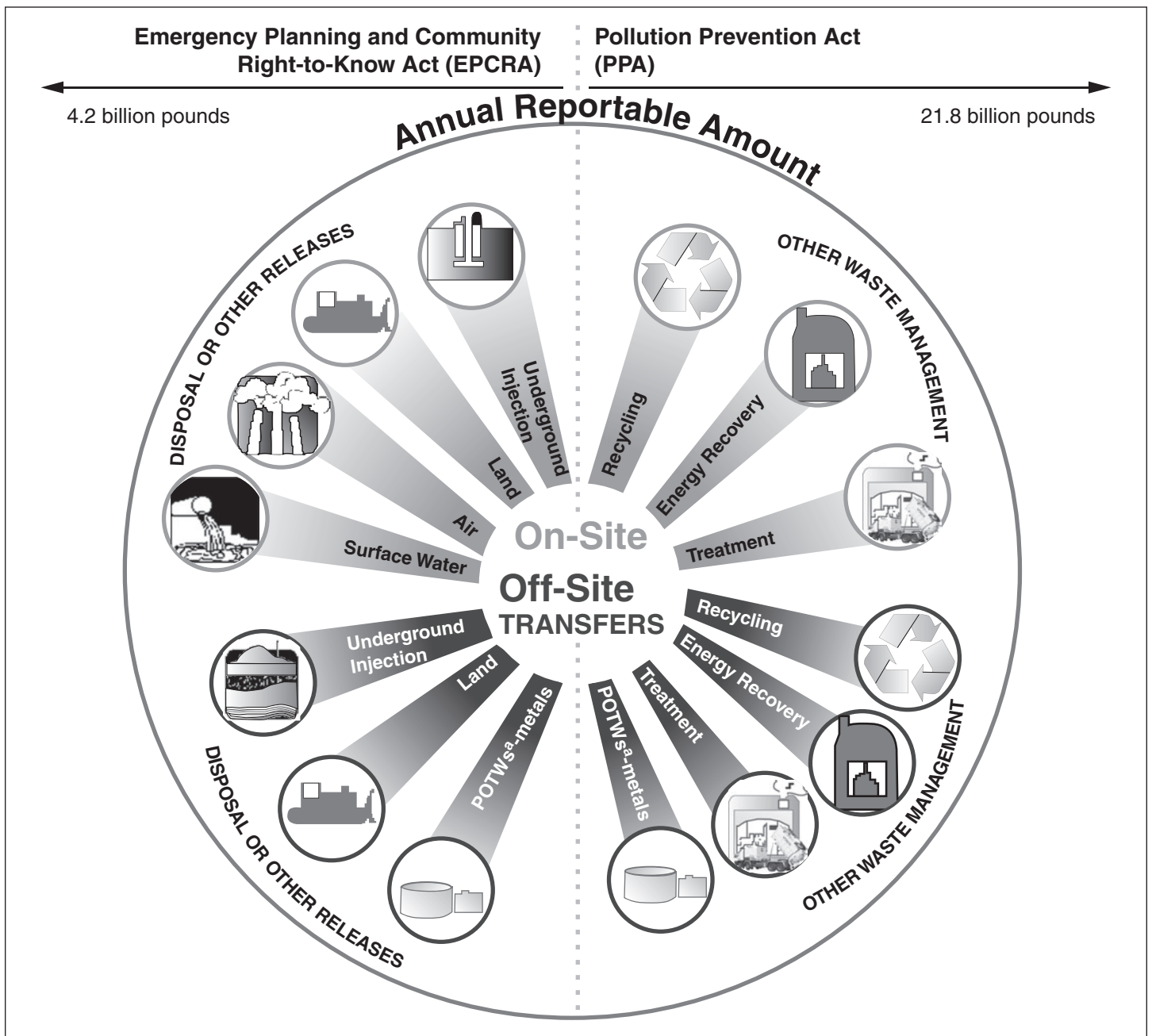
Source: GAO based on Waste Policy Center data.

Owners of facilities subject to EPCRA comply its reporting requirements by submitting an annual Form R report to EPA, and their respective state, for each TRI-listed chemical that they release in excess of certain thresholds. Form R captures information about facility identity, such as

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address, parent company, industry type, latitude, and longitude and detailed information about the toxic chemical, such as quantity of the chemical disposed or released onsite to air, water, land, and underground injection or transferred for disposal or release off-site. This information is labeled as “Disposal or Other Releases” on the left side of figure 2.

Figure 2: Types of TRI Data Reported on Form R



Source: GAO based on 2004 EPA TRI data.

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In the PPA, Congress declared that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner. Consequently, EPA expanded TRI by requiring facilities to report additional information about their efforts to reduce pollution at its source, including the quantities of TRI chemicals they manage in waste, both on- and off-site, including amounts recycled, burned for energy recovery, or treated. EPA began capturing this information on Form R in 1991, as illustrated by “Other Waste Management” on the right side of figure 2.

Beginning in 1995, EPA allowed facilities to use a 2-page Certification Statement (Form A) to certify that they are not subject to Form R reporting for a given non-PBT chemical provided that they (1) did not release more than 500 total pounds and (2) did not manufacture, process, or otherwise use more than one-million total pounds of the chemical. Form A contains the facility identification information found on Form R and basic information about the identity of the chemical being reported. However, Form A does not contain any of the Form R details about quantities of chemicals released or otherwise managed as waste.

Beginning with Reporting Year 2001, EPA has provided the Toxics Release Inventory–Made Easy software (TRI-ME) to assist facilities with their TRI reporting. TRI-ME leads prospective reporters interactively through a series of questions that eliminate a good portion of the analysis required to determine whether a facility needs to comply with the TRI reporting requirements, including the threshold calculations needed to determine Form A eligibility. If TRI-ME determines that a facility is required to report, the software provides guidance for each of the data elements on the reporting forms. The software also provides detailed guidance for each step through an integrated assistance library. Prior to submission, TRI-ME performs a series of validation checks before the facility prints the forms for mailing, transfers the data to diskette, or submits the information electronically over the Internet.

Each year, EPA compiles the TRI reports and stores them in a database known as the Toxics Release Inventory (TRI). In 2004—the latest year for which data are publicly available—23,675 facilities filed a total of nearly 90,000 reports, including nearly 11,000 Form As. In total, facilities reported releasing 4.24 billion pounds of chemicals to the environment and handling

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21.8 billion pounds of chemicals through other waste management activities.

EPA recently embarked on a three-phase effort to streamline TRI reporting requirements and reduce the reporting burden on industry. During the first phase, EPA removed some data elements from Form A and Form R that could be obtained from other EPA information collection databases to simplify reporting. As part of the second phase, EPA issued the TRI Burden Reduction Proposed Rule, which would have allowed a reporting facility to use Form A for (a) non-PBT chemicals, so long as its releases or other disposal were not greater than 5,000 pounds, and (b) for PBT chemicals when there are no releases or other disposal and no more than 500 pounds of other waste management (e.g., recycling or treatment). The phase III changes that EPA was considering proposing would have allowed alternate-year reporting, rather than yearly reporting. The phase II and III changes generated considerable public concern that they will negatively impact federal and state governments' and the public's access to important public health information.

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## EPA Does Not Appear to Have Followed Internal Guidelines in All Respects When Developing TRI Rule

Although we have not yet completed our review, our preliminary observations are that EPA does not appear to have followed its own rulemaking guidelines in all respects when developing the new TRI reporting requirements. Throughout the rule development process, senior EPA management generally has the discretion to depart from the guidelines, including by accelerating the development of the proposed regulations. Nevertheless, we discovered several significant differences between the guidelines and the process EPA followed in this case: (1) late in the rulemaking process, senior EPA management directed consideration of a burden reduction option that the TRI workgroup had considered but which had subsequently been dropped from consideration; (2) EPA developed this option on an expedited schedule that appears to have provided a limited amount of time for conducting various impact analyses; and (3) the expedited schedule afforded little, if any, time for internal stakeholders to provide input to senior EPA management about the impacts of the proposal during Final Agency Review.

First, the TRI workgroup charged with identifying options to reduce reporting burdens on industry identified three possible options for senior management to consider. The first two options allowed facilities to use Form A in lieu of Form R for PBT chemicals, provided the facility has no releases to the environment. Specifically, the workgroup considered and analyzed options to facilities to:

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- report PBT chemicals using Form A if they have zero releases and zero total other waste management activities; or
  - report PBT chemicals using Form A if they have zero releases and no more than 500 pounds of other waste management activities.

The third option was to create a form, in lieu of Form R, for facilities to report “no significant change” if their releases changed little from the previous year.

According to a June 2005 briefing for the Administrator and interviews with senior EPA officials, the Office of Management and Budget (OMB) had suggested increasing the Form A eligibility for non-PBT chemicals from 500 to 5,000 pounds as a possible burden reduction option. However, the TRI workgroup had previously dropped that option from consideration. In fact, EPA’s economic analysis—dated July 2005—did not evaluate the impact of raising the Form A reporting threshold because the TRI workgroup pursued the “no significant change” option. Nonetheless, by the time the TRI burden reduction proposed rule was published in October 2005, it included the option to increase Form A reporting eligibility from 500 to 5,000 pounds.

Second, although we could not determine from the documents EPA provided or the discussions we held with EPA officials what actions the agency took between the June 2005 briefing for the Administrator and the October 2005 publication of the TRI proposal in the *Federal Register*, the Administrator provided direction after the briefing to expedite the process in order to meet a commitment to OMB to provide burden reduction by the end of December 2006. Subsequently, EPA staff worked to revise the economic analysis to consider the impact of raising the Form A reporting threshold. However, that analysis was not completed before EPA sent the proposed rule to OMB for review and was only completed just prior to the proposal being signed by the Administrator on September 21, 2005 and ultimately published in the *Federal Register* for public comment on October 4, 2005.

Third, it appears that EPA management received limited input from internal stakeholders, including the TRI workgroup, after directing that the proposed rule include the option to increase the Form A reporting threshold from 500 to 5,000 pounds. EPA conducted a Final Agency Review burden reduction proposal, as provided for in the internal rulemaking guidelines. Final Agency Review is the step where EPA’s internal and regional offices would have discussed with senior

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management whether they concurred, concurred with comment, or did not concur with the final proposal. It appears that the review pertained to the “no significant change” option rather than increased threshold option. As a result, the EPA Administrator or EPA Assistant Administrator for Environmental Information likely received limited input from internal stakeholders about the increased Form A threshold prior to sending the TRI Burden Reduction Proposed Rule to OMB for review and publication in the *Federal Register* for public comment.

Finally, in response to the public comments to the proposed rule, nearly all of which were negative, EPA considered alternative options and revised the rule to allow facilities to report releases of up to 2,000 pounds on Form A. We continue to review EPA documents and meet with EPA officials to understand the process EPA followed in developing the TRI burden reduction proposal. We expect to have a more complete picture for our report in June.

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## Impact of Reporting Changes on Information Available to the Public is Likely to be Significant

We believe that the impact of EPA’s changes to the TRI reporting requirements will likely have a significant impact on environmental information available to the public. While our analysis confirms EPA’s estimate that the TRI reporting changes could result less than 1 percent of total pounds of chemical releases no longer being included in the TRI database, the impact on information available to some communities is likely to be more significant than these national aggregate totals indicate. EPA estimated that these reports amount to 5.7 million pounds of releases not being reported to the TRI (only 0.14% of all TRI release pounds) and an additional 10.5 million pounds of waste management activities (0.06% of total waste management pounds). Examined locally, the impact on data available to some communities is likely to be more significant than these national totals indicate. To understand the potential impact of EPA’s changes to TRI reporting requirements at the local level, we used 2005 TRI data to estimate the number of detailed Form R reports that would no longer have to be submitted in each state and the impact this could have on data about specific chemicals and facilities. We provide a summary of our methodology and estimates of these impacts, by state, in Appendix I. In addition, preliminary results from our January 2007 survey of state TRI coordinators indicate that they believe EPA’s changes to TRI reporting requirements will have, on balance, a negative impact on various aspects of TRI, including environmental information available to the public.

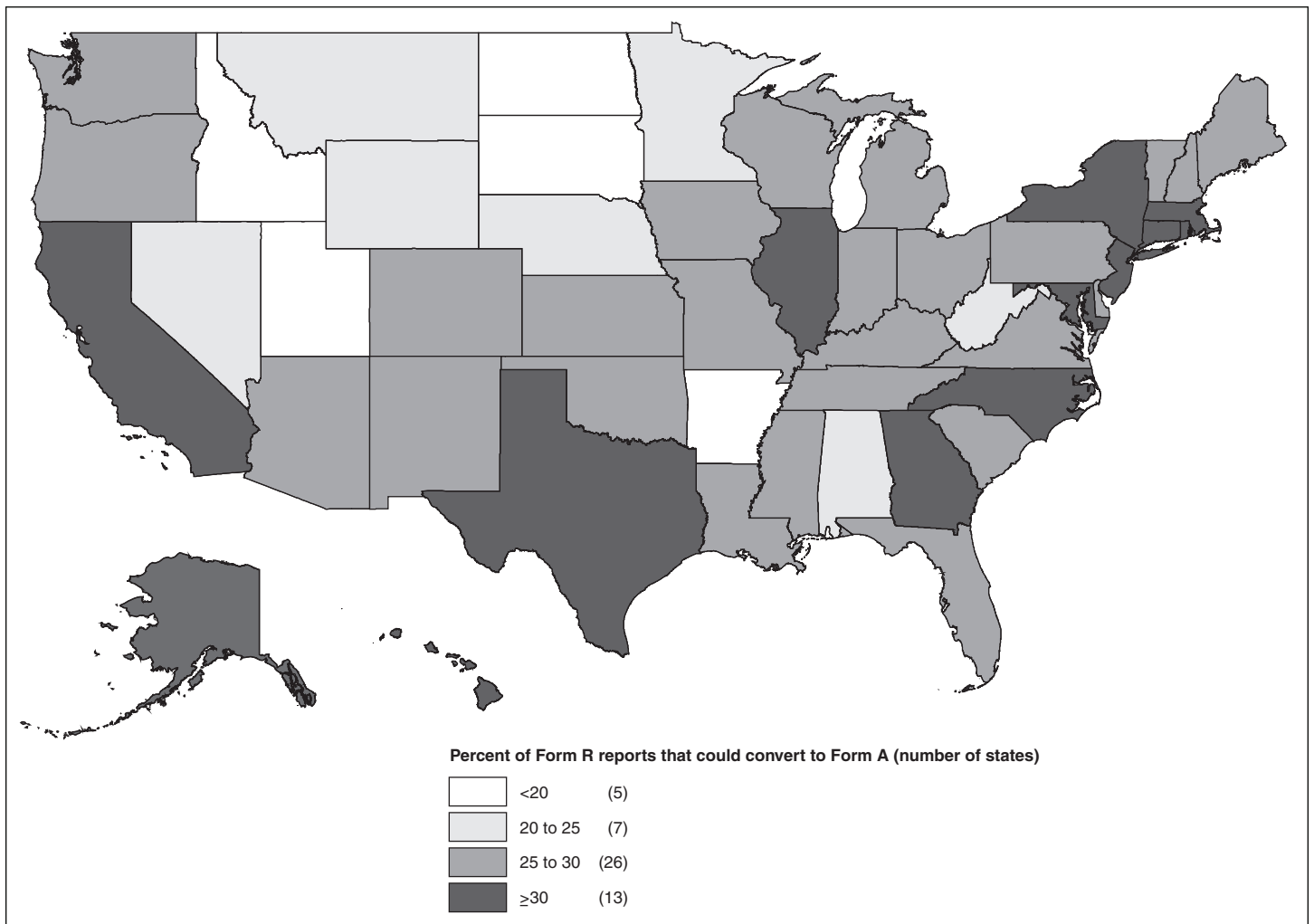
We estimated that a total of nearly 22,200 Form R reports could convert to Form A if all eligible facilities choose to take advantage of the opportunity

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to report under the new Form A thresholds. The number ranges by state from 25 Form Rs in Vermont (27.2 percent of Form Rs in the state) to 2,196 Form Rs in Texas (30.6 percent of Form Rs in the state). As figure 3 shows, Arkansas, Idaho, Nevada, North Dakota, and South Dakota could lose less than 20 percent of the detailed forms, while Alaska, California, Connecticut, Georgia, Hawaii, Illinois, Maryland, Massachusetts, New Jersey, New York, North Carolina, Rhode Island, and Texas could lose at least 30 percent of Form R reports.



**Figure 3: Impact of TRI Reporting Changes on Number of Form R Reports**



Sources: GAO based on 2005 EPA TRI data and Map Info (map).

For each facility that chooses to file a Form A instead of Form R, the public would no longer receive detailed information about a facility's releases and waste management practices for a specific chemical that the facility manufactured, processed, or otherwise used. While both Form R and Form A capture information about a facility's identity, such as mailing address and parent company, and information about a chemical's identity, such as its generic name, only Form R captures detailed information about the chemical, such as quantity disposed or released onsite to air, water, and land or injected underground, or transferred for disposal or release

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off-site. Form R also provides information about the facility's efforts to reduce pollution at its source, including the quantities managed in waste, both on- and off-site, such as amounts recycled, burned for energy recovery, or treated. We provide a detailed comparison of the TRI data on Form R and Form A in Appendix II.

One way to characterize the impact of the TRI reporting changes on publicly available data is in terms of information about specific chemicals at the state level. The number of chemicals for which no information is likely to be reported under the new rule ranges from 3 chemicals in South Dakota to 60 chemicals in Georgia. That means that all quantitative information currently reported about those chemicals could no longer appear in the TRI database. Figure 4 shows that thirteen states—Delaware, Georgia, Hawaii, Iowa, Maryland, Massachusetts, Missouri, North Carolina, Oklahoma, Tennessee, Vermont, West Virginia, and Wisconsin—could no longer have quantitative information for at least 20 percent of all reported chemicals in the state.

**Figure 4: Impact of TRI Reporting Changes on Number of Chemicals Reported on Form R**



Sources: GAO based on 2005 EPA TRI data and Map Info (map).

The impact of the loss of information from these Form R reports can also be understood in terms of the number of facilities that could be affected. We estimated that 6,620 facilities nationwide could choose to convert at least one Form R to a Form A, and about 54 percent of those would be eligible to convert all their Form Rs to Form A. That means that approximately 3,565 facilities would not have to report any quantitative information about their chemical releases and other waste management

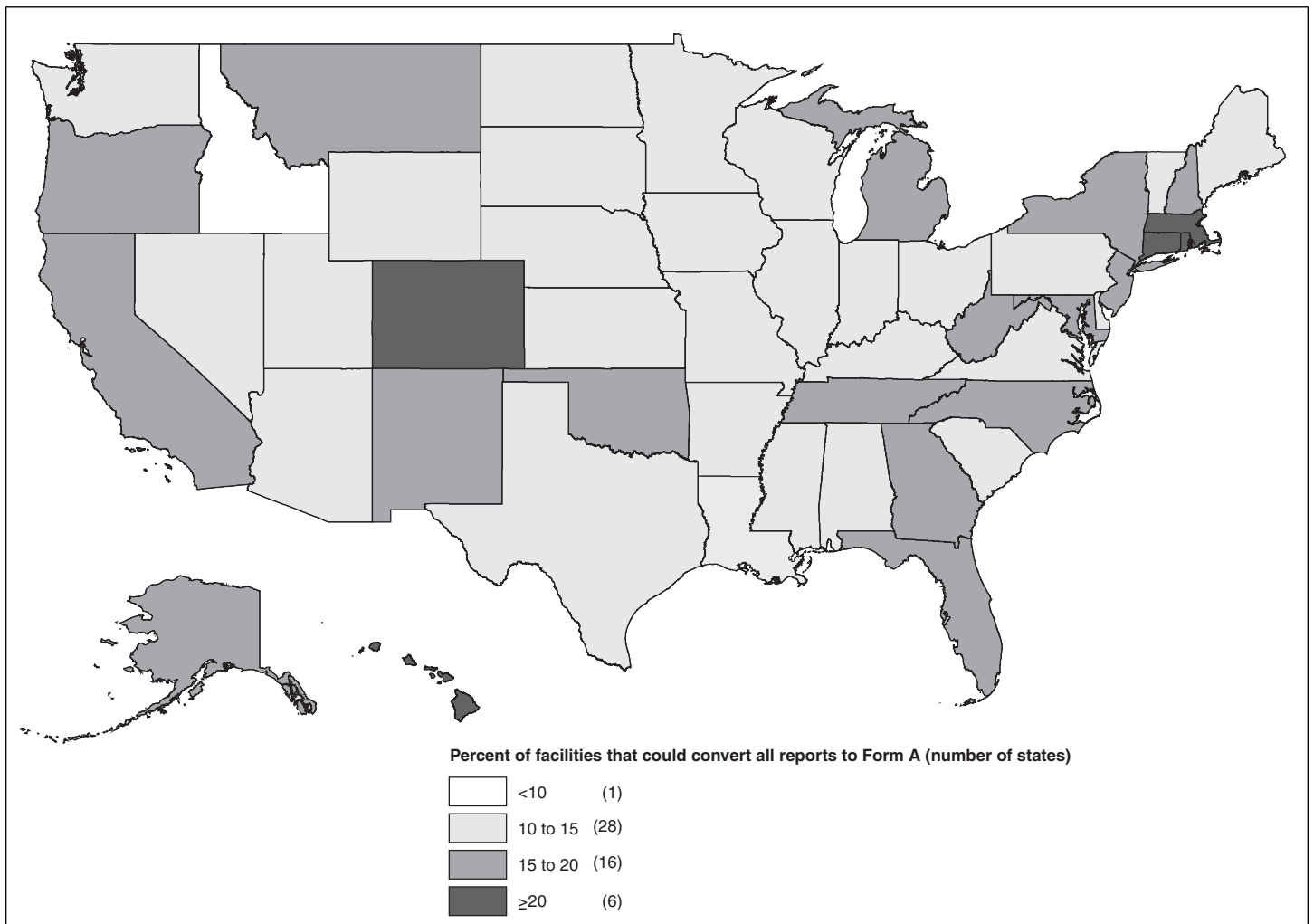
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practices to the TRI, according to our estimates. The number of facilities ranges from 5 in Alaska to 302 in California.<sup>5</sup> As an example, one of these facilities is ATSC Marine Terminal—a bulk petroleum storage facility in Los Angeles County, California. In 2005, it reported releases of 13 different chemicals—including highly toxic benzene, toluene, and xylene—to the air. Although the facility’s releases totaled about 5,000 pounds, it released less than 2,000 pounds of each chemical. As figure 5 shows, more than 10 percent of facilities in each state except Idaho would no longer have to report any quantitative information to the TRI. The most affected states are Colorado, Connecticut, the District of Columbia, Hawaii, Massachusetts, and Rhode Island, where more than 20 percent of facilities could choose to not disclose the details of their chemical releases and other waste management practices. Furthermore, our analysis found that citizens living in 75 counties in the United States—including 11 in Texas, 10 in Virginia, and 6 in Georgia—could have no quantitative TRI information about local toxic pollution.

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<sup>5</sup>Appendix I provides the number of affected facilities for each state.

**Figure 5: Impact of TRI Reporting Changes on Number of Facilities Reporting on Form R**



Sources: GAO based on 2005 EPA TRI data and Map Info (map).

The Environmental Protection and Community Right-to-Know Act requires that facilities submit their annual TRI data directly to their respective state, as well as to EPA. Last month, we surveyed the TRI program contacts in the 50 states and the District of Columbia to gain their perspective on the TRI, including an understanding of how TRI is used by the states. We also asked for their beliefs about how EPA's increase in the Form A eligibility threshold would affect TRI-related aspects in their state, such as information available to the public, efforts to protect the environment, emergency planning and preparedness, and costs to facilities

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for TRI reporting. Although our analysis of the survey is not final, preliminary results from 49 states and the District of Columbia show that the states generally believe that the change will have a negative impact on various aspects of TRI in their states.<sup>6</sup> Very few states reported that the change will have a positive impact. The states reported that the TRI changes will have a negative impact on such TRI aspects as information available to the public and efforts to protect the environment. Specifically, 23 states—including California, Maryland, New York, and Oklahoma—responded that the changes will negatively impact information available to the public, 14 states—including Louisiana, Ohio, and Wyoming—reported no impact, and one state, Virginia, reported a generally positive impact. Similarly, 22 states responded that the change will negatively impact efforts to protect the environment, 11 reported no impact, and 5 said it will have a positive impact. States also responded that raising the eligibility threshold will have no impact on TRI aspects such as emergency planning and preparedness efforts and the cost to facilities for TRI reporting. For example, 22 states responded that the change will have no impact on the cost to facilities for TRI reporting, 12 said it will have a positive impact, and no states said it will have a negative impact. The totals do not always sum to 50 because some states responded that they were uncertain of the impact on some aspects of TRI.

Finally, we evaluated EPA's estimates of the burden reduction impacts that the new TRI reporting rules would likely have on industry's reporting costs, the primary rationale for the rule changes. EPA estimated that the TRI reporting changes will result in an annual cost savings of approximately \$5.9 million. (See table 1.) This amounts to about 4 percent of the \$147.8 million total annual cost to industry, according to our calculations.

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<sup>6</sup>Survey results from those states responding as of February 1, 2007.

**Table 1: EPA Estimates of Annual Savings from Changes to TRI Reporting Requirements**

Option	Newly eligible Form Rs	Eligible facilities	Burden (hours per form)	Annual burden savings (hours)	Cost savings per form	Annual cost savings
New PBT chemical eligibility	2,360	1,796	15.5	36,480	\$748	\$1,764,969
Increased eligibility for non-PBT chemicals	9,501	5,317	9.1	86,924	438	4,160,239
<b>Total</b>	<b>11,861</b>	<b>6,670</b>		<b>123,404</b>		<b>\$5,925,208</b>

Source: EPA based on reporting year 2004 TRI data.

This amounts to an average savings of less than \$900 annually for each facility. EPA also projected that not all eligible facilities will chose to use Form A, based on the agency’s experience from previous years. Furthermore, according to industry groups, much of the reporting burden comes from the calculations required to determine and substantiate Form A eligibility, rather than from the amount time required to complete the forms. As a result, EPA’s estimate of nearly \$6 million likely overestimates the total cost savings (i.e., burden reduction) that will be realized by reporting facilities.

We are continuing to review EPA documentation and meet with EPA officials to understand the process they followed in developing the TRI burden reduction proposal. We expect to have a more complete picture for our report later this year.

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## A System to Track Perchlorate Sampling and Cleanup Results Is Still Needed

Perchlorate is a salt that is easily dissolved and transported in water and has been found in groundwater, surface water, drinking water, soil, and food products such as milk and lettuce across the country. Health studies have shown that perchlorate can affect the thyroid gland and may cause developmental delays during pregnancy and early infancy. In February 2005, EPA established a new safe exposure level, or reference dose, for perchlorate, equivalent to 24.5 parts per billion in drinking water.<sup>7</sup> However, EPA has not established a national drinking water standard, citing the need for more research on health effects. As a result, perchlorate, like other unregulated contaminants, is not subject to TRI reporting. In May 2005 we issued a report that identified (1) the estimated extent of perchlorate found in the United States; (2) what actions the federal government, state governments, and responsible parties have taken to clean up or eliminate the source of perchlorate; and (3) what studies of the potential health risks from perchlorate have been conducted and, where presented, the author's conclusions or findings on the health effects of perchlorate.

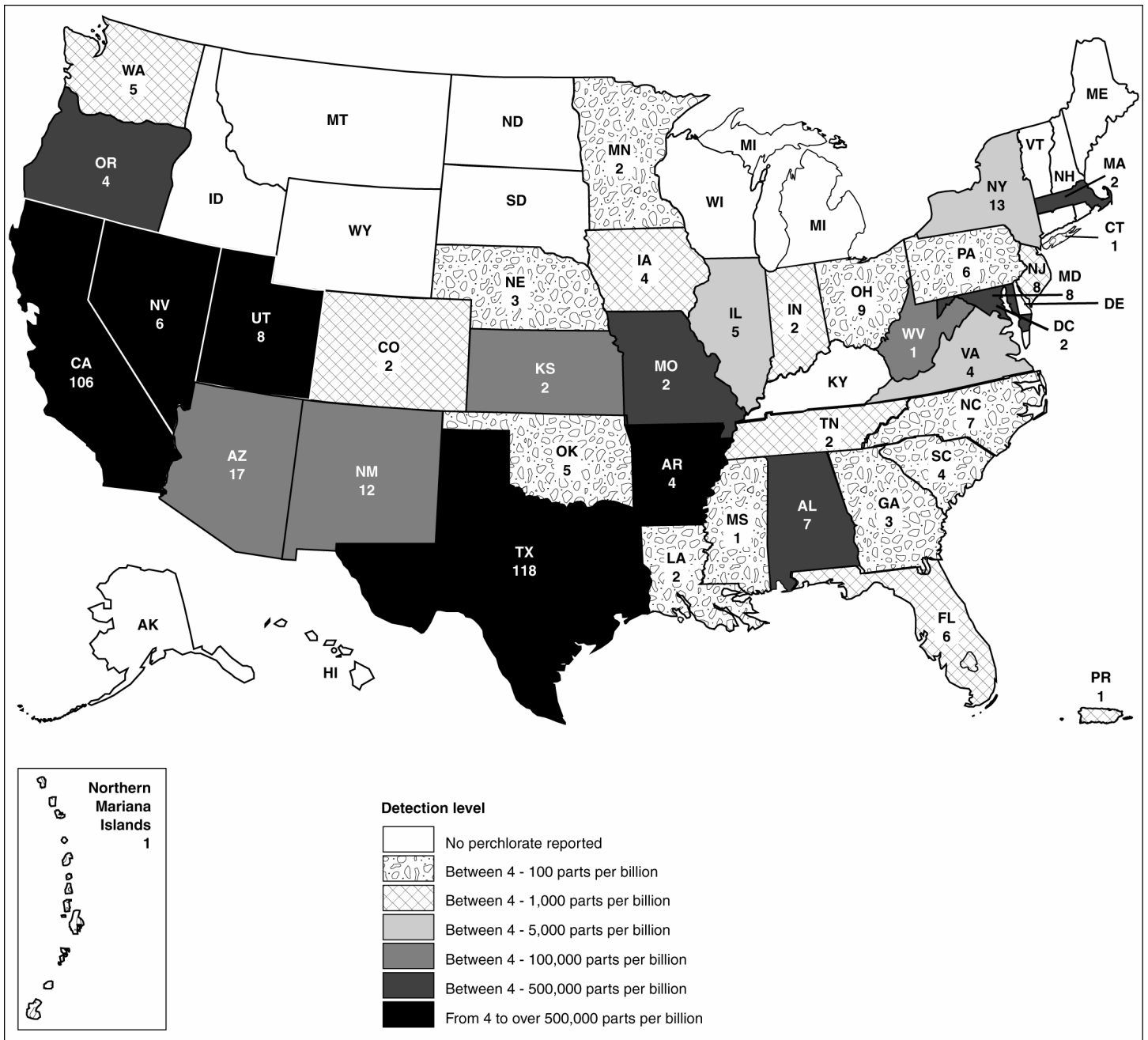
Perchlorate has been found by federal and state agencies in groundwater, surface water, soil, or public drinking water at almost 400 sites in the United States. However, because there is not a standardized approach for reporting perchlorate data nationwide, a greater number of sites than we identified may already exist in the United States. Perchlorate has been found in 35 states, the District of Columbia, and 2 commonwealths of the United States, where the highest concentrations ranged from 4 parts per billion to more than 3.7 million parts per billion. (At some sites, federal and state agencies detected perchlorate concentrations as low as 1 part per billion or less, yet 4 parts per billion is the minimum reporting level of the analysis method most often used.) More than 50 percent of all sites were found in California and Texas, and sites in Arkansas, California, Texas, Nevada, and Utah had some of the highest concentration levels. However, roughly two-thirds of sites had concentration levels at or below 18 parts per billion, the upper limit of EPA's provisional cleanup guidance, and almost 70 percent of sites had perchlorate concentrations less than 24.5 parts per billion, the drinking water concentration calculated on the basis of EPA's recently established reference dose (see fig. 6).

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<sup>7</sup>The reference dose of 0.0007 milligrams per kilogram of body weight per day is equivalent to 2 liters of drinking water per day containing 24.5 parts per billion of perchlorate when consumed by an adult weighing 70 kilograms (or 154 pounds), assuming that all perchlorate exposure comes from drinking water.



**Figure 6: Maximum Perchlorate Concentrations Reported in any Media and Number of Sites, January 2005**



Sources: Environmental Protection Agency, Department of Defense, U.S. Geological Survey, and state environmental agencies.

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At more than one-quarter of the sites, propellant manufacturing, rocket motor testing, and explosives disposal were the most likely sources of perchlorate. Public drinking water systems accounted for more than one-third of the sites where perchlorate was found. EPA sampled more than 3,700 public drinking water systems and found perchlorate in 153 systems across 26 states and 2 commonwealths of the United States. Perchlorate concentration levels found at public drinking water systems ranged from 4 to 420 parts per billion. However, only 14 of the 153 public drinking water systems had concentration levels above 24.5 parts per billion. EPA and state officials told us they had not cleaned up these public drinking water systems, principally because there was no federal drinking water standard or specific federal requirement to clean up perchlorate. Further, EPA currently does not centrally track or monitor perchlorate detections or the status of cleanup activities. In fact, several EPA regional officials told us they did not always know when states had found perchlorate, at what levels, or what actions were taken. As a result, it is difficult to determine the extent of perchlorate in the United States or the status of cleanup actions, if any.

Although there is no specific federal requirement to clean up perchlorate or a specific perchlorate cleanup standard, EPA and state environmental agencies have investigated, sampled, and cleaned up unregulated contaminants, such as perchlorate, under various federal environmental laws and regulations. EPA and state agency officials have used their authorities under these laws and regulations, as well as under state laws and action levels, to sample and clean up and/or require the sampling and cleanup of perchlorate by responsible parties. For example, according to EPA and state officials, at least 9 states have established non-regulatory action levels or advisories, ranging from under 1 part per billion to 18 parts per billion. Where these action levels or advisories are in effect, responsible parties have been required to sample and clean up perchlorate. Further, certain environmental laws and programs require private companies to sample for contaminants, which can include unregulated substances such as perchlorate, and report to environmental agencies. According to EPA and state officials, private industry and public water suppliers have generally complied with regulations requiring sampling for contaminants and agency requests to sample or clean up perchlorate. DOD has sampled and cleaned up when required by specific environmental laws and regulations but has been reluctant to sample on or near active installations, unless a perchlorate release due to DOD activities is suspected and a complete human exposure pathway is likely to exist. Finally, EPA, state agencies, and/or responsible parties are currently cleaning up or planning cleanup at 51 of the almost 400 sites where

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perchlorate has been found. The remaining sites are not being cleaned up for a variety of reasons. The reason most often cited by EPA and state officials was that they were waiting for a federal requirement to do so.

We identified and summarized 90 studies of perchlorate health risks published since 1998. EPA and DOD sponsored the majority of these studies, which used experimental, field study, and data analysis methodologies. For 26 of the 90 studies, the findings indicated that perchlorate had an adverse effect. Eighteen of these studies found adverse effects on fetal or child development resulting from maternal exposure to perchlorate. Although the studies we reviewed examined whether and how perchlorate affected the thyroid, most of the studies of adult populations were unable to determine whether the thyroid was adversely affected. Adverse effects of perchlorate on the adult thyroid are difficult to evaluate because they may happen over longer time periods than can be observed in a research study. However, adverse effects of perchlorate on fetal or child development can be studied and measured within study time frames. We also found some studies considered the same perchlorate dose amount but identified different effects. The precise cause of the differences remains unresolved but may be attributed to an individual study's design type or the physical condition of the subjects, such as their age. Such unresolved questions are one of the bases for the differing conclusions among EPA, DOD, and academic studies on perchlorate dose amounts and effects.

In January 2005, NAS issued its report on the potential health effects of perchlorate. The NAS report evaluated many of the same health risk studies included in our review. NAS reported that certain levels of exposure may not adversely affect healthy adults but recommended that more studies be conducted on the effects of perchlorate exposure in children and pregnant women. NAS also recommended a perchlorate reference dose, which is an estimated daily exposure level from all sources that is expected not to cause adverse effects in humans, including the most sensitive populations. The reference dose of 0.0007 milligrams per kilogram of body weight is equivalent to a drinking water exposure level of 24.5 parts per billion, if all exposure comes from drinking water. In January 2006, EPA issued guidance stating that this exposure level is a preliminary cleanup goal for environmental cleanups involving perchlorate.

We concluded that EPA needed more reliable information on the extent of sites contaminated with perchlorate and the status of cleanup efforts, and recommended that EPA work with the Department of Defense, other

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federal agencies and the states to establish a formal structure for better tracking perchlorate information. In December 2006, EPA reiterated its disagreement with the recommendation stating that perchlorate information already exists from a variety of other sources. However, we found that the states and federal agencies do not always report perchlorate detections to EPA and as a result EPA and the states do not have the most current and complete accounting of perchlorate as an emerging contaminant of concern. We continue to believe that the inconsistency and omissions in the available data that we found during the course of our study underscore the need for a more structured and formal system, and that such a system would serve to better inform the public and others about the locations of perchlorate releases and the status of clean ups.

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## Preliminary Observations

Contrary to EPA's assertions, in our view EPA's recent changes to the Toxics Release Inventory significantly reduce the amount of information available to the public about toxic chemicals in their communities. EPA's portrayal of the potential impacts of the TRI reporting rule changes in terms of a national amount of pollution is quite misleading and runs contrary to the legislative intent of EPCRA and the principles of the public's right-to-know. TRI is designed to provide states and public citizens with information about the releases of toxic chemicals by facilities in their local communities. Citizens drink water from local sources, spend much of their time on land near their homes and places of business, and breathe the air over their local communities. We believe that the likely reduction in publicly availability data about specific chemicals and facilities in local communities should be considered in light of the relatively small cost savings to industry afforded by the TRI reporting changes.

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Madam Chairman, this concludes my prepared statement. I would be happy to respond to any questions that you and Members of the Committee may have.

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## GAO Contact and Staff Acknowledgments

For further information about this testimony, please contact me, John Stephenson, 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 statement. Contributors to this testimony include J. Erin Lansburgh, Assistant Director, and Terrance Horner, Senior Analyst; Mark Braza, John Delicath, Karen Febey, Edward Kratzer, Richard Johnson, and Jennifer Popovic also made key contributions.

# Appendix I: GAO Estimates of the Impact of Reporting Changes on TRI Data

We analyzed 2005 TRI data provided by EPA to estimate the number of Form Rs that could no longer be reported in each state and determine the possible impacts that this could have on data about specific chemicals and facilities.<sup>1</sup> Table 2 provides our estimates of the total number of Form Rs eligible to convert to Form A, including the percent of total Form Rs submitted by facilities in each state. The table also provides our estimates of the number of unique chemicals for which no quantitative information would have to be reported in each state, including the percent of total chemicals reported in each state. The last two columns provide our estimates for the number of facilities that would no longer have to provide quantitative information about their chemical releases and waste management practices, including the percent of total facilities reporting in each state.

**Table 2: Estimated Impact of TRI Reporting Changes on Number of Form Rs, Chemicals, and Facilities, by State**

State	Form Rs		Chemicals		Facilities	
	Number	Percent of total	Number	Percent of total	Number	Percent of total
AK	59	36.6	8	17.0	5	15.6
AL	456	22.0	34	17.1	69	12.9
AR	247	17.7	18	5.8	39	11.0
AZ	221	27.7	12	10.8	50	15.0
CA	1,533	37.5	36	18.2	302	19.9
CO	162	25.8	11	11.1	51	21.8
CT	299	33.5	16	15.4	73	20.6
DC	4	28.6	2	18.2	2	28.6
DE	80	27.7	24	23.3	10	14.1
FL	479	27.4	19	13.2	119	17.2
GA	678	30.9	60	29.1	132	16.7
HI	67	37.9	12	26.1	9	23.1
IA	371	27.7	34	22.2	46	10.6
ID	41	14.4	8	10.4	8	7.3
IL	1,155	30.0	37	16.4	171	14.3
IN	900	25.6	29	14.6	143	14.4
KS	291	28.3	23	16.0	41	14.0
KY	490	25.7	28	15.3	63	13.4

<sup>1</sup>The EPA anticipates issuing the 2005 TRI Public Data Release in April, 2007.

State	Form Rs		Chemicals		Facilities	
	Number	Percent of total	Number	Percent of total	Number	Percent of total
LA	665	25.6	34	13.1	46	12.4
MA	574	38.0	23	20.4	119	20.1
MD	221	32.6	24	22.6	34	16.6
ME	105	26.1	8	11.3	14	13.7
MI	965	29.7	36	19.0	145	16.1
MN	263	21.0	20	15.4	55	11.5
MO	498	27.3	43	21.7	80	14.2
MS	265	25.0	29	18.7	37	11.8
MT	61	21.8	10	13.5	7	15.2
NC	705	30.1	43	24.9	148	17.8
ND	29	13.8	7	11.5	6	12.5
NE	116	20.3	11	7.9	24	12.9
NH	98	29.1	13	17.3	23	16.1
NJ	582	35.1	34	16.0	101	19.3
NM	96	29.2	11	15.3	15	19.2
NV	96	21.2	14	18.9	19	14.3
NY	663	31.8	33	19.1	122	17.2
OH	1,557	28.5	38	12.6	218	13.8
OK	273	26.1	30	23.3	50	15.2
OR	236	28.6	16	15.5	47	15.5
PA	1,253	29.9	30	15.2	192	14.9
RI	112	39.3	12	17.4	30	23.4
SC	596	29.0	36	17.6	78	15.0
SD	44	19.6	3	5.8	10	10.5
TN	569	27.6	40	20.9	105	16.2
TX	2196	30.6	29	9.3	210	14.1
UT	146	19.9	11	9.9	25	12.6
VA	401	25.2	23	14.8	70	14.3
VT	25	27.2	9	23.7	6	14.6
WA	276	26.4	22	19.8	43	12.5
WI	692	25.4	31	21.2	113	12.5
WV	222	22.8	40	24.1	35	17.4
WY	60	23.6	9	14.5	5	10.9
<b>Total</b>	<b>22,193</b>				<b>3,565</b>	

Source: GAO analysis of EPA 2005 TRI data.

# Appendix II: Comparison of TRI Data on Form R and Form A

Form R	Form A
<p><b>Facility Identification Information</b></p> <ul style="list-style-type: none"> <li>• TRI Facility ID Number</li> <li>• Reporting year</li> <li>• Trade secret information (if claiming that toxic chemical is trade secret)</li> <li>• Certification by facility owner/operator or senior management official</li> <li>• Facility name, mailing address</li> <li>• Whether form is for entire facility, part of facility, federal facility, or contractor at federal facility</li> <li>• Technical contact name, telephone number, Email address</li> <li>• Public contact name, telephone number</li> <li>• Standard Industrial Classification (SIC) code</li> <li>• Dun &amp; Bradstreet number</li> <li>• Parent company information (name, Dun &amp; Bradstreet number)</li> </ul>	<p><b>Facility Identification Information</b></p> <ul style="list-style-type: none"> <li>• TRI Facility ID Number</li> <li>• Reporting year</li> <li>• Trade secret information (if claiming that toxic chemical is trade secret)</li> <li>• Certification by facility owner/operator or senior management official</li> <li>• Facility name, mailing address</li> <li>• Whether form is for entire facility, part of facility, federal facility, or contractor at federal facility</li> <li>• Technical contact name, telephone number, Email address</li> <li>• Standard Industrial Classification (SIC) code</li> <li>• Dun &amp; Bradstreet number</li> <li>• Parent company information (name, Dun &amp; Bradstreet number)</li> </ul>
<p><b>Chemical Specific Information</b></p> <ul style="list-style-type: none"> <li>• Chemical Abstracts Service (CAS) registry number</li> <li>• EPCRA Section 313 chemical or chemical category name</li> <li>• Generic name</li> <li>• Distribution of each member of the dioxin or dioxin-like compound category</li> <li>• Generic name provided by supplier if chemical is component of a mixture</li> <li>• Activities and uses of the chemical at facility, whether chemical is: <ul style="list-style-type: none"> <li>• produced or imported for on-site use/processing, for sale/distribution, as a byproduct, or as an impurity</li> <li>• processed as a reactant, a formation component, article component, repackaging, or as an impurity</li> <li>• otherwise used as a chemical processing aid, manufacturing aid, or as an ancillary or other use</li> </ul> </li> <li>• Maximum amount onsite at any time during the year</li> </ul>	<p><b>Chemical Specific Information</b></p> <ul style="list-style-type: none"> <li>• Chemical Abstracts Service (CAS) registry number</li> <li>• EPCRA Section 313 chemical or chemical category name</li> <li>• Generic name</li> </ul>



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**Form R****On-site Chemical Release Data**

- Quantities released on-site to:
  - air as fugitive or non-point emissions
  - air as stack or point emissions
  - surface water as discharges to receiving streams or water bodies (including names of streams or water bodies)
  - underground injection
  - land, including RCRA Subtitle C landfills, other landfills, land treatment/application farming, RCRA Subtitle C surface impoundments, other surface impoundments, other land disposal
- Basis for estimates of releases (i.e., monitoring data or measurements, mass balance calculations, emissions factors, other approaches)
- Quantity released as a result of remedial actions, catastrophic events, or one-time events not associated with production processes

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**On-site Chemical Waste Management Data**

- Quantities managed on-site through:
  - recycling
  - energy recovery
  - treatment
- Recycling processes (e.g., metal recovery by smelting, solvent recovery by distillation)
- Energy recovery methods (e.g., kiln, furnace, boiler)
- Waste treatment methods (e.g., scrubber, electrostatic precipitator) for each waste stream (e.g., gaseous, aqueous, liquid non-aqueous, solids)
- On-site waste treatment efficiency

**Form A****On-site Chemical Release Data**

Not reported on Form A

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**On-site Chemical Waste Management Data**

Not reported on Form A

<b>Form R</b>	<b>Form A</b>
<b>Off-site Transfers for Release or Other Waste Management</b>	<b>Off-site Transfers for Release or Other Waste Management</b>
<ul style="list-style-type: none"> <li>• Quantities transferred to any Publicly Owned Treatment Works (POTW) <ul style="list-style-type: none"> <li>• POTW name(s), address(es)</li> </ul> </li> <li>• Quantities transferred to other location for disposal or other release <ul style="list-style-type: none"> <li>• underground injection</li> <li>• other land release</li> </ul> </li> <li>• Quantities transferred to other location for waste management <ul style="list-style-type: none"> <li>• treatment</li> <li>• recycling</li> <li>• energy recovery</li> </ul> </li> <li>• Quantity transferred off-site for release, treatment, recycling, or energy recovery that resulted from remedial actions, catastrophic events, or one-time events not associated with production processes</li> <li>• Off-site location(s) name and address</li> <li>• Basis for estimates for amounts transferred</li> <li>• Whether receiving location(s) is/are under control of reporting facility/parent company</li> </ul>	Not reported on Form A
<b>Source Reduction and Recycling Activities</b>	<b>Source Reduction and Recycling Activities</b>
<ul style="list-style-type: none"> <li>• Total quantities, for (1) the prior and (2) current reporting years and estimated totals for (3) the following and (4) second following years for: <ul style="list-style-type: none"> <li>• on-site disposal to underground injection wells, RCRA Subtitle C landfills, and other landfills</li> <li>• other on-site disposal or other releases</li> <li>• off-site transfer to underground injection wells, RCRA Subtitle C landfills, and other landfills</li> <li>• other off-site disposal or other releases</li> <li>• on-site treatment</li> <li>• on-site recycling</li> <li>• on-site energy recovery</li> <li>• off-site treatment</li> <li>• off-site recycling</li> <li>• off-site energy recovery</li> </ul> </li> <li>• Production ratio or activity index</li> <li>• Source reduction activities the facility engaged in during the reporting year (e.g., inventory control, spill/leak prevention, product modifications)</li> <li>• Option to submit additional information on source reduction, recycling, or pollution control activities</li> </ul>	Not reported on Form A

Sources: EPA TRI Form R and Form A.

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