TOXIC CHEMICAL RELEASE INVENTORY

TOXIC CHEMICAL RELEASE REPORTING

INFORMATION COLLECTION REQUEST SUPPORTING STATEMENT

OMB CONTROL NO. 2070-0093
EPA ICR #1363.14

October 2005

1 IDENTIFICATION OF THE INFORMATION COLLECTION

1(a) Title of the Information Collection

TITLE: Toxic Chemical Release Reporting, Recordkeeping, Supplier Notification and Petitions under Section 313 of the Emergency Planning and Community Right-to-Know Act

EPA ICR No.: 1363.14

OMB Control No.:

1(b) Short Characterization

This Information Collection Request (ICR) is for the information collection requirements for toxic chemical release reporting under section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (42 U.S.C. 11001 et seq.) and the information collection in section 6607 of the Pollution Prevention Act (PPA) (42 U.S.C. 11071 to 11079). In short, EPCRA §313 requires certain owners or operators of certain facilities (i.e., currently manufacturing facilities in Standard Industrial Classification (SIC) codes 20 through 39, and facilities in SIC codes 10 (except 1011, 1081, and 1094), 12 (except 1241), 4911, 4931, 4939 (limited to facilities that combust coal and /or oil for the purpose of generating power, 4953 (limited to facilities regulated under the Resources Conservation Recovery Act, subtitle C, 42 U.S.C. section 6921 et. seq.), 5169, 5171, 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis) manufacturing, processing, or otherwise using any of over 600 listed toxic chemicals and chemical categories (hereafter "toxic chemicals") in excess of the applicable threshold quantities to report on their environmental releases and transfers of and waste management activities for such chemicals annually. Under section 6607 of the PPA, facilities must provide information on the quantities of the toxic chemicals in waste streams and the efforts made to reduce or eliminate those quantities.

Currently, facilities subject to the Toxics Release Inventory (TRI) reporting requirements may either use the EPA Toxic Chemical Release Inventory Form R (EPA Form #9350-1), or the EPA Toxic Chemical Release Inventory Form A Certification Statement (EPA Form #9350-2), which is approved under OMB Number 2070-0093. The Form R must be completed if a facility manufactures, processes, or otherwise uses any listed chemical above threshold quantities. For the Form A Certification Statement, EPA established an alternate threshold for those facilities with low annual reportable amounts of a listed toxic chemical. A facility that meets the appropriate reporting thresholds, but estimates that the total annual reportable amount of the chemical does not exceed 500 pounds per year, can take advantage of an alternate manufacture, process, or otherwise use threshold of 1 million pounds per year for that chemical, provided that certain conditions are met, and submit the Form A Certification Statement instead of the Form R. Facilities may submit information on multiple chemicals on a single Form A Certification Statement.

Pursuant to EPCRA section 313 (and PPA section 6607 because of its linkage to EPCRA), EPA's Office of Environmental Information (OEI) collects, processes, and makes available to the public all of the information collected. The information gathered under these authorities is stored in a database maintained at EPA and is available through the Internet. The TRI is used extensively by EPA, other federal, state and local government agencies, industry, and the public. Program offices within EPA and other government agencies have used the TRI, along with other sources of data, to establish priorities, evaluate potential exposure scenarios, and for enforcement activities. Industries use TRI data to identify pollution prevention opportunities, and set goals for emissions reductions. Environmental and public interest groups use TRI data to make the public more aware of releases of chemicals in their communities, and to initiate direct negotiation and risk reduction with facilities.

EPA has developed EPA Information Quality Guidelines to ensure the utility, objectivity and integrity of information that is disseminated by the Agency. The information supporting this ICR is consistent with all appropriate EPA policies, including EPA's Information Quality Guidelines. In particular, the EPA Agency-wide Quality System helps ensure that EPA organizations maximize the quality of information disseminated by the Agency. The Quality System is documented in EPA Order 5360.1 A2, *Policy and Program Requirements for the Mandatory Agency-wide Quality System* and the *EPA Quality Manual for Environmental Programs* 5360 A1, May 2000. The information supporting this action is also consistent with *EPA's Guide to Writing Information Collection Requests Under the Paperwork Reduction Act of 1995,* revised 2/99. It is EPA's intention that collection of information under this ICR will result in information that will be collected, maintained, and used in ways consistent with both EPA's Information Quality Guidelines and the OMB Information Quality Guidelines.

With TRI, and the real gains in understanding it has produced, communities and governments know what listed toxic chemicals many industrial facilities in their area release, transfer, or otherwise manage as waste. In addition, industries have an additional tool for evaluating efficiency and progress on their pollution prevention goals.

OMB last approved this Information Collection request on October 31, 2003 with an expiration date of January 31, 2006.

2 NEED FOR AND USE OF THE COLLECTION

2(a) Need/Authority for the Collection

This information collection activity is a statutory requirement pursuant to sections 313 of EPCRA (42 U.S.C. 11001 et seq.) and section 6607 of the PPA (42 U.S.C. 11071 to 11079). According to EPCRA section 313(h), the data submitted in the forms are intended to "inform persons about releases of toxic chemicals to the environment; to assist governmental agencies, researchers, and other persons in the conduct of research and data gathering; to aid in the development of appropriate regulations, guidelines, and standards; and for other similar purposes."

Section 6602 of the PPA establishes a national policy that pollution should be prevented or reduced at the source whenever feasible. To further this goal, EPA is to establish a source reduction program which, among other responsibilities, is to collect and disseminate information. The information collected under section 6607 is intended to fulfill that responsibility in part and to provide a basis for measuring progress in pollution prevention in certain industrial groups.

Annual reporting under EPCRA section 313 of toxic chemical releases and other waste management information provides citizens with a more complete picture of the total disposition of chemicals in their communities and helps focus industries' attention on pollution prevention and source reduction opportunities. EPA believes that the public has a right to know about the disposition of chemicals within communities and the management of such chemicals by facilities in covered industries subject to EPCRA section 313 reporting.

Current TRI reporting has been successful in providing communities with important information regarding the disposition of toxic chemicals, and other waste management information on toxic chemicals from manufacturing facilities in their communities.

The information collected under EPCRA section 313, and subsequently distributed through EPA outreach and awareness programs, is provided at relatively low cost compared to the value it represents to the general public. Through mass mailings to all facilities within the manufacturing sector of the economy, work with a wide variety of trade associations representing covered industries, local and national seminars, training courses, and enforcement activities, EPA has endeavored to locate all facilities required to report under section 313 of EPCRA and inform them of their obligations. In addition, EPA has prepared various tools to assist facilities in complying with EPCRA. These materials include detailed reporting instructions, a questions and answer document, magnetic media reporting instructions, general technical guidance, and 24 industry and chemical specific guidance documents. In addition, EPA maintains a toll-free hotline to answer regulatory and technical questions to assist facilities in preparing TRI reports.

Furthermore, TRI reporting does not require a rigid, one-size fits all approach to estimating and reporting release information. EPA believes the submitters of the TRI data are best informed to honestly and accurately report information, within certain parameters provided by EPA. The Agency believes in the good intent of the reporters to use the most appropriate means to accurately estimate the release information. EPA does, however, also invest in enforcement and compliance efforts to insure that reporting is being done consistently and thoroughly by regulated industries.

2(b) Use/Users of the Data

According to many, the TRI program is one of the most effective environmental programs ever legislated by Congress and administered by EPA. Its success is due, in large part, to the right-to-know provisions contained in the legislation itself. By requiring that the resulting data be made publicly available "by electronic and other means," Congress ensured that citizens, the media, environmental advocates, researchers, the business community, and others could influence and evaluate industry's efforts to manage toxic emissions. Consequently, data collected under EPCRA section 313 and section 6607 of the PPA is made available through EPA's Envirofacts and TRI Explorer databases. In addition, the public may also obtain TRI information through OMB Watch's Right-to-Know Network (RTK NET) at http://www.rtk.net. RTK NET provide free public access to numerous databases, text files and conferences on the environment, housing, and sustainable development.

In addition to providing information to the public via electronic means, EPA also conducts outreach activities to make key groups and the public aware of TRI. Journalists, educators, public interest, labor, and environmental groups, trade associations, and state governments continue to be key targets in these outreach efforts. In addition, libraries in communities all across the United States (in particular, members of the Federal Depository Library Program), are committed to providing public access to TRI data in a variety of formats. Educators are also using the data to conduct studies and courses on the environment. Labor unions are using the TRI data to improve conditions for workers. Businesses are using the data in many ways -- as a basis for reducing emissions, to cut costs, to improve operations, and for a variety of other reasons. Concerned citizens are a growing user group. These individuals, on their own and through organized groups, are using TRI to address concerns about the management and release of chemicals in their communities. Finally, states use the national data to compare chemical management and releases within industries and to set environmental priorities at the state level.

Because the value of TRI increases as more people use it, EPA encourages these organizations to acquaint new users with TRI, help people who already know about TRI to better use and understand the data, and, whenever possible, provide feedback on how to improve TRI products and services. The following are some examples of how the TRI data are used, both by EPA and others. As examples, the following information is not intended to be all inclusive.

Use Within EPA

Use of the Data by the Office of Pollution Prevention and Toxics

With the voluntary cooperation of respondent facilities, EPA established the Industrial Toxics Project, also known as the 33/50 Program. EPA's 33/50 Program targeted 17 priority TRI chemicals for emissions reductions from 1988 reported levels of 33% by 1992 and 50% by 1995. More than 1300 companies nationwide joined the program which provided recognition to participating companies, including Certificates of Appreciation to all companies upon enrollment, as well as Certificates of Environmental Achievement to a select group of facilities that achieved noteworthy reductions. Through collaborative partnerships between government, industry and the public, the program met its goals a year early and went on to exceed expectations by the end of 1995. EPA celebrated the program's success by hosting a national conference in September, 1996 and explored ways of building even more successful partnerships in the future with the use of the TRI data.

The Office of Pollution Prevention and Toxics (OPPT) has completed development of the Risk-Screening Environmental Indicators (RSEI) model which provides comparative information regarding the risk-related potential impacts of toxic chemical releases on human health and the environment. This multi-media, screening-level tool considers TRI release and transfer volumes, toxicity, exposure potential, and the size of receptor populations. Both generic and site-specific exposure characteristics are incorporated into the Indicators model. The Indicators may be used for trends analysis, as well as targeting and prioritization of TRI releases by chemical, release medium, industrial sector, individual facilities, geographic area, or a combination of these and other variables.

OPPT's Pollution Prevention Division (PPD) has used TRI data as a screening tool to prioritize proposed regulations and industrial source categories to promote pollution prevention in rulemaking. As a result, the Pollution Prevention Senior Policy Council identified a number of regulatory development efforts that should consider inclusion of pollution prevention measures.

OPPT uses TRI data to track environmental progress towards annual performance goals as part of GPRA. Specifically, OPPT is using RSEI data to set risk-based and pollution prevention performance goals. For example, for FY05, OPPT set a goal of 12% reduction from 2001 in the production-adjusted risk-based score of releases and transfers of toxic chemicals. Pollution prevention goals were also determined based on TRI releases; for example, one goal for FY04 was a 32% reduction in TRI reported releases at federal facilities.

Use of the Data by the Office of Air and Radiation

The Office of Air and Radiation (OAR) has used the TRI data for a variety of tasks related to the implementation of the Clean Air Act (CAA). Section 112 of the CAA, as amended in 1990, requires EPA to develop Maximum Achievable Control Technology (MACT) standards for

major sources of 189 hazardous air pollutants, all but 8 of which were on the TRI list of toxic chemicals prior to EPA's expansion of the EPCRA section 313 list of toxic chemicals. TRI was used to estimate the number of major sources (greater than 10 tons per year of any single hazardous air pollutant or 25 tons per year of total toxics) of hazardous air pollutants in each of 700 source categories. This information helped to prioritize the source categories for regulatory development. In addition, the impacts of a potential lower major source definition for 47 highly toxic compounds were analyzed using TRI data.

TRI was used to help identify the 30 hazardous air pollutants to be included in the Urban Area Source Program mandated by section 112(k) of the CAA. OAR also has used TRI to expand the coverage of the "Locating and Estimating" series of documents, which help state and local air agencies identify potential source categories of air toxics in their communities. Similar data have been incorporated into the Crosswalk database, which identifies which source categories emit which toxic compounds. OAR is developing a series of air quality indicators to track progress in implementing the CAA. Trends in the TRI data are envisioned to be a part of those indicators.

OAR's National Emission Inventory (NEI) database contains information about sources that emit criteria air pollutants and their precursors, and hazardous air pollutants. Several sources, including TRI, are used to compile information on annual air pollutant emissions from point, nonpoint, and mobile sources. Data from the NEI are used for air dispersion modeling, regional strategy development, regulation setting, air toxics risk assessment, and tracking trends in emissions over time. More information about the NEI database and its sources can be found on EPA's AirData Web site, at http://www.epa.gov/air/data/neidb.html.

Use of the Data in Enforcement Activities

Because TRI data include detailed facility identification information, as well as releases to all media and transfers to off-site locations, the Office of Enforcement and Compliance Assurance (OECA) has found that TRI is particularly well-suited to multi-media enforcement and compliance planning, priority setting and inspection targeting. The OECA and the Office of Research and Development (ORD) are developing a "Multi-Media Ranking System" to prioritize sites for enforcement actions and to evaluate the effectiveness of environmental laws in reducing risks from sites. The system ranks sites based on their multi-media releases of pollutants, their potential risk to human health and the environment, and the history of legal violations by the facility. The system combines TRI data with data from EPA air and water databases. The Office of Regulatory Enforcement (ORE) within OECA has also used TRI data in their National Enforcement Screening Strategy. Various data were incorporated including measures for risk associated with TRI releases. This strategy screened for large companies with compliance issues with a presence across EPA Regions that could potentially be targeted for enforcement.

OECA cross-checks data collected under EPCRA and other environmental statutes to identify those facilities or types of businesses which reported for some but not all of the reporting rules.

Enforcement personnel are able to identify additional facilities owned by the same corporation or by the same parent company that may be subject to liability, by using TRI data in conjunction with company tracking systems.

OECA also uses TRI data in the Integrated Data for Enforcement Analysis (IDEA) System. IDEA provides integrated data on individual facilities' compliance records for most of the statutes administered by EPA through access to over a dozen separate databases, including the Toxic Release Inventory System (TRIS). In the near future, RSEI will also be included in IDEA to provide metrics for risk and hazard associated with TRI data. The TRI data aid OECA in developing enforcement initiatives by providing a point of departure for distinguishing between industrial sectors based on their potential for exceeding permits as indicated by the amounts of chemicals reported as managed in waste. OECA provides web access to databases in IDEA through their Online Tracking Information System (OTIS). OTIS is open to a host of federal and state users who can use the data for targeting, cross-media comparisons, and tracking enforcement targets. Users include state environmental agencies, state attorney general offices, other state agencies, local governments, and federal government departments and agencies (including the military).

TRI data continue to be extremely helpful in identifying pollution prevention projects. Enforcement staff use data on releases and transfers to identify (or evaluate) projects that will significantly reduce emissions, or those that will help prevent or minimize the release of extremely hazardous substances under EPCRA section 302.

OECA places a high priority on enhancing the use of TRI data among Regional field personnel. Guidance has been provided to the field offices on the resources available to their inspectors in identifying non-reporters, late reporters and data quality errors. These resources provide the inspectors with valuable information extrapolated from the TRI, such as facility reporting rates, processes, and releases. A recent OECA initiative, conducted in conjunction with the Regions, used TRI data to target facilities that submitted late reports to TRI for enforcement.

Use of the Data by the Office of Solid Waste and Emergency Response

TRI data assist in priority setting for waste minimization efforts by the Office of Solid Waste and Emergency Response (OSWER). Many of the 30 priority chemicals OSWER has identified as a focus for its waste minimization efforts are reported to TRI. In combination with other information OSWER collects on waste minimization, TRI data are useful in analyzing long-term trends and identifying particular industry practices that warrant attention by the program, serving OSWER pollution prevention goals.

OSWER also uses TRI data to target facilities for recruitment to voluntary waste minimization programs. Facilities are selected from TRI by region based on their releases of priority chemicals. Each region then determines particular facilities that may be candidates for waste reduction opportunities or for participation in the National Partnership for Environmental

Priorities (NPEP), a voluntary program managed under OSWER. There are about 40 participating facilities that make commitments to reduce wastes and releases of their hazardous chemicals.

With respect to enforcement, TRI data supplement other existing data sources and can be called on to assist in the development of OSWER enforcement priorities. TRI data also are valuable as a means to assist in establishing liability under both the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA) statutory authorities. TRI data are also used in OSWER's RCRA annual reports. They incorporate TRI data on releases and the nature and scope of recycling, for example, of metal recycling or solvent recycling.

Another site-specific function of the TRI database relates to its role in providing emission information that can be used when developing emission inventories for the Superfund site discovery program and when undertaking Superfund preliminary assessments of sites. In the reportable quantity (RQ) program, TRI data could be used in analyses to support future rulemaking under CERCLA (e.g., designation of additional hazardous substances). In addition, states use TRI data in conjunction with other data obtained under EPCRA for local accident prevention planning. In conducting facility inspections, TRI data are used to provide a multi-media look at what chemicals are being released. Inspectors use this information to look for discrepancies.

Similar to other offices, OSWER uses TRI data to track progress being made toward EPA goals under GPRA to reduce the quantity of priority chemicals contained in regulated hazardous wastes. Specifically, TRI data are used in an annual Trends Report that discusses the progress being made toward meeting two GPRA goals: 1) a 2008 GPRA goal to reduce priority chemicals in regulated hazardous wastes by 10 percent, using a 2001 baseline, and 2) a 2005 GPRA goal to reduce priority chemicals in hazardous waste by 50 percent, using a 1991 baseline. The Trends Report shows trends concerning the generation and management of the priority chemicals by National, EPA Region, state, and industry sector levels. For example, TRI data indicated that facilities generating a priority chemical in both 1991 and 2001, achieved a 53% reduction in the amount of priority chemicals they generated as RCRA hazardous waste between these years, surpassing the GPRA goal of 50% reduction. TRI data show a declining trend overall in the quantity of the priority chemicals, although there have been some increases year to year. The most recent version of the Trends Report, for 1991 to 2001, can be seen at: www.epa.gov/epaoswer/hazwaste/minimize/trends.htm

Use of the Data by the Office of Water

The Office of Water (OW) is using the TRI information to support the planning process required under section 304(m) of the Clean Water Act. As part of that planning process, OW is using the TRI data as one way of evaluating the likelihood of risk to humans (i.e., adverse human health impacts) resulting from exposure to pollutant discharges associated with a source category.

OW has used TRI data for identifying candidates for the National Primary Drinking Water Regulations. Chemicals were identified that had a dramatic overall increase (doubling or more) of discharges and releases. These discharges and releases were considered to have direct potential for drinking water contamination and are good candidates for development of regulatory controls.

TRI data were used as a screening mechanism for possible sources of wellhead contamination. Using TRI and other relevant data in a Geographic Information System (GIS), potential contamination sources have been identified. These sources may affect community ground water systems in the development and implementation of wellhead protection programs. Regions are continuing to coordinate ground water programs using GIS and TRI data as a cross-program tool.

OW has also used the TRI data in the development of management plans to identify the sources of toxic discharges into selected estuaries and coastal waters. In addition, the data have been used to identify sources of toxic discharges that may contaminate sediments that are proposed for ocean dumping.

Under the Watershed Protection Approach, the Regions are using TRI data along with other data in assessing loadings to their watersheds. They are identifying multi-media sources of toxic discharges to receiving waters.

TRI data serves as an input to watershed analysis software maintained by OW. BASINS (Better Assessment Science Integrating point and Nonpoint Sources) is a multipurpose environmental analysis system designed for use by regional, state, and local agencies in performing watershed and water quality-based studies. The software allows a user to analyze water quality for a selected stream site or throughout an entire watershed. Different point and nonpoint source data are modeled, including the locations of TRI facilities. The BASINS software system includes map layers showing the locations and toxic releases of TRI reporting facilities throughout the United States.

The Office of Wastewater Management (OWM) used TRI data to identify industrial users that contributed the greatest amount of toxic pollutants to city sewer systems. Facility names were provided to the Regions for further evaluation.

OW used TRI data to identify which pollutants are released from pesticide manufacturing facilities and the pattern of releases when developing effluent limitations guidelines and standards for an industrial category. While many pollutants and industries that will be addressed by effluent guidelines are currently reported in TRI, the Effluent Guidelines Program screens for a number of pollutants not in listed in the TRI database.

OW used TRI data and other water emissions data in its National Sediment Contaminant Source Inventory, an evaluation of sources of sediment contamination in the United States. This project identified point source pollutant discharges that may result in sediment contamination and analyzed these releases based on their potential sediment hazard. Chemical release amounts were weighted by the relative toxicity of a compound to aquatic or human health, as well as relevant fate and transport factors. The study identified chemicals, geographic areas, and industrial categories of greatest concern for sediment contamination.

OW is charged with reviewing and revising the effluent limitations guidelines established under the CWA. Guidelines have been established for 55 major industrial categories. OW identifies changes to guidelines for existing industrial categories, plus new industrial categories, if they pose a large risk from toxic discharges. As part of the review process in 2003 and 2004, OW looked at water releases reported in TRI to help them identify industries with greater risk for potential revision or implementation of effluent limitations. Some industries initially identified include organic and inorganic chemicals; nonferrous metals manufacturing; petroleum refining; petroleum storage; and timber and pulp processing. TRI data were then also used to determine which industries could achieve effluent reductions through a voluntary program rather than new regulation. Use of TRI data was helpful in identifying which industrial sectors' releases were mostly attributed to a small percentage of facilities as the releases for the sector could potentially be reduced if the largest releasers participated in voluntary pollutant reduction programs.

Use of the Data by the Office of Policy, Economics, and Innovation

The Office of Policy, Economics, and Innovation (OPEI) launched the Sector Strategies program in 2003 as an industry-EPA partnership to promote improved environmental performance. TRI data were used to measure environmental performance trends for participating industry sectors, for the first annual report released in 2004. TRI data will continue to be used to measure environmental trends in subsequent annual reports. In future years the program may also include RSEI data for each industry sector to incorporate measures of exposure and risk or specific groups of chemicals released/managed may be used to measure environmental performance trends.

OPEI’s Performance Track program rewards facilities that go beyond environmental compliance and make voluntary commitments to improve performance. Rewards include reduced regulatory burden. The program used an analysis of TRI data conducted by the Office of Water in developing water-related regulatory incentives for its members. In the process of developing new effluent guidelines for selected industrial sectors, OW evaluated industrial sectors' TRI data to determine sectors where a small percentage of facilities were responsible for the majority of risk related to water discharges. If these facilities could participate in a voluntary environmental program, the sector as a whole may not require new effluent guidelines. For sectors identified by OW, Performance Track determined the top releasers and evaluated if they would be eligible for this voluntary program. If deemed eligible, current Performance Track facilities in these sectors would also benefit because they would not be subject to increased regulation. However, the

analysis indicated that many of the top releasers in those sectors would probably not be eligible due to their level of compliance with environmental requirements.

Use of the Data by the National Center for Environmental Economics

The National Center for Environmental Economics (NCEE) assists EPA Program Offices, Agency economists, and regulatory policy makers with economic analyses. NCEE also conducts research projects analyzing the relationship between economic factors, environmental health, and pollution control. Some examples of their research work that have used TRI data include:

The Trade Environmental Assessment Model (TEAM), created by NCEE, is a multimedia model that allows a user to simulate changes in environmental emissions resulting from changes in industrial activity. The model incorporates economic data in addition to multi-media pollutant release data. TRI data on indirect dischargers are used as one component of modeling releases to water. The model's output measures the change in chemical emissions, by industry category, county, or chemical.

TRI data were utilized in a project examining compliance with air pollution regulations at U.S. pulp and paper mills. Several plant-level characteristics were tested for their relationship to air regulation compliance, including emissions to other media, which was measured in part with TRI data. The study hypothesized that higher emissions to various media may be one factor related to lower compliance with air pollution regulations. Results indicated that TRI air and water discharges (relative to a facility's shipments) tended not to be correlated with air regulation compliance. Although low correlation was found with environmental emissions, other plant and firm level characteristics are being evaluated, such as facility shipments, age, profitability, and compliance with other regulations.

Economists at NCEE have used TRI data in ongoing environmental justice analyses. In a study of communities in Texas, TRI locational data were used to examine relationships between various socioeconomic factors and siting of facilities. A related study used TRI emissions information to determine if there is a disproportionate burden of risk in different communities. The project incorporates data on pounds released in addition to toxicity weights for the chemicals released to look at the risk factor.

Program evaluation is another topic where NCEE has used TRI data. To assess the effectiveness of voluntary programs, NCEE is evaluating the effect of one such program, the National Metal Finishing Strategic Goals Program. The program set emissions reductions goals to be met by 2001, near the programs' end. Some of these goals can be measured using TRI, for example, one goal of the program was to reduce metals air emissions from a 1992 baseline. TRI data will be used to assess the amount of reduction achieved by participating facilities and to determine what role the voluntary program played in the reduction in comparison to other factors, by looking at reductions in similar non-participating facilities.

Other Government Uses

Environmental Solutions

Government agencies can take a variety of actions when TRI data reveal an environmental problem in a specific state or region. Some of these actions involve voluntary incentive programs for companies. Although these programs are not binding commitments, they offer good publicity for participating companies. Examples include:

Governor Frank O'Bannon of Indiana announced the Indiana Governor's Toxics Reduction Challenge in 1998. The challenge pledged to "support the state's goal to reduce toxic chemical releases to the air and water from 1995 levels: 50% by December 31, 2000, in large urban areas for carcinogens and persistent bioaccumulative toxic chemicals; 60% by December 31, 2002 statewide for these chemicals; and, 50% by December 31, 2002, statewide for all toxic chemicals reported in the Toxics Release Inventory." The Challenge also pledged to "energetically help the state reach these goals through efforts emphasizing pollution prevention within your organization and/or in cooperation with other organizations." As of mid-April 2000, 67 companies in Indiana had committed to the Challenge. A list of the companies and an update on their progress is available on the Indiana state Web site: (http://www.in.gov/idem/). In addition, the Indiana Department of Environmental Management frequently uses TRI data to work with industries and suggest ways to reduce waste at the source, use less toxic alternatives, and identify opportunities to recycle and reuse materials.

The P2 Program of the Colorado Department of Public Health and the Environment used TRI data, in combination with other data about hazardous waste and toxic chemical releases to air and water, to identify the ten industry organizations responsible for the largest quantities of hazardous waste generation or toxic chemical releases in the state. This research served as the basis for establishing priorities for P2 activities and for distribution of technical assistance grants. The report also aided in targeting large companies for participation in the "Governor's P2 Challenge Program" to reduce toxic chemical releases and hazardous waste generation.

Due to the TRI reporting requirements for dioxin, the Delaware Department of Natural Resources and Environmental Control became aware of dioxin-tainted waste at DuPont's Edge Moor, DE titanium dioxide (TiO_2) plant. Subsequently, DuPont agreed to pay an estimated $15 million to remediate dioxin-tainted waste at this facility. DuPont discovered that the waste sludge was contaminated with dioxin while the company was preparing to comply with EPA's requirement that dioxin releases be reported under TRI. In addition, DuPont agreed with the Delaware Department of Natural Resources and Environmental Control to spray a 23-acre stretch along the Delaware River with a starch-like coating to keep the dioxin from being stirred up by the wind or eroding into the river. DuPont used the site to store waste sludge from the Edge Moor plant. The company will also close four sludge lagoons near the plant and plans to cut dioxin formation in half by 2003 and by 90 percent by 2007.

Environmental Targeting

Budgets to fund environmental programs and measures often do not increase in proportion to the need for these activities. Environmental targeting initiatives, such as those listed below, help governments and communities prioritize their needs and ensure that their resources are used most efficiently.

The P2 Division in Georgia's Department of Natural Resources used TRI data to identify the technical assistance needs of manufacturing sectors generating chemicals that pose the greatest risk to public health and the environment. The Division prioritized chemicals, examined manufacturing sectors releasing the highest priority chemicals, and identified particular subsectors for further assessment. The Division also conducted in-depth manufacturing sector assessments to determine which processes produce which wastes, what multi-media waste problems exist, what P2 activities were being undertaken, and what additional opportunities might exist.

The Florida Waste Reduction Assistance Program provides assistance in source reduction and waste minimization to facilities handling TRI chemicals. The Program relies on TRI and other data to target facilities for the Program.

EPA's Office of Enforcement and Compliance Assurance (OECA) uses TRI data within its Online Tracking Information System (OTIS) -- a collection of online search engines that enables EPA staff, state, local, and tribal governments, and federal agencies to access a wide range of data relating to enforcement and compliance. OTIS is a web application that organizes the information to facilitate cross-database analysis. OTIS can be used for many functions, including planning, targeting, analysis, data quality review, and pre-inspection review. OTIS was launched for internal Agency use in November 1999. In addition to performing data base analysis, OTIS has three other additional benefits: helps the Regions and states to identify and clean up data errors; provides report information on a cross media basis, leading to improved integration and targeting; provides the basis for a public access site for enforcement and compliance data.

OTIS is currently restricted to registered users from governmental organizations. In 2004, about 340 local, state, and federal organizations were registered. Data on the OTIS site are from OECA's Integrated Data for Enforcement Analysis (IDEA) system, which extracts and integrates information from TRI as well as the following databases: AFS (Clean Air Act -- AIRS Facility Subsystem), PCS (Clean Water Act -- Permit Compliance System), RCRAInfo (Resource Conservation and Recovery Act Information System), ICIS (Integrated Compliance Information System), National Compliance Database (NCDB), and the 2000 U.S. Census.

For the purpose of targeting exposure screening for facility employees in certain geographic areas, the U.S. Occupational Safety and Health Administration (OSHA) and local public health departments used TRI data to identify facilities that release specific chemicals. EPA has

provided OSHA with all submitted toxics release inventory data for the 28 facilities that are subject to the OSHA special inspection program. These data provide OSHA inspection teams with valuable information, such as a list of chemicals that are used in significant quantities by each facility. EPA ~~is~~ also provides OSHA with information concerning accidental releases.

Legislation and Regulations

TRI data often provide the impetus for legislative action from federal, state, and local governments. For over a decade, TRI data has been used to influence and change environmental standards, regulations, and legislation, as shown below:

The North Carolina Environmental Management Commission set limits for 105 pollutants after a public interest organization published a report, using TRI data, on unregulated toxic chemical releases to air in the state.

In response to legislation passed in 1987 to address toxic chemical releases to the air, the Illinois EPA Bureau of Air used TRI data to determine quantities of stack and fugitive air emissions of reported substances to support continued development of regulatory proposals.

Risk Assessment

As the connection between toxic chemicals and human health becomes better known, public health officials are looking for ways to assess the levels of risk in their communities. TRI data have been a crucial component in creating tools to address these assessments. Examples follow:

The New York State Department of Health developed a risk screening protocol using TRI air release data and toxicity potency data to produce relative risk scores and rankings for facilities and chemicals within the state. Results suggested the need for a more careful evaluation of health effects resulting from large releases of noncarcinogenic compounds.

Researchers from EPA's Office of Health Research published a study of national and regional differences in county-level TRI chemical releases to air according to the ethnicity or race and in conjunction with the household income of these populations. Using the "Population Emissions Index," a population-weighted average release for each county, the study found that all minority groups except Native Americans tend to live in counties where levels of TRI chemical releases to air are higher. The data also suggest that household incomes tend to be higher in counties with higher TRI chemical releases to air.

The EPA Office of Pollution Prevention and Toxics's Risk-Screening Environmental Indicators (RSEI) model provides year-to-year indicators of the potential impacts of TRI chemical releases on human health and the environment. The indicators consider TRI release and transfer volumes, chronic toxicity, exposure potential, and the size of receptor populations. Both generic and site-specific exposure characteristics can be incorporated in the model. The model allows

the targeting and prioritization of chemicals, industries and geographic areas. Facility scores can also be tracked from year to year to analyze trends.

TRI is offered as 1 of 9 toxicology and hazardous chemical-related databases accessible through the National Library of Medicine's TOXNET Web site. TRI data can be searched by chemical, year, facility name, geographic location, type and amount of releases. Results display facility-specific information, including facility releases and management. Other databases offered include: Hazardous Substances Data Bank (HSDB), Integrated Risk Information System (IRIS), International Toxicity Estimates for Risk (ITER), Chemical Carcinogenesis Research Information (CCRIS), and Genetic Toxicology (GENE-TOX), as well as literature databases for toxicity-related research articles. TOXNET users cited preparation of risk assessment, improved understanding of environmental/occupational health concerns, and use in regulatory activities as some of the top uses of their searches. The TRI TOXNET search Web site is available at: http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?TRI.

Quality Assurance and Control

Some states, such as Massachusetts, that require separate reporting of toxic chemical releases for their facilities, find TRI data to be a useful measure of quality assurance and control. The Air Pollution Control Program in the Missouri Department of Natural Resources also compares fugitive and stack emissions reported to the TRI with toxic chemical release data reported on the state's Emissions Inventory Questionnaire for quality control.

Other Government Uses

Additional governmental uses of TRI data can be found in agencies not immediately associated with environmental issues. The U.S. Internal Revenue Service used TRI data to identify companies releasing chlorofluorocarbons (CFCs) to enforce a tax imposed on releases of CFCs and thus facilitate the phase-out of these chemicals.

Public Use

Each year, the EPA makes TRI data available to the public on two Internet sites: TRI Explorer (www.epa.gov/triexplorer) and Envirofacts (www.epa.gov/enviro). The EPA also provides a summary of national and state data in the annual publications Toxics Release Inventory: Public Data Release and Toxics Release Inventory: Public Data Release: State Fact Sheets. States also release their own reports. Community organizations, universities, workers and labor unions, local public interest organizations, and national non-governmental organizations (NGOs) also conduct analyses and risk assessments based on TRI data. Some of these organizations also make data and analyses available to the public.

Citizen Activists and Community Organizations

The Oneida Environmental Resources Board in Wisconsin used TRI data to convince leaders of the Oneida Tribe to organize a conference on cleaner ways to manufacture pulp and paper. The Board used TRI data to show that the pulp and paper industry was the largest industrial source of toxic chemical releases in Wisconsin, despite industry claims that significant release reductions in the past made further improvements unnecessary. The conference improved industry awareness of more environmentally friendly practices and procedures. The Board also used TRI data to alert a local labor union about possible worker health risks. The union included requests for reductions in toxic chemical releases in its contract renewal negotiations.

California's Silicon Valley Toxics Coalition has used TRI data for over a decade. The Silicon Valley Environmental Index (www.svep.org) shows "sustainability trends" in Santa Clara County, California. The Index provides information about, but not limited to, hazardous materials and air and water quality. At least five cities in Santa Clara County have referenced or relied on the Index as the basis for their "sustainable city" efforts or municipal environmental management system (EMS) initiatives. Private-sector companies, such as IBM and Philips Semiconductor, have also used the Index in evaluating their own EMS practices. Several universities have incorporated the Index into their environmental science course curricula. In addition, several states (Wisconsin, South Carolina, New Jersey) and countries (Germany and the Netherlands) have developed regional environmental indicators studies modeled after the Index.

Wilma Subra, a chemical research analyst in Louisiana, has been a vocal citizen leader and an active proponent of the TRI program for 20 years, working to change regulations and policies to improve public health and the environment at the local level. Ms. Subra has informed residents about the possible effects of toxic chemical releases and has aided their work to improve environmental conditions. The TRI data support Ms. Subra's efforts to reduce toxic chemical releases from Louisiana's industrial facilities. Ms. Subra gathers and analyzes TRI data, distributes information to the public, participates in legal and regulatory processes against industrial facilities, and sits on national and international advisory committees.

Citizens' Environmental Coalition (CEC) (http://cectoxic.home.igc.org/) is a statewide grassroots organization of 110 groups and 14,000 individual members working to eliminate pollution in the State of New York. They also seek to empower and educate the public about environmental problems, and promote corporate accountability. CEC uses TRI as a means to "empower, educate and assist people concerned about environmental problems." They maintain a sister Web site (http://www.ecothreatny.org/) with an interactive mapping tool for New York that allows for selection of different environmental concerns, including TRI sites, other air pollution sources, water pollution sources, and Superfund sites. It is possible to zoom in on a particular community and also obtain information on specific locations.

Ohio Citizen Action (http://www.ohiocitizen.org/) is Ohio's largest environmental organization. They use and promote toxic chemical right-to-know laws as a means for negotiating "good

neighbor agreements" with industrial facilities in Ohio. For example, the group's non-profit arm, Ohio Citizen Action Education Fund, examined TRI data for Sunoco's Toledo Refinery in Ohio to check the company's statement to the community regarding its annual environmental releases. The group found that the company's statement was based on its reporting to TRI rather than its total chemical releases, as reported to the City of Toledo.

National Organizations

National organizations employ TRI data in many of the same ways as small community organizations, but on a larger scale. Such organizations analyze TRI data, use it to conduct risk screening and risk assessment, and often help the public interpret the data. National organizations often work with local public interest and community organizations to initiate discussions between citizens and industry. Some national organizations also use TRI data to help lobby for changes in environmental policy. Examples of the use of TRI data by national organizations include the following:

Environmental Defense (ED) launched its Scorecard Web site in1998 (http://www.scorecard.org). The site's "polluter locator" allows users to perform a search by ZIP code on a database containing information on more than 17,000 chemical-releasing facilities. The Scorecard also provides data on the health effects and regulatory status of different chemicals. The site correlates TRI chemical release data with U.S. Census demographic data. ED is currently linking TRI data with toxicological studies to create a Scorecard tool that compares the risks of different toxic chemical releases. Logging 500,000 data requests on its first day of operation, the Scorecard Web site has drawn significant public interest. In 2003, Scorecard received approximately 3 million queries related to TRI data.

The Right-to-Know Network (RTKNet) Web site (http://www.rtknet.org), launched in 1989 by the nonprofit organizations OMB Watch and the Unison Institute, also facilitates public access to TRI data. Users can search the TRI data by ZIP code, city, county, state, year, or chemical. The Web site also includes links to additional information about chemicals and right-to-know issues. RTKNet estimates that over 100,000 TRI searches were performed in 2003 which is about 50% of the total database searches on RTK NET for the year.

The former Environmental Information Center conducted a study of the Great Lakes in 1997. Scientists used TRI data to examine endocrine disrupters released in states bordering the Great Lakes. The study ranked the largest emitters of various classes of toxic chemicals by region, and found the Great Lakes region to be the nation's top emitter of reportable endocrine disrupting chemicals.

In September 2000, Physicians for Social Responsibility, along with the National Environmental Trust and the Learning Disabilities Association of America, released the report, "Polluting Our Future: Chemical Pollution in the U.S. that Affects Child Development and Learning" (www.psr.org/trireport.pdf). This report used TRI and other data to present national information

about releases of chemicals that present potential developmental and neurological risks. The report ranked states by the amount of releases of these chemicals and included information about counties, industries, and facilities with the highest toxic chemical releases.

Labor unions also have used TRI data to support demands for safer working conditions for employees. Other than citizens who live near facilities, employees of TRI reporting facilities are most at risk from toxic chemical releases because they are most likely to come in regular contact with these chemicals. Beginning in 1990, the International Union, United Automobile, Aerospace & Agricultural Implement Workers of America (UAW) began training employees and managers of UAW companies to access, interpret, and utilize computer databases and programs in "critically assessing industrial emergency response activities at their facilities." Workers were trained to download and interpret environmental compliance data. TRI data was one of the main sources of information for the program. Concerning TRI, the UAW stated, "knowing about maximum amounts on-site can help people prepare for a 'worst-case scenario'." It can help an emergency response planning group decide if there is enough response equipment and personnel to deal with an emergency involving the chemical(s) in question."

The Safe Hometowns Initiative is a group of organizations and individuals concerned about the threat to public safety posed by hazardous chemicals in American communities. They formed shortly after September 11th to encourage government and industry to protect communities by putting prevention first rather than restricting environmental information. They advocate using TRI data in their Safe Hometowns Guide (http://www.safehometowns.org/download.html) to help communities identify vulnerable facilities, organize assessments of hazardous materials used at facilities, and make recommendations on safer material and process alternatives.

Direct Negotiation

Through increasing their understanding of TRI data, members of the public can begin to understand potential risks associated with toxic chemical releases in their communities and can work with facilities to reduce those risks. The nation's first "right-to-act" law was enacted in September 1999 by the Passaic, N.J., Board of Chosen Freeholders, the county's governing body. The law "allows neighbors and/or employees to petition the county health officer for creation of Neighborhood Hazard Prevention Advisory Committees (NHPACs) for specific facilities." Even without the aid of this law, concerned citizens nationwide can take action in their own communities. Community organizations and citizen activists have used TRI data to negotiate with local facilities. Examples of direct negotiation agreements between citizens and facilities follow:

In the city of Richmond, California, community members were concerned about toxic chemical releases from several oil refineries and other large industrial facilities. The West County Toxics Coalition, a local environmental organization, joined with Communities for a Better Environment, a statewide environmental organization, to investigate industrial polluters in Richmond. Using the TRI and other databases, they published the report, *Richmond at Risk*, that

identified the area's 20 largest industrial polluters and named the Chevron oil refinery the number one polluter. The report served to initiate discussions among Chevron, the West County Toxics Coalition, and other community and environmental organizations. As a result of the meetings, the company agreed in 1994 to close down older portions of the plant and install P2 equipment to achieve zero net toxic chemical releases on its reformulated fuel project.

The Calhoun County Resource Watch (CCRW), founded by a Texas environmental activist and shrimper named Dianne Wilson, used TRI data to build community awareness about pollution of the rich shrimp and oyster breeding grounds of Lavaca Bay on the Gulf of Mexico. Calhoun County was ranked first in the nation for toxic chemical disposal to the land, based on the 1987 TRI data. Lavaca Bay was designated as a Superfund site in 1993. CCRW brought suit against the Aluminum Company of America (Alcoa) related to this pollution. In 1995, Alcoa signed an agreement designed to protect the breeding grounds. Two Alcoa firms, a chemical plant and a bauxite refinery, committed to "fund independent review of zero discharge options and to adopt the technologies where technically, economically, and environmentally sound." In return, CCRW agreed to drop its legal challenges and suspend permit interventions against the companies. According to an Alcoa operations manager, as of March 2000 the company had made considerable progress toward the goals set in 1995, including compliance with a permit that sets the "allowed total annual maximum mass loading mercury limit" at 30 pounds, development and implementation of a Best Management Practices plan, and installation of an "evaporative spray and dust control system" near the refinery.

In 1998, Butler County, PA, warned pregnant women and infants against drinking water from Connoquenessing Creek due to high levels of nitrates in the water. In its report, the Pennsylvania Public Interest Research Group (PennPIRG) used TRI data to highlight the significant quantities of nitrate compounds being released into the creek. The report identified the major source of the nitrates as the AK Steel Corporation. TRI data showed that the company had discharged approximately 29 million pounds of nitrates into the creek in 1997 and 32 million pounds in 1998. This report and several newspaper articles about these toxic chemical releases prompted the state to commit to reduce the levels of nitrates that AK Steel is permitted to release into the creek. Pennsylvania began developing a new water permit to reduce allowable nitrate releases to a level 90 percent lower than the previous level. In June 2000, EPA issued an emergency order requiring AK Steel to significantly reduce the nitrate compounds it discharges into Connoquenessing Creek. In addition, AK Steel was required to provide and pay for an alternative water source for the affected public on any day that the local water plant could not meet the federal maximum nitrate contaminant standard.

Working with The Ecology Center, a public interest organization based in Ann Arbor, Michigan, residents of the town of Flat Rock used TRI data to obtain a commitment from Auto Alliance International to enact an aggressive solvent reduction program. TRI data showed that the company's air releases of toluene had increased from 100,000 pounds in 1991 to 800,000 pounds in 1993, along with an increase in noxious odors in the community. A former Ecology Center staff member, Andrew Cormai, said, "[R]esidents who have put up with the smells since 1987

suddenly have a bone to pick with the company. The company is going to be saving some money by recapturing solvents, and they will be improving community air quality."

Environmental Justice

The goal of environmental justice is to ensure that all people, regardless of race, national origin, or income, are protected from disproportionate impacts and environmental hazards. "The concept [of environmental justice] addresses evidence [that] in some parts of the nation, poor and minority communities live closer to factories, highways and airports and are exposed to more pollution and noise and generally more environmental risks than the population at large." TRI data have proved to be an important tool in environmental justice. Communities that were once uninformed about the toxic chemical releases in their area now have access to that information. Examples of TRI data use in environmental justice activities include:

Two areas of Louisiana have become focal points for environmental justice efforts: the Mississippi River corridor, popularly known as "Cancer Alley," and the Lake Charles region. Local groups have used TRI data to illustrate the high toxic chemical release rates in these areas compared to those in other regions. Several small communities have confronted industrial facilities about their toxic chemical releases and possibly related health effects. One illustrative dispute arose in Mossville, Calcasieu Parish, Louisiana, where some residents suspected that poor health in their community was due to the activities of 17 industrial facilities located within one half-mile of the community. Their concerns prompted numerous public interest organizations to collaborate on the report, *Breathing Poison: The Toxic Costs of Industries in Calcasieu Parish, Louisiana*. The 2000 report used TRI data and information from the Scorecard Web site to convey the health risks to which the community might be exposed. It stated the need for "pollution reduction, environmental health services, and a fair and just relocation for consenting residents."

The Asian Pacific Environmental Network (APEN) works with Asian and Pacific Islander communities in the San Francisco Bay Area, California. APEN created a series of maps that combined TRI and demographic data, to show that many poor Asian and Pacific Islanders live in "toxic hot spots." The maps increased awareness among community members about both their environment and environmental justice issues. APEN might add more environmental, health, and demographic information, and expand its mapping work to other nearby counties.

The Los Angeles chapter of Communities for a Better Environment used TRI data to help ensure that the communities it serves would not be exposed to higher environmental risks as a result of poverty or ethnicity. In one project, the organization combined 1996 TRI data with Geographical Information System (GIS) mapping data to show that 80 to 100 percent of facilities that release toxic chemicals in Los Angeles County were located in areas where a large majority of the residents were people of minorities. These findings led to the report, *Holding Our Breath – the Struggle for Environmental Justice in Southeast Los Angeles.*

Industry Use

TRI data have also specifically benefited regulated industrial facilities.

Cost Reduction

A primary goal of the International Organization for Standardization (ISO 14000) is to bring environmental issues to the attention of the highest levels of corporate management. Leaving decision-making to environmental managers alone might not produce the corporate commitment necessary to achieve the best success. TRI data have been used as evidence to convince high-level management of the need for an EMS. In turn, the proactive environmental protection afforded by an EMS can reduce corporate costs.

For some industries, the creation of the TRI marked the first time that company managers and operators could be made aware of the quantity of chemicals being released from their facilities. Initially, some companies expressed surprise at their own toxic chemical release ratings and set goals to improve their environmental performance. Some companies have reduced their toxic chemical releases and increased their efficiency at the same time, leading to an increased profit. Examples of ways that industry has used TRI data to reduce costs follow:

After reporting toxic chemical releases to the TRI, Berg Electronics realized that it was releasing almost 300,000 pounds of toxic chemicals into the environment annually. By installing a new cleaning system, the company reduced its toxic chemical releases to less than 400 pounds per year. Although the initial costs for the new system were relatively high ($500,000), the company was able to save approximately $1.2 million a year by avoiding cleanup and hazardous waste disposal costs.

The Haartz Corporation, located in Acton, Massachusetts, makes coated fabrics used in automobiles. The firm once used 800,000 pounds per year of methyl ethyl ketone (MEK), a solvent that can cause dizziness, nausea, or unconsciousness when inhaled. In 1987, when the Haartz Corporation was preparing its first TRI report, the company installed a new emissions control system to capture and recycle MEK. TRI data enabled the company to track the association between reduced toxic chemical releases and reduced costs. According to the Haartz Corporation environmental manager, the company's "emissions have stayed pretty flat" despite its "double-digit sales growth" between 1993 and 1998. In addition, reducing its MEK releases saved the Haartz Corporation an estimated $200,000 annually.

Performance Measurement

Industry uses TRI data to identify pollution prevention opportunities, set goals for toxic chemical release reductions, and demonstrate its commitment to and progress in reducing emissions. At least one industry initiative -- the American Chemistry Council's (ACC) Responsible Care Program plans to use TRI data as a performance measure to demonstrate participating

companies' environmental progress. In 2004, there were 226 companies participating in the Responsible Care Program that will report their TRI releases as a performance metric. Of the 226 responsible care companies, 33 are in the top 50 (66%) chemical companies based on sales in 2002 and will use their TRI releases, in part, as a measure of their performance.

International Right-to-Know

The TRI has served as the model for many countries' Chemical Right-To-Know programs and laws. Within the next few years, more than 30 nations are expected to have a TRI-like system, known internationally as Pollutant Release and Transfer Registers (PRTRs). PRTRs allow the public to obtain toxic chemical release data covering a large geographic area. Countries can compare their data and share ideas about improving environmental regulations. Examples of how PRTR information is being used include:

The Commission for Environmental Cooperation (CEC), which was created by a side-agreement to the North American Free Trade Agreement (NAFTA), began its PRTR work by preparing a document that compares U.S. and Canadian PRTR systems. The CEC now develops an annual report, entitled "*Taking Stock*", that correlates data from the TRI and the Canadian National Pollutant Release Inventory to give an overall view of releases and transfers of toxic chemicals within and between countries. The CEC also has created an Internet search engine that allows the public to obtain continental PRTR data.

In 2000, the Silicon Valley Toxics Coalition attended an international conference in Croatia on public participation and community right-to-know. Participants recognized the fundamental importance of Chemical Right-To-Know and are lobbying the United Nations to promote the program and persuade nations to support the passage of community right-to-know laws modeled after the TRI.

Investment

The public's increased awareness of environmental issues has made environmental performance an important factor in their investment decisions. Many investment companies have responded to this demand by providing socially responsible investment options. Examples of how TRI data have been used in investment decisions include:

Green Century Funds, an investment organization that specializes in socially responsible mutual funds, offers two funds committed to promoting corporate environmental responsibility. The Green Century Balanced Fund invests in "performance-driven companies that are a part of the solution to environmental problems," as well as in environmentally benign companies and "best of class" companies that are setting standards for environmental protection in their industries. The Green Century Equity Fund screens out companies with the worst environmental and social records. The funds are monitored for environmental performance using TRI data.

KLD Research and Analytics screens companies and investments for inclusion in Domini Social Investments' "Domini 400 Social Index." Environmental performance is one aspect of their selection criteria including an evaluation of the largest emitters as reported in TRI for each state. Other environmental selection measures include compliance with EPA regulations, a company's liability for hazardous waste sites, and involvement in pollution prevention programs, among other factors.

Vanderbilt University's Owen Graduate School of Management found a correlation between a company's stock value and its P2 efforts, which were assessed using TRI data. A researcher from the University performed two separate studies comparing the progress of a company's P2 activities as reported on TRI forms to a company's stock market performance. The study reported that "companies that underperform expected pollution prevention goals are penalized in the stock market, and the stock of the companies that engage in pollution prevention activity tends to outperform the stock of companies that do not engage in pollution prevention."

Using TRI data, the Investor Responsibility Research Center (IRRC) developed an Emissions Efficiency Index® that indicates which companies have a competitive edge in environmental performance. The Index is predicated on the idea that greater toxic chemical releases are associated with higher risks of negative publicity, more tort actions, and higher costs for pollution control and waste management. IRRC's constituency uses TRI-based information to identify companies with poor environmental records. Using the index, investors can either screen such companies out of their portfolios or purchase shares and use their ownership as leverage to improve environmental performance.

Before making an investment in property, The National Association of Realtors suggests that homebuyers check information reported through TRI. On their Web site, Realtor Magazine Online recommends that homebuyers and realtors evaluate an area's environmental safety by checking the pollutant release data provided at Environmental Defense's Scorecard Web site.

Academic Use

A variety of TRI data applications occur in academia, in areas ranging from doctoral theses and journal publications to teaching in the classroom.

Research

Universities and research institutions are using TRI data as a means for "examining environmental policies and strategies, and clarifying risks associated with toxic chemicals at the state and local level." Students and faculty in the academic community also perform studies based on TRI data. Examples of academic research using TRI data include:

In February 2000, the journal *Drug and Chemical Toxicology* published an article entitled, "Using GIS to Study the Health Impact of Air Emissions." This article showed how public

health professionals are able to use data (such as the TRI) on toxic chemical releases to air, air dispersion modeling, and GIS to identify and define a potentially exposed population. In addition, such data can be analyzed to estimate the health risk burden of that population and determine correlations between point-based health outcome results and estimated health risk.

In the Journal of Environmental Economics and Management in 1998 and 1999, and in the Journal of Economic Surveys in 2001, researcher Madhu Khanna published results of research that examined the environmental, economic and investment effects of voluntary and mandatory toxic release reporting programs. One of the research studies focused on the EPA's 33/50 Program during its first three years, 1991-1993, and its impact on the U.S. chemical industry. The paper showed that Program participation led to a statistically significant decline in toxic releases over the time period, a statistically significant negative impact on current return on investment, but a positive and statistically significant impact on the expected long-run profitability of firms.

At Louisiana State University, environmental science professor Paul Templet developed a method, using TRI data, to evaluate the comparative effectiveness of pollution control strategies, policies, and programs, by calculating an "emissions to jobs ratio." This ratio, which is the number of pounds of toxic chemical releases per job in a given industry and location, can be compared to a national or other average. The comparison is then used to assess the relative toxic air releases associated with a certain job. This ratio was used to modify tax exemptions granted to facilities to encourage and reward job creation.

Professor Mark Stephan used TRI in research focusing on the role of information disclosure programs in environmental policy. One of his research projects, conducted with Michael Kraft and Troy Abel, utilized TRI data to examine correlations between measures of emissions as reported in TRI and state measures of policy, political environment, and economic resources. The authors found that the ratio of facilities reducing toxic releases to facilities increasing them was correlated with political factors at the state level such as membership in conservation groups. Researchers R.D. Klassen and D.C. Whybark studied management of the natural environment in manufacturing firms, given increased public awareness and scrutiny as a result of programs like the TRI. In one of their published studies, it was found that an emphasis on pollution prevention instead of pollution control, improved delivery performance and firms' competitiveness.

Andrew King and Michael Lenox of New York University's Stern School of Business tested the relationship between "lean production" and environmental performance. TRI data were employed as one measure of production, with lower inventories representing leaner production. The study found that lean production was correlated to measures of waste reduction and pollution reduction.

Michael Ash of the University of Massachusetts and T. Robert Fetter of Science Applications International Corporation used TRI data in an environmental justice analysis for the contiguous

United States. They incorporate measures of risk faced by different economic and racial groups by using RSEI, which combines TRI data on releases with information on transport and toxicity for each chemical. Their analysis also controls for regional variations in pollution, allowing them to identify exposure differences both within cities and between cities. They found a consistent relationship between income and pollution exposure, and determined that certain racial groups live both in more polluted cities, and in more polluted neighborhoods within cities, while others live in less polluted cities, but in more polluted areas within cities.

Linda Bui, an economics researcher at Brandeis University, has used TRI data in her work on the effect of public disclosure laws such as TRI. One such study, published in The Review of Economics and Statistics in 2003, evaluated the relationship between TRI releases and housing prices and other political economy variables. In another study, Bui examined firm-level response of petroleum refineries to public disclosure of their toxic chemicals through TRI. TRI releases to air and water were evaluated in relation to firm expenditure on abatement technology for other non-hazardous chemicals discharged. In addition, Bui looked at whether state pollution prevention policies and TRI-type programs helped to explain differences in TRI releases at the refineries across states as a measure of effectiveness of public disclosure policies. Researchers from Harvard University, Robert Stavins, Lori Snyder, and Nolan Miller, also evaluated firm-level response to TRI. Their study examines the effect of TRI and other regulatory programs on technology adoption in the chlorine manufacturing industry, particularly of adoption of membrane cell technology. The authors are also studying the effect of state-level pollution prevention regulations with some similarity to TRI.

Lori Snyder also conducted research assessing the validity of TRI data in light of the potential "truncation bias" that may be caused by TRI's reporting thresholds. She estimates the magnitude of releases for Massachusetts that may not be reported to TRI because of facilities which dropped below the reporting threshold for particular chemicals. Massachusetts's Toxic Use Reduction Act (TURA) provides comparison data for Massachusetts facilities, because it has lower thresholds and it also asks facilities why they may have stopped reporting for a chemical they previously reported. She found that truncation bias could be significant at least for releases in Massachusetts, and based on her results, she provides guidance for policy analysts in using TRI data to measure program effectiveness.

Research conducted at North Carolina State University, in conjunction with the Pew Research Center for the People and the Press and with funding from EPA, assessed the extent to which people are aware of TRI data and the impact of this information. To measure the extent of public awareness of TRI information and people's approach to environmental information, a telephone survey was carried out of 600 people in two cities. The authors also conducted more in-depth focus groups and interviews with respondents who were familiar with TRI to ascertain the level of their knowledge and the level of their support for environmental information dissemination as a form of environmental protection.

As an extension of measuring program effectiveness, Wade E. Martin of California State University proposed a study to evaluate the economic benefit of TRI information. He proposed to study two main user groups, attorneys and citizen activist groups, to determine their "willingness to pay" for the data available through TRI. The project would entail surveying a random sample of both user groups, and asking questions about their use of TRI data and its role in their work. The end result would be an economic valuation for the TRI data, and the cost to these users of not having the data available in its current format.

Classroom Use

High school and university instructors have incorporated the TRI into curricula involving subjects ranging from introductory chemistry to business.

The JSI Center for Environmental Health Studies developed a field-based environmental education curriculum for high school students in Chelsea, Massachusetts, a low-income minority community near Boston. The goal was to encourage student participation in environmental assessment and protection. Students learned to inventory sources of contamination in a local creek and to work with community agencies on protecting a valuable environmental resource. TRI data were an integral part of the students' research.

TRI data are integrated into many lesson plans or activity guides for K-12 teachers and students. The National Science Teacher's Association published a resource guide for high school teachers on using environmental data, specifically TRI, to integrate science in an everyday context. The resource kit was designed with the help of EPA and helps students to conduct research into environmental issues in their own communities.

Delaware's Department of Natural Resources designed a set of lessons for a high school and middle school air quality education program. This program, which incorporates TRI data, includes a lesson on air quality impact associated with industrial sources. Students use the data to locate facilities in their area that have air emissions. They are also able to identify the types and quantity of facility emissions. They can compare businesses that report to TRI between counties and explore the health hazards posed by the reported emissions.

A 2001 workshop sponsored by the University of Arizona explored how to integrate toxicology with high school curriculum. How to obtain data from the TRI and what the data mean were included in the activities for middle and high school teachers to help them use it with their students.

Private groups also have incorporate TRI data into environmental education programs. Aquatic Research Interactive, Inc, which conducts distance learning programs online, offers a program on accessing TRI data. "Diving into Toxic Releases Inventory" reviews how students, educators, and community members can access toxic release data from the EPA. The program

demonstrates how to use EPA's TRI Explorer Web site, including how to use the different search features; generate reports; and interpret the results.

Professor Robert Hognor of Florida International University incorporated TRI data into his classes in the Department of Business and Society. In one example, students used TRI data as the basis for assessing the potential impact of toxic chemicals in the Caribbean and then issued a report on the subject.

3 THE RESPONDENTS AND THE INFORMATION REQUESTED

3(a) Respondents/SIC Codes

The statute applied the reporting requirement to owners and operators of facilities that have 10 or more full-time employees, manufacture or process more than 25,000 pounds or otherwise use more than 10,000 pounds of a listed chemical, and are in Standard Industrial Classification (SIC) codes 20 through 39. The SIC code determination applies to all operations within each two-digit category, including all sub-categorizations to the four-digit level. In addition, in May, 1997, EPA issued a final rule that expanded the TRI reporting requirements to facilities in seven industries outside of the manufacturing sector. A detailed listing of the four-digit SIC codes and categories can be found in Table I of Attachment A (Toxic Chemical Release Inventory Reporting Forms and Instructions). The following identifies the SIC codes and corresponding categories at the two and four-digit level:

SIC Code	Industry Group
10	Metal Mining (except 1011,1081 and 1094)
12	Coal Mining (except 1241)
20	Food
21	Tobacco
22	Textiles
23	Apparel
24	Lumber and Wood
25	Furniture
26	Paper
27	Printing/Publishing
28	Chemicals
29	Petroleum
30	Rubber and Plastics
31	Leather
32	Stone, Clay, and Glass
33	Primary Metals
34	Fabricated Metals
35	Machinery (ex. electrical)

36	Electrical/Electronic Equipment
37	Transportation Equipment
38	Instruments
39	Miscellaneous Manufacturing
4911, 4931 or 4939	Electric Utilities (limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce.)
4953	Commercial Hazardous Waste Treatment (limited to facilities regulated under RCRA Subtitle C, 42 U.S.C. section 6921 et seq.
5169	Chemical Allied Products-Wholesale
5171	Petroleum Bulk Terminals and Plants-Wholesale
7389	Solvent Recovery Services (limited to facilities primarily engaged in solvents recovery services on a contract or fee basis).

Establishments that are part of a multi-establishment facility have the option to report separately, provided that all of the releases and waste management data from all of the establishments in that facility are reported.

4 THE INFORMATION COLLECTED--AGENCY ACTIVITIES, COLLECTION METHODOLOGY, AND INFORMATION MANAGEMENT

4(a) Agency Activities

EPA engages in many activities to fulfill the requirements of EPCRA. These activities can be grouped in the following categories which cover what the Agency does to assist the regulated community with compliance, process the data, maintain the database, and make the data available.

X Assistance to Respondents
X Data Processing and Quality Control
X Making Data Available
X List Revisions and Petition Reviews
X Trade Secrecy Reviews

Assistance to Respondents. The Agency has operated a successful outreach program to assist businesses in obtaining and completing both the Form R and Form A Certification Statement. A reporting package that is updated annually is distributed directly to all TRI respondents. This package also is made available to potential respondents through EPA's TRI Web site, Regional office coordinators and the EPA publications distribution center. The package contains reporting forms with detailed instructions along with a magnetic media software package that allows reporters to submit their data on computer diskettes. General guidance has been prepared for estimating releases, including fourteen industry-specific guidance documents.

EPA also has established a training program designed to familiarize Regional personnel with the reporting requirements and to train them in providing technical assistance to respondents. Using that training, the Regions have conducted and continue to conduct numerous workshops each year to explain the reporting requirements to the regulated community. EPA also has established a training program to teach EPCRA section 313 reporting requirements to private businesses and consultants that wish to provide counsel on section 313 compliance. As previously mentioned, EPA operates a toll-free hotline to answer general questions and direct potential respondents to proper EPA personnel. In addition, the Agency maintains a Web site with current program-specific information and guidance (www.epa.gov/tri).

EPA has also provided guidance for persons or organizations interested in petitioning the agency to add or delete chemicals from the TRI list. In addition to this guidance, EPA also convenes pre-petition meetings to assist petitioners if they request such assistance.

Data Processing and Quality Control. When TRI reports are submitted on paper, the information is keyed into a database on a PC-based local area network (LAN). Automated data quality checks begin at data entry, including various edit checks and the start of normalization of some of the data fields. At this point, emphasis is placed on identifying forms that are not completed correctly. If the problem(s) identified prevent further processing of the form, EPA sends a Notice of Significant Error to the respondent. Notices of Technical Error are sent to the respondents identifying any errors and requesting corrections.

At this stage, EPA also loads data from those facilities that have provided their Form R submissions on magnetic media. Many data quality checks are incorporated into the magnetic media reporting package.

EPA continues to place a high emphasis on data entry accuracy within the TRI. EPA's internal review of approximately 4% of the records showed a data entry accuracy rate of over 99.9%. This is up from 97.5% for the 1987 reporting year. EPA continues to conduct the computerized edit checks at the point of data entry, including a high percentage of verification and data reconciliation activities. EPA now has available an electronic Facility Data Profile (FDP) that enables all reporting facilities to verify online all TRI data submitted. EPA continues to mail hard copy notices of significant reporting errors to reporting facilities.

Once on the LAN, the data are uploaded to the mainframe, where further data quality checks are made. These operations involve continued normalization of name fields, such as county names, insertion of missing latitude and longitude coordinates along with checks with other data.

Congress requires EPA to make TRI data available to the public through computer telecommunications. As a result, EPA has found it necessary to undertake a variety of activities to make the data more usable. This is due to the fact that computer searches only retrieve data in exactly the format requested. Because facilities report their data in a wide variety of ways, EPA has taken steps to use a consistent name for all counties, uses a variety of nomenclature standards for names within the database, has added latitude and longitude representing the center of the zip code area in which the facility is found, and has taken other steps to assist in the normalization of the data.

EPA generates a facility identification number for newly reporting facilities at the time of data entry. This allows linkage to all years of reports for a particular facility or location. The identification number also allows easy retrieval of cross-year data, even when a facility is sold or changes its name. This number has been sent to all facilities and they are required to use it on all future submissions submitted to the Agency. Use of the facility identification number also facilitates data quality and cross-year analysis.

Under EPCRA section 313, facilities are required to submit forms both to EPA and the state in which they operate. For additional quality assurance and tracking purposes, EPA provides all states with a listing of facilities that reported to the Federal Reporting Center for each reporting year. This activity typically results in the identification of several cases where facilities had not reported to one or the other government. Many states then provide copies of forms to the EPA where EPA had not received copies, and vice-versa. This activity has provided a critical step to assist EPA in coordinating the data collection with the states and completing both data repositories.

Ensuring the accuracy of the on-site release and off-site transfer estimates is an on-going effort, and includes comparison across reporting years as well as use of data and evaluations

based on facility site visits. EPA conducted a data quality site survey of 104 facilities for reporting years 1994 and 1995: 25 facilities in SIC code 25 (furniture manufacturing) for 1994; 19 facilities in SIC code 281 (inorganic chemical manufacturing) for 1994; 17 facilities in SIC code 285 (paint manufacturing) for 1994; 23 facilities in SIC code 30 (rubber and plastics manufacturing) for 1994; 10 facilities in SIC code 26 (pulp and paper manufacturing) for 1995; and 10 facilities in SIC code 286 (organic chemical manufacturing) for 1995. Following are some of the major findings of the site survey: 1) Facility and site surveyor release estimates were in good agreement, calculated to be within ±3%. 2) Facilities primarily used purchasing records to make threshold determinations. 3) Facilities in chemical manufacturing used production data more frequently to make threshold determinations. 4) Facilities in chemical manufacturing were more likely to assume thresholds were exceeded and because of that they had the highest error rate, primarily for reporting chemicals that did not exceed thresholds. 5) Container residue was the most commonly overlooked release source.

Making TRI Data Available. Many options are available for accessing TRI data. EPA offers the data in a variety of common computer and hard copy formats to ensure that everyone can easily use the information. TRI is available on diskette, CD-ROM, and on the Internet. While TRI data have been available from several computer-based sources, recent system conversions, processing efficiencies, improvements in web-based access have created a need for a primary source for accessing TRI (and other Agency) data. Therefore, EPA has shifted its focus to the Envirofacts and TRI Explorer systems to address this need. TRI data will be updated in the Envirofacts and TRI Explorer systems at a more frequent rate than previously possible allowing the user community access to virtually "live" TRI data.

TRI reports are also available from state government offices as well as from EPA. For each reporting year, many states make their data available before EPA releases data from the national database. Persons interested in receiving state specific information may call their state EPCRA Coordinator or EPA Regional TRI Coordinator for assistance.

List Revisions and Petition Reviews. The list of toxic chemicals subject to reporting under section 313 of EPCRA is not static. The list can be modified by Agency-initiated reviews of chemicals or by public petition. If a listing petition is submitted by a state governor, then EPA must respond within 180 days by either publishing an explanation of denial or granting the petition. If EPA does not respond within 180 days the chemicals are automatically added to the toxic chemical list. Once a petition is received, EPA begins an intensive review that includes chemistry and toxicity analyses of the chemical or chemicals. Depending on the toxicity of the chemical or chemicals, EPA's review also may include exposure, economic, and engineering analyses. If the chemical meets the criteria for addition to the list, it is added or maintained on the list. If the criteria are not met, then the chemical is removed from the list. The criteria for inclusion on the list are stated in section 313(d)(2): the chemical is known to or can reasonably be anticipated to cause significant adverse acute human health effects at concentration levels that are reasonably likely to exist beyond facility site boundaries as a result of continuous, or frequently recurring, releases; the chemical is known to cause or can reasonably be anticipated to cause in humans cancer or teratogenic effects, or serious or

irreversible reproductive dysfunctions, neurological disorders, heritable genetic mutations or other chronic health effects; or the chemical is known to cause or can reasonably be anticipated to cause a significant adverse effect on the environment because of its toxicity, its toxicity and persistence in the environment, or its toxicity and tendency to bioaccumulate in the environment.

Since the list was first published, there have been 332 additions (including 6 chemical categories) to and 19 deletions or modifications (including modifications to two chemical categories) from it, and several delisting petitions are pending. Two hundred ninety-one of these additions (including 4 chemical categories) are the result of Agency-initiated rulemakings. Four of the deletions or modification, including acetone, sodium hydroxide (solution), sodium sulfate (solution), hydrochloric acid (non-aerosol), and sulfuric acid (non-aerosol), were high production volume chemicals, which greatly reduced the reporting burden on industry. In general, previous petitions have been submitted for single chemicals, however, a recent increase in petitions for groups of chemicals has occurred. EPA may list the chemicals as a category or add only those individual chemicals which meet the section 313(d)(2) criteria. Since inception of the TRI Program, EPA has identified several existing listed chemicals as PBT chemicals as well as added new chemicals as PBT chemicals.

Trade Secrecy Reviews. When a respondent claims a chemical identity as a trade secret, a substantiation must be included. Occasionally respondents claim trade secret status on Form R, but do not provide substantiation. In those cases, EPA must review the claim and contact the respondent to determine the true intent. In many cases, the trade secret claim was not intended and no substantiation is made. Trade Secrecy reviews, including the costs to EPA, are discussed in greater detail in the ICR for the Trade Secrecy Rule for EPCRA (EPA #1428, OMB #2050-0078).

4(b) Collection Methodology and Management

EPA continues to encourage the use of submissions on magnetic media. The use of magnetic media is intended to reduce both the cost and the time required to enter, process, and make available the data, although is may also reduce the reporting burden on industry. Submission by magnetic media also improves data quality because of automatic checks that highlight errors or omitted data. As an additional step in improving user's ability to report using magnetic media, EPA has made the Form A Certification Statement available on magnetic disk and CD-ROM. For TRI reporting, EPA has made available an automated reporting software package called TRI-ME, that simplifies the reporting process by automating calculations and compiling instructions and guidance in an electronic format.

4(c) Small Entity Flexibility

The statute provides that facilities with less than 10 full-time employees (or equivalent) are not required to report. In addition, EPA has taken several steps to minimize the burden for small businesses. A range reporting option was added to the February 16, 1988 final rule (53 FR 4500) that codified the EPCRA section 313 reporting requirements. Range reporting was the

preferred option from the Regulatory Flexibility Act analysis to provide burden reduction for small businesses. Range reporting provides an option for releases of less than 1,000 pounds to be recorded as a code representing one of three ranges, 1 to 10 pounds, 11 to 499 pounds, or 500 to 999 pounds, rather than as a specific estimate of the release amount. The benefit is not, however, limited to small businesses. Range reporting is not applicable for PBT chemicals.

In addition, in response to a petition from the Small Business Administration, EPA has promulgated the alternate threshold (November 30, 1994, 59 FR 61488) discussed above. Although any reporting facility meeting the criteria may use the alternate threshold, it is thought that this alternate threshold will be most advantageous to small entities.

EPA conducted a TRI Stakeholder Dialogue between November 2002 and February 2004 to explore burden reduction opportunities. During this dialogue, improvements to the TRI reporting process were identified and a number of burden reduction options associated with TRI reporting were explored. After reviewing these improvements and reporting options, EPA has promulgated a TRI Reporting Forms Modification Rule (July 12, 2005, 70 FR 39931) that simplifies a number of TRI reporting requirements; removes some data elements from the Form R and Form A that can be obtained from other EPA information collection databases, or are rarely used, and updates the regulations to provide corrected contact information and descriptions of the Forms R and A data elements. The benefit is not, however, limited to small businesses.

EPA has also developed interactive, intelligent, user-friendly software called "Toxics Release Inventory Made Easy Software (*TRI-ME*)," that asks the user simple, straightforward questions to help the user determine if the facility is subject to TRI reporting. *TRI-ME* has greatly reduced data quality errors and therefore, reduced the likelihood of a facility being in violation of the reporting requirements, or having to subsequently submit corrections. In the last five years TRI-ME usage has increased. Note that 73 percent of responses were received electronically for the 1999 reporting year. And by reporting year 2003 93% of responses were received.

4(d) Collection Schedule

Facilities must report their information on a calendar year bases, and submit the Form R to EPA by July 1 each year. On average, EPA has released the national TRI data set to the public approximately ten months after the annual reporting deadline, i.e., July 1. In response to public concerns about shortening the time frame for release of TRI information, EPA is instituting tighter deadlines for facilities to submit revised reports, and combining a series of automated data quality operations. The Agency expects these measures will help it to meet the ultimate goal of releasing data in the year of submission. Also, it is important to note that EPA's national database is just one avenue of access to the TRI information. Each state also makes its data available to the public, and most states are able to make their data available prior to EPA's release of the national database. For example, nearly half of the states release their state's TRI database within four months of the reporting deadline.

5 NONDUPLICATION, CONSULTATIONS, OTHER COLLECTION CRITERIA

5(a) Nonduplication

The basic information requested on the Form R is required to be reported by law. Other statutes, however, also necessitate the reporting of information about releases of chemicals to the environment, creating the possibility of overlap or duplication of reporting requirements. EPA anticipates some overlap and acknowledges that respondents may use readily available data collected pursuant to other provisions of law to complete the section 313 reports. However, currently available non-TRI sources of information may not provide readily accessible release and transfer, inventory, or pollution prevention data with the scope, level of detail, and chemical coverage as data currently included in TRI.

The reader should note that EPA has taken an initial step to revisit the frequency of reporting, as provided for in EPCRA section 313(i) by notifying Congress of its intent to initiate a rulemaking on this subject. One determination that EPA must make as part of this rulemaking is the extent to which information is readily available from other sources (paragraph (i)(3)(B). The discussion below is not the formal determination but contains some relevant information that may be assessed by EPA as part of this formal process.

The TRI contains information on releases, transfers, inventories, and pollution prevention activities for approximately 650 toxic chemicals and chemical categories. EPA is not aware of national databases that are comparable to the whole of TRI, however, several data sources exist which contain media-specific data on releases and transfers. In theory, information from these databases could be combined to form an analog of release and transfer data contained in TRI. However, given the currently available data sources (see Figure 1 below), there appear to be issues in replicating TRI data using these alternative sources. For example, there are differences in chemical coverage, facility coverage, differences in the level of public access granted, reporting frequencies, and the integration of data from various sources at the facility level.

The Air Facility System (AFS) contains compliance and permit data for stationary sources regulated by the U.S. EPA and state and local air pollution agencies. AFS is used by some state and local government agencies to track permit data. This information is used by the states to prepare State Implementation Plans (SIPs) and to track the compliance status of point sources with various regulatory programs under the Clean Air Act. AFS is operated and maintained by the EPA's Office of Enforcement and Compliance Assurance (OECA).

AFS is complemented by the National Emissions Inventory (NEI), which is maintained by the Office of Air Quality Planning and Standards (OAQPS), and contains nationwide annual emissions data for point and mobile sources of criteria air pollutants (CAPs) and hazardous air pollutants (HAPs).

FIGURE 1 - MAJOR RELEASE AND TRANSFER DATABASES

Data source	Media and chemical coverage[1]	Relevant releases statistics available	Ease of database substitution for TRI data[2]
Air Facility System (AFS), National Emissions Inventory (NEI)	Contains annual emissions of six criteria air pollutants and 189 hazardous air pollutants for facilities above reporting thresholds.	Total annual releases; average daily releases in non-attainment areas.	Limited toxics data
Biennial Reporting System (BRS)	Contains waste volumes by RCRA waste code reported biennially.	Total annual off-site transfers of hazardous waste for land disposal; total annual releases to POTW.	Many RCRA waste codes are not specific to an individual Chemical Abstracts Service (CAS) number. Quantities of chemicals in waste can not be determined. Portion of waste stream matching each waste code can not be determined.
Permit Compliance System (PCS)	Contains monthly discharge monitoring data and flow rates for major sources of water pollutants.	Contains concentration data; total annual releases can be calculated; average daily releases, maximum "moment" if continuous monitoring.	Only includes chemicals for which a discharge limit has been set. Difficult to link between PCS parameters and CAS number; very limited monitoring data for minor dischargers.

Under RCRA, generators, treaters, storers, and disposers of hazardous waste are required to submit reports to the Biennial Reporting System (BRS) every two years. The Biennial Reporting System is a national system that collects data on the generation, management, and minimization of hazardous waste (http://www.epa.gov/enviro/html/brs/index.html). This system captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage, and disposal facilities. The biennial data provide a basis for trend analyses. Data about the previous year's hazardous waste activities is reported on even years by the facilities to EPA. EPA then provides reports on hazardous waste generation and management activity that accompany the

1. For additional detailed information on chemical coverage of TRI, AFS, BRS, and PCS, please refer to Attachments B-1 and B-2 at the end of this document.

2. "Ease of substitution" refers only to the potential of the information in the database to substitute for TRI reporting. It does not imply that the database is not adequate for the purposes for which it was designed.

data files. BRS does not duplicate the information contained within TRI, as BRS waste codes do not necessarily map to unique chemicals, quantities of specific wastes in the wastestream cannot be determined, and reporting is less frequent than that of TRI.

The Permit Compliance System (PCS) tracks permit compliance and enforcement status of facilities that discharge to surface waters. PCS (http://www.epa.gov/enviro/html/pcs) provides information on companies that have received permits to discharge waste water into rivers, including information on when a permit was issued and expires, how much the company is permitted to discharge, and the actual monitoring data showing what the company has discharged. PCS data are not directly comparable to TRI data because PCS is a permit tracking system and not a loadings system. Thus, PCS typically tracks pollutant concentrations, and not total releases. Furthermore, PCS does not contain all TRI chemicals.

TRI also contains inventory data, which makes up a small portion of the total data. The most likely alternatives for TRI inventory data are the Tier I/II data reported under EPCRA §312. Under EPCRA §312, regulated facilities must submit annual inventory reports of hazardous chemicals stored on site to the state. Tier I requires reporting on broad categories of physical hazards, while Tier II requires chemical specific information by CAS number. The information contained on the Tier I and Tier II reports surpasses the chemical inventory data requested on TRI Form R in terms of the chemicals covered and level of detail. However, there are significant difficulties associated with public access of Tier I and Tier II data, including the lack of a nationally integrated database, and restrictions on public access due to security concerns.

In addition to release/transfer and inventory data, TRI also collects pollution prevention data from reporting facilities. Pollution prevention data somewhat analogous to data in TRI can be found in BRS (described above) and databases administered by two state environmental agencies. While BRS provides both qualitative and quantitative pollution prevention information, it does not have the facility or chemical coverage directly comparable to TRI pollution prevention reporting requirements. BRS contains data on generation, transfer, and management of hazardous wastes, while pollution prevention data contained in TRI includes information on wastes or process by-products in all production phases and media. In addition, states have come to rely on the pollution prevention data provided to them by TRI. As a result, no state program collects all of the pollution prevention data currently available in TRI.

What follows is a more detailed discussion of the several information sources that currently provide pollutant release and transfer data. The analysis is broken down by specific type of data collected under TRI.

Fugitive/Non-Point Air Emissions and Stack/Point Air Emissions

Fugitive (non-point) air emissions and stack (point) air emissions are reported under sections 5.1 and 5.2, respectively, of TRI Reporting Form R. (Fugitive air emissions are defined as all releases of air pollutants to the air that are not released through stacks, vents, ducts, pipes, or

any other confined air stream. Stack air emissions are defined as all releases of air pollutants that are released through stacks, vents, ducts, pipes, or any other confined air stream.) In the paragraphs below, several alternative data sources are compared and contrasted to TRI. Key criteria considered in comparing the alternative data sources with TRI include: chemical coverage, industry/facility coverage, release statistics, and public accessibility to the data.

Air Facility System (AFS)/ National Emissions Inventory (NEI)

AFS contains compliance and permit data for stationary sources of air pollution regulated by the U.S. EPA, and state and local air pollution agencies. This information is used by the environmental regulatory community to track the compliance status of point sources with various programs regulated under the Clean Air Act.

NEI is a national database of air emissions based on data collected from state and local air agencies, from tribes, and from industry. This database contains information on stationary and mobile sources that emit criteria air pollutants (CAPs), as well as hazardous air pollutants (HAPs).

OAR manages EPA programs to improve air quality in areas where the current quality is unacceptable and to prevent deterioration in areas where the air is relatively free of contamination. To help accomplish this task, OAR uses AFS and NEI to track emissions of pollutants that have been proven to be detrimental to public health as defined by the national ambient air quality standards. The six criteria pollutants which states must report to EPA include: particulate matter less than 10 microns in size (PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and ozone (reported as reactive volatile organic compounds, an ozone precursor), as well as the 189 HAPs listed under section 112(b) of the Clean Air Act. States are also required to report ambient air quality data on a quarterly basis and point source data on a yearly basis for the criteria pollutants listed.

Threshold reporting quantities for the various criteria air pollutants vary. For the hazardous air pollutants, the threshold is 10 tons per year for any one HAP and 25 tons per year for any combination of HAPs at the facility level. These data are then utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. Data for over 90,000 point source facilities are stored in NEI.

Compliance and enforcement data are updated by states and EPA based on the data submitted by facilities. Compliance data for these plants may be recorded for the plant as a whole or for a specific point within the plant. Emissions estimates are available for facilities satisfying the emissions thresholds described above. States also are required to report emissions data for point sources which emit below the 100 ton threshold in areas where air quality does not meet federal standards (non-attainment areas).

Fugitive air emissions data are not specifically flagged within AFS or NEI. It may be possible, however, to generate fugitive emissions estimates for pollutants included within AFS by determining all Source Classification Codes (SCCs) generating fugitive air emissions, and then totaling emissions (Kleeman, 1995). SCCs are eight-character codes which represent specific processes or functions within a source category. For example, SCC 1-02-005-01 corresponds to the burning of distillate oil in an industrial boiler. SCCs allow proper identification of processes as well as proper calculation of emissions when applying AP-42 emission factors.[3] Because SCC codes are not designed to distinguish stack level emissions from fugitive air emissions, such an effort would require a review of all coded industrial processes in order to identify those generating fugitive emissions.

Chemical coverage: States are required to report to EPA annual emissions estimates for point sources emitting greater than or equal to threshold quantities of the *criteria pollutants* (40 CFR §51: 321-326): particulate matter (PM_{10} & $PM_{2.5}$), carbon monoxide, sulfur oxides, nitrogen oxides, lead, and ozone. Hazardous air pollutants (HAPs) are reported by state, local, and tribal agencies to EPA and are contained within NEI.

Because data on toxic releases in AFS are limited, emissions can be estimated (that is, modeled) using a technique called "speciation." Speciation involves multiplying reported emissions of particulate matter and volatile organic compounds by fractions representing various compounds, according to a profile specific to the emission source. SPECIATE is EPA's repository of total organic compounds and particulate matter speciated profiles for a variety of sources for use in source apportionment studies. SPECIATE is available through OAQPS's Clearinghouse for Inventories on Emission Factors (CHIEF) Web site, and it provides access to apportionment factors for 691 organic chemicals and 110 particulates in about 700 total profiles. However, there are significant limitations to the accuracy and reliability of speciation data. The speciation profiles contained in SPECIATE were developed from field sampling, engineering judgments, and other indirect techniques. The weight percentages and number of chemicals in a given profile may be heavily influenced by the particular analytical and sampling methods used to develop the profile (U.S. EPA, 1996).

Another aspect of SPECIATE involves the assignment of profiles for all SCCs in AIRS. Ideally, each SCC in AIRS would have a unique profile to represent its speciation characteristics; however, there are far more SCCs than available profiles. Therefore, those categories which are not associated with original profiles are assigned profiles based on engineering judgment (Radian, 1993).

3. AP-42 Emission Factors, available from the Factor Information Retrieval (FIRE) System, and emission factors in general, are representative values that attempt to relate the quantity of a pollutant released with a given activity associated with the release of that pollutant. Emission factors are typically expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (EPA, 1995b). Generally, AP-42 emission factors are simply averages of available emissions rates that can be used to facilitate the estimation of air emissions and are sometimes used by facilities to estimate TRI releases and transfers. A difficulty with using emissions factors is that there is a lack of facility-specific throughput data (production or activity), without which estimates cannot be made. Another difficulty is that the factors are averages and do not account for the variations between facilities.

Industry/facility coverage: Because facilities are included in AFS and NEI on the basis of their emissions levels, there are no SIC or industry limitations. In contrast, TRI currently only requests data from some, but not all SIC codes, thereby excluding many other industries. It is important to note, however, that emissions thresholds play an important role in determining which facilities are covered. Facilities are covered under AFS or NEI only if they release multiple tons of criteria or hazardous air pollutants annually. Smaller HAP emitters that release small amounts of criteria pollutants may therefore be completely exempted from reporting. TRI, on the other hand, employs general thresholds of 25,000 pounds per year for manufacture and processing of a chemical and 10,000 pounds per year for otherwise use of a chemical. These thresholds are not tied to emissions quantities. In addition to this threshold, TRI also exempts facilities with less than the equivalent of ten full time employees.

Release statistics/reporting frequency: EPA requests that states upload information to AFS on an annual basis. However, because there are no defined reporting schedules and no real penalties for not reporting, in practice there is "rolling receipt" of information, with some states failing to report for various reasons in some years. Although AFS notes that most states report regularly, and some facility-specific emissions data are available from AFS across all reporting years (Wakefield, 1995), the looseness of the reporting structure makes comparisons across states, industry, facilities, or years difficult. The NEI is updated every three years by EPA. For example, the 1999 NEI data were released in 2003 and the 2002 data will be available in early 2006.

Accessibility: AFS data are readily accessible on the EPA Web site for anyone with access to the Internet. The data are available through the Enforcement & Compliance History Online (ECHO) Web site (http://www.epa.gov/echo/index.html), Envirofacts (http://www.epa.gov/enviro), as well as on the AirData Web site (http://www.epa.gov/air/data/index.html). NEI data are available in Microsoft Access format on the EPA Web site (http://www.epa.gov/ttn/chief/eiinformation.html).

State Air Emissions Inventories

Several states and regional agencies maintain their own air emissions inventories, including the inventory set up under California's "Hot Spots" Information and Assessment Act (Assembly Bill 2588), and the Great Lakes Regional Air Toxics Emissions Inventory. Approximately half the states have implemented some kind of air toxics reporting system (Pope, 1995). However, the amount of data as well as the types of data elements collected vary widely from state to state. The Great Lakes inventory merits special attention because other states and countries (including Louisiana; Texas; Ontario, Canada; and Mexico) use it as a model for their own inventories. A number of other states have active programs or are in the process of developing them. A number of other states have active programs or are in the process of developing them. Two are discussed below in terms of their coverage and accessibility characteristics.

Chemical coverage: Chemicals covered under state and regional inventories vary widely in the number of chemicals covered, data elements required, and reporting thresholds used. While some inventories collect detailed, facility level information on many chemicals, others are designed only to track very specific pollutants for specific applications. For example, The California Air Resources Board maintains its own list of approximately 400 toxic air pollutants.

Industry/facility coverage: States often develop their own toxics inventories due to perceived gaps in TRI's industry coverage.

The Great Lakes Regional Air Toxics Emissions Inventory does not require emissions reporting by industry. Rather, state agencies will use best available emission factors (FIRE) or source-specific emission factors and throughput information to estimate emissions from a much larger catalog of sources than TRI, including area sources such as dry cleaners, asphalt plants, and wood stoves (Ratza, 1995).

Release statistics/reporting frequency: The types of data collected and data collection frequency among states and regions also vary widely.

Accessibility: States that maintain their own HAPs databases do so more or less independently of the federal government; thus, there currently is no central repository for the information that they collect. EPA maintains NEI, a compilation of data from various sources, most of which come from state and local agencies and tribes.

Title V Part 70 Operating Permits

Under the 1990 Clean Air Act Amendments (CAAA), facilities designated as "major sources" and facilities otherwise subject to section 112 and Title IV must apply for a Title V Part 70 Operating Permit. Although a facility can meet the criteria for a major source in any of several ways, particularly relevant are those facilities which attain major source status by emitting 10 tons per year (tpy) or more of any HAP or 25 tpy total combined HAPs. As part of the application for a Title V permit, some facilities may have to report emissions of air toxics (see discussion on chemical coverage below). There is significant overlap between the 189 HAPs regulated under the CAA and the 650+ chemicals in TRI. Compared to TRI, however, the information provided in the permit applications has very different characteristics in terms of chemical coverage, completeness, and accessibility.

Chemical coverage: Title V requires that all permit applicants provide qualitative descriptions of their emissions, including all criteria pollutants and all 189 toxic pollutants. Quantitative emissions estimates are usually required by the permitting authorities only when more information is needed to resolve a dispute over applicable requirements, such as whether or not the facility should be classified as a major source. In the event that there is no dispute, no emissions estimates are required. In situations where estimates are required, facilities are

allowed to use "available information," which include EPA emission factors documents, "reasonable engineering projections," as well as test data. EPA's policy, as outlined in the "White Paper for Streamlined Development of Part 70 Permit Applications," is to request just enough information to convince the permitting authorities that the facility meets all emissions requirements. According to the White Paper, "emissions information for these purposes does not always need to be detailed or precise." (U.S. EPA, 1995c) For most pollutants, it is not likely that Title V Part 70 emissions data could substitute for TRI release reporting.

Industry/facility coverage: There are no SIC or industry limitations for major facilities. For non-major sources, decisions on permit applicability are made on a source category by source category basis. Decisions are currently being made on Title V Part 70 permit requirements for non-major sources as to which source categories will be exempted, deferred, or required to obtain permits (Seitz, 1995). However, as stated above in the chemical coverage discussion, actual emissions estimates are required only when attempting to settle a dispute over facility status or other applicable requirements. Therefore, the majority of Title V permit applicants are not required to furnish any quantitative data. Title V's facility coverage is likely to be different from TRI's facility coverage, due to the differences in applicability criteria between the two systems. While TRI has a manufacture, process, or use threshold for toxic chemicals, Title V has applicability criteria based on HAPs emissions (see above).

Release statistics/reporting frequency: Emissions information is required at the time of permit application, renewal, and modification. Since permits are typically renewed every five years, most facilities will report their information every five years (Swanson, 1995). Other possible situations for emissions information updates include new applicable requirements not requiring permit modifications, and changed compliance status of facilities. Therefore, the duration between reports is likely to be much longer than the one year timespan between TRI reports.

Accessibility: EPA Headquarters does not maintain a central inventory of the emissions data contained in permit applications (Southerland, 1995). This information is kept at the state and EPA Regional levels and accessibility tends to vary. For instance, EPA Region 9's Electronic Permit Submittal System allows the public to view all proposed and issued permits in the region.
,TRI is readily accessible by the public via the Internet.

Summary of Availability of Fugitive/Non-Point and Stack/Point Air Emissions Data

Using the data from the sources described above in place of TRI fugitive or stack emissions data may be unwieldy. Although AFS and NEI provide good data on criteria pollutants, only one criteria pollutant (lead) is reportable as a discrete chemical substance on TRI. Further, NEI HAP release information is not directly comparable to TRI because data for EPCRA section 313 toxic chemicals are generally unavailable in NEI, and speciation cannot reliably generate accurate facility-specific HAP emissions estimates. In addition, fugitive emissions are not specifically flagged within AFS or NEI. Some state air emissions inventories such as

California's may collect air emissions information that is as complete or even more detailed than TRI. However, not all states maintain inventories, and there are still many unresolved data compatibility and accessibility issues. The Great Lakes inventory is limited in its geographic coverage as well as the number of chemicals it contains, uses different data collection techniques than TRI, and relies on state-generated estimates in lieu of facility reported release data. Furthermore, the emissions information on air toxics contained within Title V Permit documents do not provide the same level of chemical coverage, frequency of reporting, or accessibility as TRI.

Direct Discharges to Receiving Streams or Water Bodies

Form R requires that facilities report total direct discharges to receiving streams or water bodies. Releases are reported in pounds per year and include the name of the receiving stream or water body. The following section compares and contrasts the Permit Compliance System (PCS) with TRI to determine whether it could be used as a substitute for TRI chemical release data. In comparing and contrasting PCS with TRI, the following variables are considered: chemical coverage, industry and facility coverage, release statistics, reporting frequency, and accessibility.

The Permit Compliance System (PCS) tracks permit compliance and enforcement status of facilities regulated by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act (CWA) and is managed by EPA's Office of Enforcement and Compliance Assurance (OECA). PCS tracks all point source discharges to surface waters, but does not include indirect releases such as discharges to Publicly Owned Treatment Works (POTWs). Permits are classified as major or minor based on facility discharge characteristics such as toxic pollutant potential and flow volume. Facilities are classified as "major" based upon a scoring system which considers toxic pollutant potential, flow/streamflow volume, conventional pollutant loading, public health impacts, water quality factors, and proximity to near coastal waters.

Major dischargers report compliance with their NPDES permit limits through Discharge Monitoring Reports (DMRs). DMRs are generally submitted on a monthly basis to state and Regional EPA, providing detailed information on reported measurement values for those chemicals regulated within their NPDES permit. Data collected via DMRs, including concentration and quantity values for regulated pollutants and the type of permit violation (if any), are entered into PCS. EPA uses PCS to produce the Quarterly Non-Compliance Report (QNCR), a public document listing NPDES permit violations. EPA requires monitoring data only for those permits classified as major. For minor facilities the database contains only general facility-level information. It is important to note, however, that all NPDES permittees (both major and minor) are required to file DMRs with their state or regional NPDES authorities. Therefore, monitoring data for minor facilities are available from the files of these permitting authorities, which are open to the public. Data for minor facilities are not maintained through the national database. As 45 states maintain their own NPDES programs, many have set up their own data systems through which the data can be accessed.

There are several differences between TRI and PCS stemming primarily from the divergent purposes of the two systems. Unlike TRI, PCS is a permit tracking system rather than a toxic pollutant loadings system. The differing data needs of these two types of systems make it problematic to transfer information from one to the other. For example, TRI data must be reported on a mass basis (usually pounds). In contrast, EPA requires the reporting of PCS data in mass units but allows reporting in concentrations if it is impracticable to use mass. The fact that PCS monitoring data can be reported in either mass units or as concentrations can make comparing the releases of two facilities difficult. Data in units of concentration can be converted to mass units only if flowrate data are also reported.

Chemical coverage: A facility's permit record may not include all pollutants actually being discharged by the facility. The monitoring data available through PCS for major dischargers include only those chemicals for which a monitoring requirement has been set in the permit. Federal effluent guidelines exist for many major industries and determine chemicals for which monitoring is required. However, the guidelines may not consider the same chemicals across industries. Therefore, two facilities in different industries with similar chemical releases may not necessarily both report the same set of chemicals to PCS. Also, for facilities not covered by a federal effluent guideline, it is left to the discretion of the permit writers to decide which pollutants will be included in the permit, how often monitoring must occur, and which parameters and units of measure are to be used.

Because NPDES permit discharge limits are written in terms of PCS pollutant parameters, and not CAS numbers, much of the data contained within PCS are not chemical-specific. An example of a non chemical-specific PCS parameter is parameter 00535, Suspended Volatile Solids. It may be difficult to determine the mix of specific chemicals when data are reported using non-chemical-specific parameters. In addition, in many cases, multiple parameters are reported for the same chemical, representing different measures of the same chemical. For example, PCS parameter numbers 01049, 01050, and 01051 represent dissolved, suspended, and total lead, respectively. Because there may be several parameters for a single chemical, it becomes difficult to aggregate their masses. Chemical Abstract Service (CAS) registry numbers are not reported for chemical parameters; however, parameters can sometimes be linked to a specific CAS number using an EPA database called SUPERCAS. SUPERCAS is an edited and augmented version of the CAS matching file contained in STORET, an EPA water monitoring data system. All PCS parameters are contained within SUPERCAS, and although SUPERCAS is not updated regularly, the addition of new parameters to PCS is a relatively infrequent event.

Industry/facility coverage: EPA requires monitoring data only from those facilities classified as major dischargers. For minor facilities, the database contains only general facility-level information. While the database tracks about 65,000 active permits, only about ten percent of these are classified as major. A state may choose to submit monitoring data for minor facilities but generally such data are unavailable. Unlike TRI, PCS does not limit reporting

requirements to specific industry groups or exempt facilities with less than the equivalent of ten employees.

Release statistics: The release statistics reported for PCS parameters depend on the permit specifications. Often, releases are reported as concentrations in parts per million (ppm) or milligrams per liter (mg/L), as opposed to units of mass such as pounds per year (lb/yr) or kilograms per year (kg/yr) (Rubin, 1995). If discharges are reported in mass units, a maximum daily discharge also is reported. The basis for these reported data varies among facilities. For example, a facility may sample its effluent only once per month and still report a monthly maximum discharge. If discharges are reported as concentrations, a minimum, maximum, and average value may be reported, although a significant percentage of dischargers report only a maximum concentration (Rubin, 1995). In general, flow rates are available for converting concentration units to units of mass (i.e., kg/year can be calculated by multiplying mg/L by the annual flow rate), although in some cases the flow rates are not provided.

A complex algorithm is required to estimate annual loadings from PCS data. The algorithm must first identify facilities reporting quantities in pounds or kilograms, favoring mean values over maximum or minimum values. For facilities with no loadings data, monthly concentration data must be linked and multiplied by each month's corresponding flow data, again favoring mean values over maximum and minimum values. Additionally, the algorithm must convert the results to a single unit of measure. PCS facilities report at least 26 different units of measure and 15 units of flow (e.g., gallons, thousands of gallons, and millions of gallons in terms of minutes, hours, days, and years). This step is repeated for each month and summed to produce an annual loadings estimate. If twelve months of data are not available, an average value can be used to produce an annual estimate.

Facility releases may be overestimated for several reasons: 1) facilities that release chemicals below their detection limit (e.g., between 0-6 ppm) will sometimes report releases at the detection limit (e.g., 6 ppm) in order to indicate the likely presence of a chemical; 2) facilities with episodic releases may be required to report releases at their peak level and not an average annual quantity; and 3) facilities might have multiple monitoring points along the same outfall route, resulting in double counting. Such reporting specifications may be appropriate given the purpose of the NPDES permit; however, PCS data will not always be appropriate for estimating annual pollutant loadings.

Reporting frequency: Discharge Monitoring Reports are generally submitted monthly to state or Regional EPA; therefore, reporting frequency is not a limitation when compared to TRI.

Accessibility: PCS data are accessible through the Envirofacts database for anyone with Internet access.

Conclusion of Availability of Data on Direct Discharges to Water

Because PCS is a permit tracking system, and not a pollutant loadings system, the information is not directly comparable to TRI release data. Within PCS, release data are only available for major facilities, and are reported in terms of PCS parameters, not specific chemicals. These chemical parameters cannot always be easily converted into CAS numbers. In addition, only those chemical parameters actually specified in the facility permit have monitoring requirements. In some cases, data may be reported in units of concentration rather than units of mass. If flow rates are also reported, concentration data can be used to estimate total releases, although there are several complicating factors in producing such an estimate.

Underground Injection and Land Disposal On-Site Section 313 gives EPA the authority to require reporting of on-site surface and subsurface (i.e., underground injection) releases to land. On-site surface releases to land include the following subcategories: RCRA subtitle C landfills, other landfills, land treatment/application farming, RCRA subtitle C surface impoundment, other surface impoundment, and other disposal. The Biennial Reports (part of the RCRAInfo database) requires reporting of both underground injection and other on-site releases to land. The following analysis compares and contrasts Biennial Reports with TRI information on underground injection and on-site releases to land data.

Under section 3002(a)(6) of the Resource Conservation and Recovery Act, facilities that generate an amount of hazardous waste that exceeds a defined threshold are required to submit biennial reports on that waste to EPA (or to state agencies that run RCRA programs). These reports include information on the quantity and nature of hazardous waste, the disposition of all hazardous waste, efforts undertaken to reduce volume and toxicity of waste generated, and the changes in volume and toxicity of waste actually achieved during the year. Facilities that treat, store, or dispose of hazardous wastes must provide information on the methods of treatment, storage or disposal. Data are reported to the states and regions, which then provide it to EPA Headquarters. Information is entered into RCRAInfo, which is maintained by the Office of Solid Waste and Emergency Response (OSWER).

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS).

The RCRAInfo system allows tracking of many types of information about the regulated universe of RCRA hazardous waste handlers. RCRAInfo characterizes facility status, regulated activities, and compliance histories and captures detailed data on the generation of hazardous waste from large quantity generators and on waste management practices from treatment, storage, and disposal facilities.

RCRAInfo provides a convenient user interface for the program staff and managers of the EPA and its state and tribal partners. RCRAInfo data are made available to the public through EPA's

Envirofacts Data Warehouse through monthly extracts and through the privately maintained Right-to-Know Network.

Biennial Reports provides an overview of the progress of the RCRA program through tracking trends in hazardous waste generation and management. Large quantity generators (LQGs) and treatment, storage, and disposal facilities (TSDFs) are required to report every two years. Large quantity generators are defined as facilities that generate 2,200 pounds of total RCRA hazardous waste per month; generate 2.2 pounds of RCRA acute hazardous waste a month, or accumulate this amount during the year; or generate or accumulate more than 220 pounds annually of spill cleanup material contaminated with RCRA acute hazardous waste. Biennial Reports contains data for about 23,000 LQGs and 4,000 TSDFs.

There are several important differences between Biennial Reports and TRI. Although Biennial Reports maintains a large amount of useful data, the data are not the same as information contained within TRI. Waste codes used in Biennial Reports do not necessarily map to unique chemicals, quantities of specific chemicals in a wastestream cannot be determined, and reporting is less frequent than for TRI.

Chemical coverage: Biennial Reports contains data on hazardous wastes as defined by RCRA. RCRA hazardous waste is designated as either "listed waste" or "characteristic waste". Listed wastes have been identified as hazardous as a result of EPA investigations of particular industries or because EPA has specifically recognized a commercial chemical waste's toxicity. Listed wastes appear in 40 CFR Part 261. Characteristic wastes are determined hazardous because they exhibit one or more of the following "characteristics": ignitability, corrosivity, reactivity, or toxicity.

The primary issue with relating waste codes to chemicals is that not all waste codes used in Biennial Reports map directly to a single, unique chemical. For example, waste code F004 is defined as:

The following spent non-halogenated solvents: cresols, cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

Listed wastes that are categorized as non-specific source waste (the F wastes, such as F004 defined above), specific source wastes (the K wastes), and three of the characteristic waste categories (D001, D002, and D003) cannot be matched to a specific chemical. Listed wastes categorized as commercial chemical products (the P and U wastes), and characteristic wastes meeting the toxicity characteristic (D004-D043) each may represent a single, unique chemical, but they also may represent a mixture of various materials of which the identified chemical is but a small proportion.

Industry/facility coverage: Biennial Reports requirements do not require that specific industries or SIC codes report; however, certain waste categories are excluded (40 CFR §§261.4 and 261.3(c)(2)(ii)). For example, the so-called Bevill exemption (40 CFR §261.4(b)(7)) classifies solid wastes resulting from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock and overburden from the mining of uranium ore) as non-hazardous solid wastes and therefore not subject to submitting a report to BRS.[5] Extraction and beneficiation wastes, plus 20 special mineral processing wastes (listed under 40 CFR §261.4(b)(7)), fall under RCRA Subtitle D classification. TRI now requires reporting from the mining industry. In addition, emission control wastes, which are prominent wastes within the electric utilities industry, are excluded from Biennial Reports requirements. Electric utilities represent an industrial group being considered for addition to TRI. The full list of wastes that are excluded from Biennial Reports include the following:

Acid
Agriculture, Irrigation
Cement Kiln Dust
Chromium, Leather Tanning
Drilling Fluid
Emission Control Waste
Fertilizer
Household
Mining
Mining, In situ
Mining, Overburden
Nuclear
Petroleum-contaminated Media and Debris
Precipitation Runoff
Pulping Liquor
Sewage, Domestic
Sewage, Mixture
Wastewater, Point Source Discharge
Wood, Wood Products

Release statistics: While some of the waste codes used in Biennial Reports to identify waste streams may refer to a single, unique chemical (i.e., a specific CAS number), others do not. In addition, a waste stream can be identified by multiple waste codes (e.g., a waste stream can simultaneously be ignitable, contain spent halogenated solvents, contain benzene, etc.). At present, there is no mechanism to apportion the waste stream volume to particular waste codes where multiple codes are reported.

5. As defined under §261.4(b)(7), the beneficiation of ores and minerals includes but is not limited to activities such as the following: crushing, grinding, washing, sizing, drying, solvent extraction, and magnetic separation. For a complete list refer to §261.4(b)(7).

The "mixture rule" and "derived-from" rule were adopted by EPA in 1980 and affect the data reported to Biennial Reports.[6] The derived-from rule provides that wastes derived from a listed hazardous waste (such as the ash from incineration of a listed waste) also are deemed hazardous waste. The mixture rule provides generally that any mixture of listed hazardous and non-hazardous waste is considered hazardous waste (although there are important exceptions). RCRA waste streams are often a mixture of one or more toxic chemicals contained at various concentrations in a non-hazardous matrix (e.g., railroad gravel or water). From the reported data, it is not possible to determine the fraction of the entire waste stream that is composed of a particular hazardous chemical. While it is evident that the chemical concentration is adequate to result in the waste stream being defined as hazardous (e.g., the chemical concentration exceeds a certain threshold), no more detailed determination regarding the quantity of the hazardous component released can be drawn.

Reporting frequency: LQGs and TSDFs submit Biennial Reports data on a biennial basis. In contrast, TRI reporting occurs on an annual basis.

Accessibility: Biennial Reports is accessible through the ENVIROFACTS database for anyone with access to the Internet.

Conclusion on Availability of Data on On-Site Releases to Land

Biennial Reports requires individual reporting of underground injections on-site as well as on-site releases to land, as does TRI. However, only half of the waste codes used in Biennial Reports can be assumed to identify individual chemicals. In addition, the waste classification system, including the "mixture rule" and "derived-from" rules, results in waste quantities being reported to Biennial Reports that do not identify quantities of the individual chemicals. The quantity reported to Biennial Reports represents the quantity of the entire waste stream, and not individual chemicals. Therefore, it is unclear how one would reliably estimate the releases of a particular toxic chemical to underground injection on-site or releases to land on-site from Biennial Reports alone.

Discharges to a POTW

Section 313 of EPCRA gives EPA the authority to require that facilities report information on annual discharges to POTWs (Public Owned Treatment Works), including the name and location of the POTW. Although Biennial Reports requires some reporting of discharges to POTWs, and PCS allows for reporting of indirect discharges to water, neither system provides information about POTW discharges at TRI's level of detail and completeness.

The RCRAInfo system, which contains data from the biennial reporting of large quantity generators (LQGs) and treatment, storage and disposal facilities (TSDFs), also requires

6. The "mixture rule" and the "derived-from" rule were struck down by a 1991 D.C. Circuit Court ruling, but at the court's suggestion, EPA has temporarily reenacted the rules on an interim basis while it develops a new rule to consider them.

reporting of some discharges to POTWs. Several limitations associated with Biennial Reports data, however, are described above. In addition, hazardous waste, once mixed with domestic sewage and sent to a POTW for treatment, is no longer considered a hazardous waste and is therefore not reported to RCRAInfo.

Section 1004(27) of the Resource Conservation and Recovery Act (RCRA) provides that once hazardous waste is discharged directly or indirectly to surface waters, the waste is not subject to Biennial Reports requirements. Hazardous waste must be reported only if it receives on-site treatment or is stored in a RCRA permitted unit prior to discharge. If it receives treatment or is stored in an exempt unit (e.g., tanks or totally enclosed treatment units), the waste is reported only if the generator qualifies as a large quantity generator, although the exempt waste is not counted when determining whether a facility is a Large Quantity Generator. TRI provides no exemption for discharges to POTWs which receive no prior treatment.

Although the Permit Compliance System (PCS) includes indirect discharge data elements, PCS does not require reporting of indirect discharges (i.e., discharges that pass through a POTW before entering a water body, in contrast to waste discharged directly to a water body). States have the option of including indirect discharge data, although very few require that this data be reported (Rubin, 1995).

Transfers to Other Off-Site Locations

EPCRA section 313 gives EPA the authority to require that facilities reporting to TRI report transfers to off-site locations, including the name, location, and RCRA ID number of the off-site location. The Biennial Reports, which contain hazardous waste data from large quantity generators (LQGs) and treatment, storage and disposal facilities (TSDFs), also requires reporting of off-site transfers on its Form GM. Information requested by RCRAInfo includes the EPA ID of the facility to which the waste was shipped, the processes used to treat, recycle, or dispose of the waste at the off-site facility, the off-site availability code, and the total quantity of waste shipped during the report year (see discussion above of underground injection and land disposal for a more complete description of Biennial Reports). Biennial Reports also provides data on the volume of hazardous waste shipped off-site for land disposal, a release end-point of relevance to TRI.

There are several issues associated with comparing Biennial Reports data to TRI data, which are described above in the section covering on-site releases to land.

Review of State Right-to-Know Programs

Under the TRI program, data are submitted to both the U.S. Environmental Protection Agency and to the state or tribal entity in whose jurisdiction the reporting facility is located. With the advent of the federally mandated TRI reporting requirements and the influx of this new information, states with release and transfer reporting requirements of their own changed their programs to minimize program costs to industry and government. In New Jersey, for example,

where TRI overlapped with state toxics reporting requirements under the New Jersey Right-To-Know (RTK) program, the RTK reporting requirements were removed to minimize reporting overlap. For more information on state-expanded TRI reporting, a detailed discussion is presented in the "Status of State TRI Programs" section of the TRI Public Data Release, State Fact Sheets. (U.S. EPA, 1999g) This section of the Public Data Release contains a survey administered by the National Conference of State Legislatures to all states on their TRI data use and expansion activities.

As of 1994, only Arizona, Massachusetts, Minnesota, and Wisconsin required or were planning to require expanded state TRI reporting to include non-manufacturing facilities (NCSL, 1995). Under the expanded state requirements, non-manufacturing facilities are required to file Form Rs with the state, but are not required to file with the federal EPA. In addition, some states require facilities to report release information beyond that required by the federal TRI program. Overall, however, the additional data collected by states are far less complete and uniform than would be available under an expanded federal TRI program. Descriptions of how state programs differ from federal TRI requirements are given below.

Massachusetts

The Massachusetts Toxics Use Reduction Act of 1989 (TURA) requires companies to report on their toxic chemical use, while TRI requires companies to report their toxic chemical releases. TURA covers facilities in the following SIC codes:

mining (SIC codes 10-14)
manufacturing (SIC codes 20-39),
transportation, communications, utilities (SIC 40, 44-49),
wholesale trade (SIC 50 and 51),
personal services (SIC 72),
business services (SIC 73),
automotive repair, services, and parking (SIC 75),
and miscellaneous repair services (SIC 76).

Initially, TURA covered the same facilities and chemicals as the federal TRI program. As of 1995, TURA requirements expanded to include facilities under the above SIC codes which use chemicals that are listed as hazardous substances under §101(14) and §102 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). (These chemicals are listed at 40 CFR §302.4). Also, substances found on the federal Comprehensive Environmental Response and Compensation Liability Act (CERCLA) list are subject to TURA reporting and planning, except for chemicals that are delisted. There are over 1400 chemicals that are subject to reporting, although only about 250 have been used and reported in Massachusetts. Massachusetts otherwise uses the same employee and manufacture/process/use thresholds and chemical list as the federal TRI program (TURI, 1994). Federal facilities are exempt from TURA reporting.

Facilities covered under TURA must file an annual report called a Form S (similar to Form R) which identifies the listed chemicals used during the year in each production process, the percentage reduction of toxic by-products and toxic emissions compared to a defined base year, and the toxic use reduction techniques used to reduce the wastes. Data from the Form Ss are entered into the state Toxics Use Reduction Inventory. In addition, as of 1995, facilities are required to prepare a detailed toxic use reduction plan every two years (MA DEP, 1993).

Wisconsin

In 1996, Wisconsin required mining operations (SIC codes 10 through 13) to file Form Rs to the state. In addition, public agencies, public and private educational facilities, and public and private research facilities in Wisconsin are subject to federal TRI reporting requirements. Aside from the additional SIC codes, Wisconsin's Right-To-Know reporting requirements are identical to those of the federal TRI program (NCSL, 1995; BNA, 1995; Dunst, 1995)

Conclusion of Availability of TRI-like Data at the State Level

Although some states have built on the foundation of TRI data with additional state reporting requirements, their data do not have major redundancies with the current TRI coverage. The advent of federally mandated TRI reporting has resulted in many states adopting Form R for their state reporting, and provided a strong impetus for states to remove redundancies in their own reporting in order to minimize costs to facilities in their jurisdictions. Information collected by states above and beyond federal reporting requirements may be available in piecemeal fashion.

Chemical Storage and Inventory Data

For each listed toxic chemical, a regulated facility must complete data element 4.1 of Part II of Form R, which asks for the "Maximum Amount of the Toxic Chemical On-Site at Any Time During the Calendar Year." Maximum amounts (in pounds) are reported in ranges that increase by powers of ten. Alternative sources of "maximum amount on site" chemical inventory data include EPCRA section 312 Tier I and II reports.

Sections 311 and 312 of EPCRA require that states establish plans for local chemical emergency preparedness and that inventory information on hazardous chemicals be reported by facilities to state and local authorities. "Hazardous chemicals" are defined under the Occupational Safety and Hazard Administration's (OSHA) requirements -- essentially any chemical that poses physical or health hazards. The relevant regulations are detailed in 40 CFR section 370. Data elements similar to both TRI and Tier I/II reports make EPCRA Tier I/II the best candidate for an alternative source of TRI "maximum amount on site" inventory information.

EPCRA section 312 outlines a "two-tier" approach for annual inventory reporting. All facilities that store hazardous or extremely hazardous substances must submit at least a Tier I

and often a Tier II form as well. Tier I requires reporting on broad categories of physical hazards such as fire, sudden release of pressure, and reactivity, as well as acute and chronic health hazards. Upon request by a Local Emergency Planning Committee (LEPC), State Emergency Response Commission (SERC), or fire department, a facility may be required to submit the more detailed Tier II form (which may be submitted instead of the Tier I form). Tier II requires chemical specific information by CAS number. For example, a Tier I report might state that a facility stores 3,000 pounds of chemicals that pose chronic health hazards, while a Tier II form for the same facility would report 1,000 pounds of toluene and 2,000 pounds of benzene on-site. Approximately 33 states require regulated facilities to submit Tier II forms, and most of the remaining states recommend that facilities submit Tier II forms.

A regulated facility is required to submit this information to each of the following groups: LEPCs, SERCs, and the local fire department with jurisdiction over the facility. A facility must submit an annual report for every chemical which requires an MSDS and which exceeds certain reporting thresholds for the amount of chemical stored on site at any one time. The reporting threshold for chemicals listed under EPCRA section 302 as Extremely Hazardous Substances (EHSs) is the threshold planning quantity (TPQ), or 500 pounds, whichever is lower.[7] For all other chemicals with MSDSs, the threshold is 10,000 pounds. In general terms, the inventories contain information about the maximum quantity stored, the average quantity on-site at any given time, the location of the chemicals at the facility, and the number of days on-site.

Chemical coverage: The chemicals covered under section 312 are all those defined as hazardous or extremely hazardous substances in section 311 (essentially any substance that poses a health or physical hazard). All of these substances, for which facilities must submit MSDSs, are covered under OSHA's Hazard Communication Standard regulations. OSHA's definition of "hazardous chemical" not only includes toxic chemicals but also chemicals that are considered health hazards, irritants, sensitizers, corrosive, fire hazards, explosive, as well as reactive. Consequently, many more chemicals are included under OSHA's rule than under TRI.

Industry/facility coverage: Facilities that are required to submit MSDSs to the state authorities for hazardous chemicals on site also must submit Tier I and/or Tier II forms. While there are no SIC exemptions for facilities that are covered under the reporting threshold requirements, facilities not included under OSHA's Hazard Communication Standard (e.g., mines) do not have to file reports. Because the section 312 thresholds cannot be used to determine whether a facility covered under section 312 also would be covered under section 313 (e.g., whether a facility which stores 10,000 lbs. of a toxic chemical listed under TRI also meets section 313 thresholds), the extent to which facilities potentially subject to TRI reporting would be captured by section 312 is unknown.

7 The Extremely Hazardous Substances and their TPQs are listed in 40 CFR Part 355, Appendices A and B.

Release statistics/reporting frequency: Facilities covered under EPCRA section 312 must submit their Tier I and/or Tier II reports containing data with respect to the preceding calendar year to their respective states annually on or before March 1.

When completing a Tier II form, a covered facility must report the following information:

The chemical name or the common name of the chemical and the CAS registry number (as it appears on the MSDS);

- Indication of whether the hazardous chemical is an extremely hazardous substance;
- Indication of whether the hazardous chemical is present at the facility in its pure state or in a mixture, and whether it is a solid, liquid, or gas;
- The applicable health and physical hazard categories;
- An estimate (in ranges) of the maximum amount of the hazardous chemical present at the facility at any time during the preceding calendar year (e.g., 10,000 to 99,999 pounds);
- An estimate (in ranges) of the average daily amount of the hazardous chemical present at the facility at any time during the preceding calendar year;
- The number of days the hazardous chemical was found on-site at the facility;
- A brief description of the manner of storage of the hazardous chemical at the facility;
- A brief description of the precise location of the hazardous chemical at the facility, and
- An indication of whether the owner or operator of the facility elects to withhold location information on a specific hazardous chemical from disclosure to the public.

Facilities that choose to withhold from the public certain data on hazardous chemicals must nevertheless provide the information to the relevant authorities via the Tier II Confidential Location Information Sheet. The information contained on these sheets is not made available to the public.

Accessibility: The general public may access Tier I and Tier II information on a facility by facility basis by forwarding a written request to either the SERC or the LEPC. Tier II information on facilities which do not meet the reporting threshold requirements also may be obtained from the SERC or the LEPC if a "general need" can be demonstrated on the part of the requester. In these cases, the relevant authorities will request that the relevant facility or facilities fill out Tier II forms.

The information technology resources of the state authorities responsible for maintaining the data vary considerably; many of the states have some type of computerized database, Ideally, this ought to make it easy to access and thus aggregate the data beyond the state level. However, homeland security concerns have led most states to severely restrict public data access.

Conclusion on the Availability of Chemical Storage and Inventory Data

Tier I forms only request information based on possible health and physical hazards, and do not ask for chemical-specific data. The level of detail and the number of chemicals covered in Tier II "maximum amount on site" inventory data surpass the chemical inventory data requested on TRI Form R. Not all states, however, require submission of Tier II forms. Therefore, some of the facilities that are covered under TRI do not have to report as detailed inventory information under EPCRA section 312. There are also significant restrictions with respect to public access of Tier I and Tier II data.

Pollution Prevention Data (P2)

Form R requires that facilities report a variety of information that can be used for pollution prevention analyses, including non-quantitative reporting of pollution prevention activities, production ratios, and chemical-specific amounts of materials treated, recycled, released (one-time, and for the entire year), and shipped off-site in wastes.

EPA Databases with Pollution Prevention Data

Besides TRI, waste prevention and management data are collected at the federal level through RCRA Biennial Reports. RCRA Biennial Reports data are compiled in the RCRAInfo database, as discussed below. The level of chemical specificity and flowthrough estimates for waste prevention and management information in RCRAInfo and TRI are not available in other federal data sources.

Biennial Reports contains pollution prevention information on hazardous waste large quantity generators and treatment, storage, or disposal facilities. Data are collected primarily by states, and are collated by EPA into the RCRAInfo database system. States are not required to use official Biennial Reports forms for the submission of data; EPA transfers data on state forms into the RCRAInfo system as necessary (ICF, 1993).

All large quantity generators must submit the following facility-specific information to RCRAInfo:

- whether any source reduction or recycling activities took place during the reporting year, and

- limiting factors that have affected source reduction and/or recycling activities.

In addition, for each hazardous waste generated, a generator must specify the following pollution-prevention related data:

- RCRA waste code and hazardous waste quantity generated;
- efforts to reduce the volume and toxicity of wastes, and
- reductions in volume and toxicity actually achieved compared with those achieved in previous years.

If a hazardous waste has been minimized as the result of new activities implemented in the reporting year, the generator also must report the following pollution-prevention related information:

- quantity of waste recycled;
- source reduction quantity; and
- waste minimization activity implemented (e.g., waste segregation, inventory control).

RCRA Biennial Reports provides some qualitative and quantitative pollution prevention information, but, at a systems level, do not have the same facility or chemical coverage as TRI. However, RCRA Biennial Reports only includes hazardous wastes (with definitions that are often not chemical specific, as discussed above); pollution prevention data contained in TRI includes information on wastes or process by-products in all production phases and media. In addition, the chemical reporting universe is different between the two systems. The universe of toxic chemicals regulated under TRI differs from the universe of listed hazardous wastes or chemicals with hazardous waste characteristics regulated by RCRA.

Also, the facility universes captured by the two systems are not the same. RCRA Biennial Reports data are only completed by RCRA large quantity generators, while TRI reports are required by facilities in manufacturing industries that exceed employee as well as chemical manufacturing, process, and use thresholds. The Biennial Reports facility universe is also different due to RCRA waste exclusions and exemptions. For example, wastes mixed with domestic sewage that are excluded from Biennial Reports requirements can be an indirect water discharge that may be covered under TRI reporting.

The pollution prevention reporting in Biennial Reports contains information on hazardous waste minimization and recycling efforts. Where this information does overlap with TRI pollution prevention reporting, it does not contain the same level of detail. For example, in some cases Biennial Reports pollution prevention information applies to wastestreams consisting of chemical mixtures, while TRI pollution prevention data are chemical specific. Since Biennial Reports waste codes are more general in nature than CAS numbers, a facility's waste mixture could change from year to year, and yet it might report the same waste code.

Lack of precision in reporting of waste contents also could result in a situation where a facility reduces the aqueous quantity of its wastes, and thus appears to be preventing pollution. However, by changing its waste mixture, the facility might even increase the amount of toxic material entering the wastestream without modifying its report. Since the exact contents of a facility's waste mixture cannot always be determined, it is often difficult to extract chemical-specific data from Biennial Reports.

State Environmental Agency Databases

As required by section 313 (a) of EPCRA, facilities send copies of all TRI reports to both state and federal agencies. Many states currently rely on the pollution prevention data received from TRI for planning and targeting purposes (U.S. EPA, 1993), and do not require additional reporting. However, two states, New Jersey and Massachusetts, have passed laws to collect materials accounting pollution prevention data that exceed that found in section 8 of Form R.

Massachusetts Pollution Prevention Reporting: The Massachusetts Toxics Use Reduction Act (TURA) has required firms to report on toxic use for individual "production units" at their facilities since July of 1991. Facilities submit annual Toxics Use Reports (Form S) to the Massachusetts Department of Environmental Protection (MDEP) as a supplement to the TRI Form R. With the exception of qualitative source reduction pollution prevention reporting requirements and production ratios, TURA pollution prevention reporting requirements are additional to those collected by TRI.

Form S records information on the quantity of the toxic substance used on a facility-wide and production unit basis. Form S is divided into two parts: 1) cover sheet and 2) chemical reports. The cover sheet contains general facility information, a certification statement, and an identification of production units at the facility. Form S chemical reports must be filed on each listed toxic chemical manufactured, processed, or otherwise used at greater than 10,000 pounds per year (ICF, 1993). The form contains the following information on chemical use and pollution prevention: facility-wide and production unit data for each chemical, year-to-year reporting changes, and production unit reports.

New Jersey Pollution Prevention Reporting: New Jersey has collected toxic chemical release and pollution prevention data longer than the TRI program has been in existence. Since 1979, New Jersey has collected toxic chemical release and pollution prevention data through a variety of separate programs and activities, gradually narrowing down the scope of these reporting requirements as TRI was introduced and expanded to include pollution prevention. In fact, the results of an industrial survey, which collected release and throughput data from 15,000 New Jersey facilities, were used to develop the list of SARA Title III chemicals (U.S. EPA, 1995d). For these reasons, New Jersey data, unlike data collected in Massachusetts, still overlaps somewhat with data collected on TRI Form R. New Jersey pollution prevention data also contain detailed throughput information which exceeds that currently contained in TRI. These throughput data require facilities to account for all amounts of the chemical brought or

produced on-site, shipped off-site in products, destroyed on-site through treatment, recycled on-site, and released to the environment or shipped off-site in wastes.

New Jersey's additional reporting requirements apply to all TRI chemicals and all facilities covered by TRI (SIC codes 20-39). Originally, New Jersey required facilities manufacturing, processing, or using an Environmentally Hazardous Substance (EHS) to report toxic chemical release information (U.S. EPA, 1995d). The original EHS list was comparable to the list of chemicals generated by the industrial survey mentioned above, and therefore similar to the original SARA Title III list. The list of chemicals for which New Jersey now collects toxic chemical release and pollution prevention information has been expanded to contain those in the national TRI listing.

Summary of Federal and State P2 Information

Differences exist in chemical and facility coverage, reporting frequency, and the level of data detail. While RCRA Biennial Reports provides some qualitative and quantitative pollution prevention information, it does not have the same facility or chemical coverage as TRI. Biennial Reports only includes hazardous wastes, while TRI pollution prevention data include information on wastes or process by-products in all production phases and media. Because Biennial Reports collects data organized by Biennial Reports waste codes, it also lacks the chemical-specific detail that TRI contains. In addition, the facility and chemical reporting universes are different between the two systems.

As required by section 313 (a) of EPCRA, facilities send copies of all TRI reports to both state and federal agencies. Many states have come to rely on this easily available source of pollution prevention data. As Massachusetts and New Jersey demonstrate, even those states that had taken a proactive role in collecting toxics release and pollution prevention data scaled back their programs with the introduction of mandatory TRI reporting. No state program collects all of the pollution prevention data currently contained in Form R, though some states (e.g., New Jersey and Massachusetts) augment TRI pollution prevention data with requirements additional to those contained in section 8 of Form R. These data, such as materials accounting data, are used at the state level for a variety of purposes, including benchmarking of facility pollution prevention efforts and the determination of toxic material flows in production processes.

Alternative Sources of Emergency Release Data

TRI Form R requires that facilities report the quantity of TRI listed chemicals released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes. Accidental release data reported to TRI also are potentially reported to the National Response Center (NRC). However, as discussed below, the NRC is a database of initial notifications, made during or immediately after a release occurs. TRI emergency release data are developed after releases have occurred, which may

provide facilities an opportunity to refine the release estimates. In any case, the amounts may differ from those provided to the NRC.

Emergency Response Notification System (ERNS)

The Emergency Response Notification System (ERNS) is a computer database containing information on release notifications of oil and hazardous substances that have occurred throughout the United States and have been reported to the National Response Center (NRC) and or one of the ten EPA Regions. Initial notifications, which comprise most of the information in ERNS, supply preliminary information on a release and are cited as unverified data. Depending on the severity of the release and any response actions taken, the EPA or Coast Guard On-scene Coordinator (OSC) may obtain further information at the site of the release or through discussions with state and local officials. Data have been collected into ERNS since 1987.

ERNS contains many types of information on specific notifications of releases of oil and hazardous substances, including the following: discharger information, date of release, material released, cause of release, damage/injuries/deaths, amount released, source of release, incident location, response actions taken, authorities notified, and environmental medium into which the release occurred.

ERNS serves as a mechanism to document and verify incident-location information as initially reported and is utilized as a direct source of easily accessible data needed for analyzing releases of oil and hazardous substances. ERNS information is used for guidance and regulatory development, Congressional inquiries, response preparedness, compliance and enforcement support, statistical and trend analyses, program planning and management, and responses to requests for information from the public.

ERNS supports the release notification requirements of section 103(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended; section 311(j) of the Clean Water Act; and sections 300.300 and 300.405 of the National Oil and Hazardous Substances Contingency Plan, which begins at 40 CFR Part 300.

ERNS is a database of initial notifications, made during or immediately after a release occurs. Because the data are reported at such an early stage, the exact details of the release are often unknown and are therefore not reported. It is estimated that two-thirds of the 193 data fields in ERNS are not completed for most release notifications. In addition, duplicate reports may appear in the database because of follow up calls that are not identified as such or observers reporting a release that has already been reported. Approximately five percent of ERNS records are estimated to be duplicates. (U.S. EPA, 1995e)

Integrated Management Information System (IMIS)

IMIS is an OSHA database that contains records of workplace inspections conducted by OSHA industrial hygienists. Two general types of inspections are conducted by OSHA: 1) Scheduled or planned inspections which are on-site enforcement inspections to verify compliance with OSHA standards, and 2) Unplanned inspections which are investigations of workplace incidents where there is one fatality or three or more worker hospitalizations (five or more worker hospitalizations were required to trigger an inspection before 1993). Inspection data are entered and stored within IMIS, providing a record of OSHA activities at each workplace that has been inspected.

OSHA is estimated to add more than 120,000 inspection records per year, of which 4,000-5,000 are related to accidents. Accident inspections include a short description of the incident, information regarding each worker that is injured, and any hazardous substances that may be involved. It is estimated that 100 incidents reported each year involve hazardous substances. A four digit hazardous substance code is entered into IMIS rather than a CAS number. The quantity of hazardous material released is not entered. In addition, it can not be assumed that the reported death or injury was a result of an accidental release even in cases where a hazardous substance was involved. For example, if a maintenance person cleans the inside of a storage tank and is asphyxiated by the nitrogen rich environment, the death is not the result of an "accidental release."(U.S. EPA, 1995e)

Summary on Availability of Accidental Release Data

As discussed above, accidental release data reported to ERNS may differ somewhat from the TRI accidental release data. ERNS is a database of initial notifications, made during or immediately after a release occurs.while TRI data are developed after releases occur. There are also differences in the extent to which the data are available to the public.

5(b) Consultations

EPA has consulted with a large number of individuals and organizations throughout all segments of the public in the development and continued implementation of the TRI program. Since the initial development of the program, feedback through EPA's outreach efforts have been received from various organizations, including environmental and public interest groups, trade associations, and individual representatives. This feedback is continually sought and incorporated in the ongoing evolution of the 313 program.

During the initial development of the TRI program, EPA consulted with a large number of individuals and organizations throughout all segments of the public in developing the rule, reporting forms, and instructions. This consultation has continued throughout the operation of the program, and was expanded with the expansion of TRI to include additional industry groups. Among the industry-oriented organizations that are or have been involved with the TRI program are:

American Association of Exporters and Importers
American Chemistry Council
American Chemical Society
American Coke and Coal Chemical Institute
American Gas Association
American Iron and Steel Institute
American Petroleum Institute
American Pharmaceutical
American Public Power Association
American Textile Manufacturers Institute
American Trucking Association
American Warehouse Association
Air Transport Association
American Wood Preservers Institute
Associated Gas Distributors
Association of Metropolitan Sewerage Agencies
Cement Kiln Recycling Coalition
Chemical Manufacturers Association
Chemical Producers and Distributors Association
Chemical Specialties Manufacturers Association
Chem-Tex Solvents Corporation
Chlorine Institute
Domestic Petroleum Council
Dry Color Manufacturers Association
Edison Electric Institute
Electric Power Institute
Environmental Industries Association
Environmental Technology Council
Fertilizer Institute
Hazardous Material Advisory Council
Independent Lubricant Manufacturers Association
Independent Liquid Terminals Association
Independent Petroleum Association of America
International Precious Metals Institute
Interstate Mining Compact Commission
Interstate Oil and Gas Compact Commission
Lead Industries Association
Metal Powder Industries Federation
National Agricultural Chemicals Association
National Air Transport Association
National Association of Chemical Distributors
National Association of Chemical Recyclers
National Association of Manufacturers
National Association of Printing Ink Manufacturers, Inc.
National Electrical Manufacturers Association
National Food Processors Association
National Mining Association

National Rural Electric Cooperative Association
National Screw Machine Products Association
National Solid Waste Management Association
Petroleum Marketers Association of America
Silver and Gold Institute
Small Business Administration
Society for Mining, Metallurgy and Exploration
Solid Waste Association of North America
Steel Service Centers Institute
Synthetic Organic Chemical Manufacturers Association
The Society of the Plastics Industry, Inc.
U.S. Chamber of Commerce

With the addition of federal facilities to TRI in 1993 (Executive Order 12856), other federal agencies such as the Department of Defense and Department of Energy now play an active role in TRI, including as participants in Interagency Workgroups. In addition to the industry-oriented groups, EPA has also worked with public interest groups in the development of the TRI program. Environmental and public interest groups assisted in the development of the Form R, testing of the NLM database, and have provided feedback on a wide range of public access issues. Among the environmental and public interest organizations that have been, or are, involved with TRI are:

AFL-CIO
American Library Association
Environmental Defense Fund
Environmental Law Institute
INFORM
Information Industry Association
Mineral Policy Center
National Wildlife Association
Natural Resources Defense Council
OMB Watch
Sierra Club
U.S. Public Interest Research Group
Working Group on Community Right-to-Know

Discussions with all of the above groups have resulted in changes to the program which have had beneficial effects, including burden reduction.

Over the course of the past decade, EPA has used the regularly-held public meetings of the Forum on State and Tribal Toxics Action (FOSTTA), which represents state environmental agencies, and the National Advisory Council on Environmental Policy and Technology (NACEPT), which includes representatives from industry, environmental organizations, states, and academia, as public venues to consult on TRI and related issues. Major issues discussed through these groups include the expansion of TRI to include both additional chemicals and facilities; implementation of PPA requirements; redesign of the Form R; and development of

the Alternate Reporting Threshold Modification. EPA officials routinely meet with representatives from industries, states, local governments, environmental organizations, and community groups on specific issues related to TRI, as the need for consultation arises.

EPA also makes a concerted effort to receive input from small businesses. Many trade associations and other industry organizations with which EPA has held discussions include small businesses as members or participants. These groups have represented the interests of some small businesses to EPA, and have helped to inform businesses about TRI. In addition, EPA has addressed forums such as the Small Business Roundtable regarding its initiatives, and has briefed officials of the Small Business Administration as well as EPA's Small Business Omsbudsman and Regional Small Business Liaisons.

EPA has conducted a series of Stakeholder meetings over time, with the most recent being in October of 2004 to address issues concerning reporting requirements and possible changes to the Form R. Specific issues discussed at these meetings included ways of improving the TRI program, ways of reducing the burden of TRI reporting, and possible improvements to the TRI reporting form. These meetings have resulted in a series of separate rulemakings to address burden that are currently under development.

5(c) Effects of Less Frequent Collection

Section 313 requires annual reporting. Section 313(i) permits EPA to modify the reporting frequency by rulemaking; however, EPA must first notify Congress and then delay the initiation of such a rulemaking for at least 12 months, but no more than 24 months, from the date of the notification. In addition, EPA must find:

(A) ...that the modification is consistent with the provisions of subsection (h) of [section 313] based on -

(i) experience from previously submitted toxic chemical release forms,
(ii) determinations made under paragraph (3).]

Paragraph (3), in turn, provides that EPA must determine

(A) The extent to which information relating to the proposed modification provided on the toxic chemical release forms has been used by the Administrator or other agencies of the federal government, states, local governments, health professionals and the public.

(B) The extent to which information is (i) readily available to potential users from other sources, such as state reporting programs, and (ii) provided to the Administrator under another federal law or through a state program.

(C) The extent to which the modification would impose additional and unreasonable burdens on facilities subject to the reporting requirements under this section.

In September 2005, EPA notified Congress of its intent to initiate a rulemaking to modify the frequency of reporting. As required by EPCRA section 313, EPA will carefully consider each of the determinations described in the statute when deciding how to proceed.

5(d) General Guidelines

This ICR adheres to the guidelines stated in the 1980 Paperwork Reduction Act, as amended, OMB's implementing regulations, and all applicable OMB guidance.

Although reporting facilities are required to identify the chemical for which reports are submitted, they can claim the chemical identity as a trade secret. A generic name must be provided as part of the information made available to the public. EPA securely stores and maintains the true identity of the chemical. This is further discussed in 5(e)(i).

EPA is actively encouraging the use of automated techniques, most notably PC-based report generating programs produced both by the Agency and by the private sector and other submissions on magnetic media. EPA recognizes that not all reporting facilities are able to or

are interested in investing the time and funds necessary to employ such automated techniques. The final decision on how to report is ultimately the reporting facility's.

Small facilities (less than 10 full-time employees or equivalent) are exempt from reporting under section 313. An optional range reporting provision and an alternate threshold have been promulgated that afford burden reduction to all facilities but are particularly beneficial to smaller facilities with small releases and wastes.

5(e) Confidentiality and Sensitive Questions

(i) Confidentiality

Respondents may designate the specific chemical identity of a substance as a trade secret. Procedures for submission and review of trade secret claims under section 313 are set forth in 40 CFR 350. This rule implements the general trade secret provisions of EPCRA. When a respondent claims the chemical identity to be a trade secret, EPA, upon substantiation of the claim, will not disclose the identity of the chemical to the public. EPA securely stores forms with trade secret information and allows access to those documents only to persons with Trade Secret clearance. Data made available to the public through any means does not include trade secret information.

(ii) Sensitive Questions

This collection does not request any sensitive information.

6 ESTIMATING THE BURDEN AND COST OF THE COLLECTION

6(a) Estimating Respondent Burden

This section presents the burden of this information collection activity to respondents in terms of the time required for facility personnel to perform the activities outlined in section 3 of this document. These burden estimates are based on previous ICRs and economic analyses, respondent experience as reflected in comments to EPA and other parties, best professional judgment and information acquired through site visits and telephone interviews.

The burden to respondents is estimated for Form R requirements (including compliance determination and supplier notification) and petitions. Burden estimates are developed for the compliance activities and then multiplied by the number of facilities or reports (as appropriate) to estimate the total burden to respondents. The burden estimates used by EPA are national average values. As with any average, some facilities will be above the average, and others will be below it. Large, complex facilities may require more than the average time to comply.

However, there are many other facilities subject to the rule that are not large or complex. Therefore, EPA believes that its burden estimates represent reasonable national averages.

Form R Requirements

The tasks associated with TRI reporting during the period of this ICR include the following:

• **Compliance Determination:** Facility staff must determine whether they meet the criteria for Section 313 reporting. This task includes the time required to become familiar with the definitions, exemptions, and threshold requirements under the TRI program, to review the list of TRI chemicals, and to conduct preliminary threshold determinations to determine if the facility is required to report.

• **Rule Familiarization:** Facility staff that are reporting under section 313 for the first time must read the reporting package and become familiar with the reporting requirements. This includes the time needed to review instructions, and the time needed to train personnel to be able to respond to a collection of information.

• **Calculations and Report Completion:** Facility staff must gather data and perform calculations to provide the information required on the form. This task includes the time required to search data sources and the time to complete and review the information.

• **Recordkeeping and Submission:** Facility staff must maintain recordkeeping systems and mail the report to EPA and the state in which the facility the facility is located. This task includes the time required to transmit or otherwise disclose the information.

• **Supplier Notification:** Certain suppliers of mixtures or trade name products containing reportable substances must annually notify their customers of the product's composition, if the customer is subject to section 313 reporting. This task includes the time required to inform customers, either by letter or through the materials safety data sheet (MSDS) for the product.

This ICR reflects one change from the last TRI Form R ICR. Due to the TRI Reporting Forms Modification Rule, both first and subsequent form completion time is slightly reduced. Previously, EPA estimated that form completion would require 69 hours in the first year for PBT and Non-PBT chemicals. In subsequent years, form completion would require 47.1 hours for PBT chemicals and 25.2 hours for Non-PBT chemicals. Currently, EPA estimates that form completion will require 66.8 hours for PBT chemicals and 67.6 hours for Non-PBT chemicals in the first year and 46.3 hours for PBT chemicals and 24.6 hours for Non-PBT chemicals in subsequent years.

The remainder of this section discusses the unit burden hour estimates for each specific industry activity. Activities are organized into two categories: those performed at the facility level and those that must be performed for each Form R submitted. The estimated hours required to complete each activity are summarized in Table 1 by labor category. Table 2

presents the annual estimated burden hours according to type of facility for facilities that submit 3 Form Rs each.[9] This represents the burden on a "typical" facility, although many facilities file fewer Form Rs and some file more. The total annual burden to all facilities is discussed in section 6(d). Note that the total annual burden estimate is based on unit reporting burdens multiplied by the total number of facilities or forms (as appropriate); it is not based on the "typical" facility burdens shown in
Table 2.

Table 1
Average Annual Burden Hour Estimate by Activity

Category	Activity	Management	Technical	Clerical	Total Hours
Facility Level	Compliance Determination - all facilities	1	3	0	4
	Rule Familiarization - first-time filers	12	22.5	0	34.5
	Supplier Notification	0	7	17	24
Per Form R	Calculations and Report Completion - first-time filers - PBTs	20.3	43.9	2.7	66.8
	Calculations and Report Completion - first-time filers - Non-PBTs	20.5	44.4	2.8	67.6
	Calculations and Report Completion - subsequent year filers - PBTs	14.1	30.4	1.9	46.3
	Calculations and Report Completion - subsequent year filers - Non-PBTs	7.5	16.1	1.0	24.6
	Recordkeeping/Submission -all filers	0	4	1	5

9. Approximately 70 percent of affected facilities file 3 or fewer Form Rs in reporting year 2002. The most common number of reports filed is 1.

Table 2
Average Annual Burden Hour Estimate per Facility in Each Subsequent Year

Type of Facility	Average Annual Hours Burden			
	Management	**Technical**	**Clerical**	**Total Hours**
Compliance Determination Only	1	3	0	4
Compliance Determination and 3 PBT Form Rs	43.3	106.1	8.6	157.9
Compliance Determination and 3 Non-PBT Form Rs	23.6	63.2	6.1	92.9
Compliance Determination, 3 PBT Form Rs, and Supplier Notification	43.3	113.1	25.6	181.9
Compliance Determination, 3 Non-PBT Form Rs, and Supplier Notification	23.6	70.2	23.1	116.9

Activities Performed at the Facility Level

Compliance Determination - A facility must report under section 313 if it: (1) is within an SIC code or industry group covered by the TRI program; (2) has ten or more full-time equivalent (FTE) employees; and (3) manufactures, processes or otherwise uses any of the listed chemicals above the threshold quantities. All facilities must determine if they meet these criteria. Most facilities incur little burden to make determinations regarding the first two criteria. Many facilities require time for the management and technical staff to determine the types of chemicals used at the facility and whether these chemicals are manufactured, processed, or otherwise used above threshold levels, in order to make the determination under the third criterion.

To make the determination, a facility will typically review whether it manufactures, processes, or otherwise uses any of the chemicals in any quantity, and then determine whether it exceeds a threshold quantity. In many cases, particularly at facilities that do not manufacture, process or otherwise use any listed chemicals, this first activity should be completed within a relatively short period of time. The second activity may involve a more detailed set of calculations.

The average burden for compliance determination is estimated to be 4 hours per facility per year. This average reflects the time requirements of facilities that do not have listed chemicals on-site, have very large or small quantities of listed chemicals (*i.e.*, are significantly above or below the thresholds and thus do not require a significant amount of time to make the determination), or have not had significant changes from the prior year, as well as facilities that have more complex and time-consuming compliance determination requirements.

Rule Familiarization - If a facility will be reporting under the section 313 requirements for the first time, facility staff must review and comprehend the reporting requirements. At a minimum, this effort will involve reading the instructions to the Toxic Release Inventory Reporting Form R, however, it may also involve consulting EPA guidance documents, attending a training course, and/or calling the EPCRA technical hotline. The cost associated with rule familiarization occurs only in the first year that a facility becomes subject to reporting. In subsequent years, staff are assumed to be familiar with the requirements that apply to their facility. Thus, the facility would no longer bear this cost. Similarly, facilities that already report on one or more existing TRI chemicals will not incur a rule familiarization cost.

It is estimated that facilities reporting under section 313 for the first time will need to make a one-time expenditure of 34.5 hours for rule familiarization. This burden estimate is comprised of 12 hours of management time and 22.5 hours of technical time.

Supplier Notification - Certain suppliers of mixtures or trade name products containing reportable substances must annually notify their customers of the product's composition if the customer is subject to section 313 reporting or sells the product to another company that is subject to reporting. Facilities may be subject to the supplier notification requirements even if they are not covered by the section 313 reporting requirements. For example, a facility with less than ten full-time employees or that does not meet reporting thresholds may still be required to notify certain customers. Supplier notification is required so that customers can make threshold determinations and complete reports for their own facilities. The notification can be provided by a letter identifying the chemical by name and CAS number and indicating its percentage by weight in the formulation. It can also be provided on the materials safety data sheet (MSDS) for the product. On average, approximately 24 hours per facility are estimated for compliance with this requirement.

Activities Specific to Completing the Form R

Calculations and Report Completion - Facilities that determine they must report under section 313 will incur additional burden to retrieve, process, review, and transcribe information to complete each report. Most of the time required for form completion is to calculate releases, transfers, and other waste management practices; relatively little time is required to copy information to the form. The facility must complete one Form R for each listed chemical it is reporting to TRI.

The burden is estimated to average 46.3 hours per PBT Form R and 24.6 hours per Non-PBT Form R for on-going, annual reporting. This estimate is based on the most recent estimate of reporting burden negotiated by EPA and OMB.[10] It has also been adjusted downward to reflect burden savings associated with the recently promulgated TRI Reporting Forms Modification

10 USEPA/OEI, *Terms of Clearance for TRI ICR Renewal*, January 20, 2004. Memo from Cody Rice OPPT/EETD/EPAB to Amy Newman OEI/OIAA/EAD/ASB.

Rule. To complete the Form R, facilities will need to verify and update data, review previous calculations, and modify the information reported on the previous year's Form R. For a facility completing 3 forms in subsequent years, this results in an average estimated burden of 138.9 hours per PBT Form R and 73.8 hours per Non-PBT Form R. The estimate for first year calculations and report completion is 66.8 hours per Form R for a PBT chemical and 67.6 hours per Form R for a Non-PBT chemical.

Recordkeeping and Submission - After a facility has completed the form, it incurs additional burden for recordkeeping and submission associated with filing a Form R report. Recordkeeping allows a facility to use the information in making calculations in subsequent years and as documentation in the event it receives a compliance audit. Facilities must maintain records used to provide the information required on the Form R; those records may include estimation methodology and calculations, engineering reports, inventory, incident and operating logs, and other supporting materials. Recordkeeping and submission are estimated to take an average of 5 hours per Form R, which works out to 15 hours for a facility filing 3 Form Rs.

Average Burden per Respondent

The estimated burden per respondent depends on the type of respondent and the number of reports submitted. For example, the burden for facilities that only perform compliance determination is estimated to average 4 hours per facility. For facilities required to file 3 Form Rs, but not required to comply with supplier notification, the burden is estimated to be 157.9 hours if all 3 reports are for PBT chemicals and 92.9 hours if all 3 reports are for Non-PBT chemicals. For facilities submitting 3 Form Rs that are also required to comply with supplier notification, the average burden is estimated at 181.9 and 116.9 hours per facility for PBT chemicals and Non-PBT chemicals, respectively.

Petitions

The activities required to prepare and file a petition are listed below. Included is a discussion of the burden associated with each activity. The time needed to complete these activities is presented in Table 3. The total annual burden for all petitions is estimated in section 6(d).

Table 3
Average Burden Hour Estimate per Petition

Activity	Average Annual Hours Burden			Total Hours Burden
	Management	Technical	Clerical	
1. Read EPA Policy and Guidance	4	0	0	4
2. Plan Activities	2	1	0	3
3. Prepare Literature Search	2	7	0	9
4. Conduct Literature Search	0	48	0	48
5. Process, Review, and Focus Information	12	74	0	86
6. Write Petition	4	8	6	18
7. Review and Edit petition	4	8	2	14
8. Submit to EPA and File	0	0	3	3
Total Hours per Petition	28	146	11	**185**

These estimates assume prior knowledge by the respondent of the issues prompting the listing of specific chemicals. An additional assumption was made that the petitioners had no in-house library facilities and, consequently, that they would have to use a university library or similar facility. Based upon the experience of the previous reporting years, fewer than 5 petitions per year are expected. Following are specific descriptions of the activities associated with preparing and filing a petition for chemical listing or de-listing.

Read EPA guidance document and consult with EPA. The reading and interpretation of EPA policy and guidance notice is conducted by management and involves four hours per petition.

Plan activities. The planning activities are conducted jointly by management and technical personnel. Three hours per petition are required to complete these activities.

Prepare literature search. This activity would be conducted by both management and technical personnel, involving about nine hours.

Conduct literature search. The technical staff member conducts this activity, which requires about 48 hours per petition.

Process, review, and focus information. This activity would be completed by both technical and management personnel, involving a total of 86 hours per petition.

Write petition. This activity would be completed by a combination of technical, management, and clerical personnel. About 18 hours are required per petition to complete the writing.

Review and edit petition. A combination of management, technical, and clerical personnel would be involved in this activity, requiring a total of 14 hours per petition.

Submit petition to EPA and file. These activities would be done by the clerical personnel, requiring approximately three hours per petition.

Total respondent burden. The total burden of submitting a petition is estimated to average 185 hours.

6(b) Estimating Respondent Costs

The cost to respondents is based on the time needed to complete the tasks listed in section 6(a) and the hourly cost of labor at appropriate levels (loaded labor rates). There are no specific capital costs associated directly with this information collection activity. There may be some small additional costs for mailing and supplies. Total annual costs for all facilities are discussed in section 6(d).

Form R Requirements

To determine the per-facility costs for typical respondents, the unit burden hour estimates for compliance activities are multiplied by fully loaded hourly rates for the appropriate categories of labor conducting these activities.[11] Loaded hourly rates are the product of wages, benefits, and overhead. Hourly wage rates are divided into three categories: managerial, technical, and clerical. Average wage and salary data for these categories are obtained from the Employer Costs for Employee Compensation (ECEC) report from the Bureau of Labor Statistics (BLS) for all goods-producing, private industries. The additional cost of benefits, such as paid leave and insurance, is also derived from information provided in the ECEC report. Loading factors for benefits are calculated separately for managerial, technical, and clerical labor by dividing the benefits percentage of total compensation by the wage percentage of total compensation. Based on information provided by the chemical industry and chemical industry trade associations, an additional loading factor of 17 percent is applied for general overhead. This loading factor is added to the benefits loading factor, then applied to the base wage. The new wage rates are calculated using current data on salaries and benefits for these three labor categories. The fully loaded 2004 hourly wage rates are shown in Table 4.

11 USEPA/OEI, *Wage Rates for Economic Analyses of the Toxics Release Inventory Program*, June 10, 2002. The wage rates used in this supporting statement have been updated to 2004 dollars.

Table 4
Loaded Hourly Wage Rates by Labor Category
2004

Labor Category	Average Hourly Wage	Benefit (% wages)	Overhead (% wages)	Loaded Hourly Rate
Managerial	$33.61	40.85%	17%	$53.05
Technical	$28.52	40.06%	17%	$44.79
Clerical	$14.70	43.68%	17%	$23.62

Average costs are summarized by activity in Table 5 and per facility in Table 6. The average cost per facility for those completing only compliance determination is $187. Based on the burden hour estimates in Table 1 and the loaded hourly rates in Table 4, the average subsequent year cost for a facility performing compliance determination and submitting 3 PBT forms is $7,251. The average subsequent year cost for a facility submitting 3 Non-PBT forms is $4,229. For facilities that must also comply with supplier notification, the average subsequent year cost increases to $7,966 for PBT reports and $4,944 for Non-PBT reports.

Table 5
Average Annual Cost Estimate by Activity

Category	Activity	Management	Technical	Clerical	Total Cost
Facility Level	Compliance Determination - all facilities	$53	$134	$0	$187
	Rule Familiarization - first-time filers	$637	$1,008	$0	$1,644
	Supplier Notification	$0	$314	$402	$715
Per Form R	Calculations and Report Completion - first-time filers - PBTs	$1,076	$1,965	$63	$3,104
	Calculations and Report Completion - first-time filers- Non-PBTs	$1,088	$1,986	$66	$3,140
	Calculations and Report Completion - subsequent year filers - PBTs	$748	$1,360	$44	$2,152
	Calculations and Report Completion - subsequent year filers - Non-PBTs	$400	$720	$24	$1,144
	Recordkeeping/Submission - all filers	$0	$179	$24	$203

Table 6
Average Annual Cost Estimate per Facility in Each Subsequent Year

Type of Facility	Management	Technical	Clerical	Total Cost
Compliance Determination Only	$53	$134	$0	$187
Compliance Determination and 3 Form Rs - PBTs	$2,297	$4,752	$202	$7,251
Compliance Determination and 3 Form Rs - Non-PBTs	$1,254	$2,832	$143	$4,229
Compliance Determination, 3 Form Rs and Supplier Notification - PBTs	$2,297	$5,066	$604	$7,966
Compliance Determination, 3 Form Rs and Supplier Notification - Non-PBTs	$1,254	$3,145	$545	$4,944

Petitions

The primary cost to respondents for developing and submitting petitions under section 313(e) will be the labor costs associated with the activities outlined in section 6(a) of this document. These costs are the product of the labor hours expended to prepare the average petition, the wage rates for the employees involved in preparing the petitions, and the average number of petitions submitted annually. Based on the burden hour estimates in Table 3 and the loaded hourly rates in Table 4, the cost estimate for the preparation of a petition is presented in Table 7.

Table 7
Average Cost per Petition

Activity	Management	Technical	Clerical	Total Cost
1. Read EPA Policy and Guidance	$212	$0	$0	$212
2. Plan Activities	$106	$45	$0	$151
3. Prepare Literature Search	$106	$314	$0	$420
4. Conduct Literature Search	$0	$2,150	$0	$2,150
5. Process, Review, and Focus Information	$637	$3,314	$0	$3,951
6. Write Petition	$212	$358	$142	$712
7. Review and Edit petition	$212	$358	$47	$618
8. Submit to EPA and File	$0	$0	$71	$71
Total Cost per Petition	$1,485	$6,539	$260	**$8,285**

Based upon prior years of implementation of EPCRA section 313, it is assumed that fewer than 5 petitions will continue to be submitted annually (in recent years, only 1 or 2 petitions have been submitted each year). The total average unit cost to prepare a petition is estimated to be $8,285.

6(c) Estimating Agency Burden and Cost

This section estimates the burden and costs to EPA to process Form R reports based on information characterizing the resources used in previous years. Burden and costs are incurred by EPA for five categories of activities: data processing, outreach and training, information dissemination, policy and petitions, and compliance and enforcement. These activities are described in detail in Table 8.

Table 8
EPA Activities for Form R

Category	Description
Data Processing	Data entry – entering the information into the database, microfilming or microfiching the reports, and filing all reports; Data quality – reviewing reports for completeness, errors, and inconsistencies; making inquiries to resolve discrepancies; and reentering corrected data; Magnetic media support – distributing computer program for electronic submissions; creation and updating of intelligent reporting software; Programming and operating the EPA mainframe and local area network; Data analysis – developing tools to use TRI data, analyzing data to support EPA needs, and preparing data for use by others; and EPCRA Reporting Center fixed costs – rent and form storage.
Outreach and Training	Providing EPCRA technical hotline, technical guidance, industry outreach, and regional, state, and public training; and Responding to requests for information through TRI User Support.
Information Dissemination	Public data release, Internet, data access tools.
Policy and Petitions	Analysis to support petitions, list revisions, trade secret claims, and rulemakings.
Compliance and Enforcement	Technical assistance, compliance outreach, facility inspections, issuance of cases and creation of Supplemental Environmental Projects (SEPs).

To estimate EPA burden and cost, EPA employees (as measured by full time equivalents, or FTEs) and extramural costs are separated into a fixed component and a variable component. Activities and expenses that are not greatly affected by marginal changes in numbers of reports are treated as fixed. These include rent for the EPCRA reporting center, development costs for data access tools, compliance assistance measures, and other activities and expenses. The variable component is the amount that varies depending on the number of forms. The variable component reflects total extramural data processing costs divided by the total number of reports processed in the 2003 reporting year. $0.8 million in fixed costs and 26.3 FTEs are required to conduct the EPA activities described above plus an additional $35 in variable costs for each form processed.

As discussed in the following section, approximately 82,000 Form R reports are expected to be filed per year. Thus, the total annual burden to EPA is estimated to be $2.88 million in variable costs, along with the $0.8 million in fixed costs and 26.3 FTEs (or 55,000 hours at $3.2 million in loaded labor costs). The analysis assumes that half of the fixed FTE requirement is met by EPA employees at the general pay scale grade GS-12, step 5 (at a loaded salary of $99,776) and half by employees at grade GS-13, step 5 (at a loaded salary of $118,651), using a loading factor of 1.4 that includes wages and benefits but not overhead which is included in the fixed costs portion of the Agency burden estimate.

6(d) Bottom Line Burden Hours and Costs

Estimated Total Annual Burden for All Respondents

This section presents the total annual burden hours for all respondents including both those complying with section 313 and submitting petitions. The total burden hours for all respondents to comply with section 313 is estimated by multiplying the unit burden estimate for each compliance activity by the relevant units: facilities or reports. It is estimated that 201,785 facilities must determine compliance each year, of which approximately 22,000 facilities are expected to also perform the report completion and recordkeeping activities for 82,000 Form Rs.[12]

As a result, 179,785 facilities are estimated to complete only the compliance determination procedure. An additional 22,000 facilities are expected to complete compliance determination, form completion and recordkeeping, and of these, 3,734 facilities are expected to also conduct supplier notification. Of the 22,000 facilities that file Form Rs, it is expected that 1,031 facilities will be reporting to TRI for the first-time as they exceed applicable thresholds, and

12 The Bureau of Census's *County Business Patterns - 1997* indicates that there are 191,745 facilities with 10 or more employees in SIC codes 20 to 39. There are an additional 10,040 facilities in the seven non-manufacturing industries that are estimated to perform compliance determination, for a total of 201,785 facilities performing compliance determination. For the 2002 reporting year, 21,941 facilities submitted 81,429 Form Rs. The number of facilities and forms has been rounded up to the nearest thousand for this ICR.

that these facilities will file 1,629 of the Form Rs.[13] Table 9 presents the total annual burden hours based on these estimates.

Table 9
Total Annual Burden Hour Estimate For Form R

Activity	Hours	Number of Facilities	Number of Reports	Total Burden
Compliance Determination - all facilities subject to EPCRA 313	4	201,785	N/A	807,140
Rule Familiarization - first-time filers only	34.5	1,031	N/A	35,570
Form R Completion - reports from first-time filers - PBTs	66.8	N/A	311	20,779
Form R Completion - reports from first-time filers - Non-PBTs	67.6	N/A	1,318	89,144
Form R Completion - reports from subsequent year filers - PBTs	46.3	N/A	15,232	705,477
Form R Completion - reports from subsequent year filers - Non-PBTs	24.6	N/A	64,568	1,590,794
Recordkeeping/Submission - all reports	5	N/A	81,429	407,145
Supplier Notification	24	3,734	N/A	89,616
Total				**3,745,665**

The annual hours burden for all petitions is calculated by multiplying the per-petition burden estimate for each activity by the expected number of petitions per year. A total of 5 petitions are estimated to be filed annually. Table 10 presents the total annual hours burden for all petitions. The total annual hours burden for all petitions submitted is expected to be 925 hours.

13 Between RY1994 and RY2001, there have been three reporting years with no major programmatic changes. Based on reporting for 1996, 1997, and 1999 the average rate of facilities that file using new TRI Facility IDs is 4.7%. These facilities filed an average of 2% of the Form Rs. For the purposes of this ICR, these facilities represent "first-time filers."

Table 10
Total Annual Burden Hour Estimate For All Petitions (5 petitions per year)

Activity	Annual Hours Burden			
	Management	**Technical**	**Clerical**	**Total Hours**
1. Read EPA Policy and Guidance	20	0	0	20
2. Plan Activities	10	5	0	15
3. Prepare Literature Search	10	35	0	45
4. Conduct Literature Search	0	240	0	240
5. Process, Review, and Focus Information	60	370	0	430
6. Write Petition	20	40	30	90
7. Review and Edit petition	20	40	10	70
8. Submit to EPA and File	0	0	15	15
Total Annual Hours Burden	**140**	**730**	**55**	**925**

Estimated Total Annual Cost for All Respondents

The total annual reporting cost for all respondent facilities is determined by multiplying the unit cost estimates by the relevant units (facilities or reports) for each compliance activity. Table 11 presents the annual reporting cost for Form R.

Table 11
Total Annual Cost Estimate For Form R
(2004 dollars)

Activity	Cost	Number of Facilities	Number of Reports	Total Cost
Compliance Determination - all facilities subject to EPCRA 313	$187.42	201,785	N/A	$37,818,545
Rule Familiarization - first-time filers	$1,644.38	1,031	N/A	$1,695,351
Form R Completion - reports from first-time filers - PBTs	$3,103.82	N/A	311	$965,102
Form R Completion - reports from first-time filers - Non-PBTs	$3,139.76	N/A	1,318	$4,138,389
Form R Completion - reports from subsequent year filers - PBTs	$2,151.72	N/A	15,232	$32,775,139
Form R Completion - reports from subsequent year filers - Non-PBTs	$1,144.29	N/A	64,568	$73,884,580
Recordkeeping/Submission - all reports	$202.78	N/A	81,429	$16,512,173
Supplier Notification	$715.07	3,734	N/A	$2,670,071
Annual Total				**$170,459,349**

The annual cost for all petitions is calculated by multiplying the per-petition cost for each activity by the expected number of petitions per year. A total of 5 petitions are assumed to be filed annually. The total annual cost for all petitions submitted is shown in Table 12.

Table 12
Total Annual Cost Estimate for All Petitions
(2004 dollars)

Activity	Management	Technical	Clerical	Total Cost
1. Read EPA Policy and Guidance	$1,061	$0	$0	$1,061
2. Plan Activities	$531	$224	$0	$754
3. Prepare Literature Search	$531	$1,568	$0	$2,098
4. Conduct Literature Search	$0	$10,750	$0	$10,750
5. Process, Review, and Focus Information	$3,183	$16,572	$0	$19,755
6. Write Petition	$1,061	$1,792	$709	$3,561
7. Review and Edit petition	$1,061	$1,792	$236	$3,089
8. Submit to EPA and File	$0	$0	$354	$354
Total Cost per Petition	**$7,427**	**$32,697**	**$1,299**	**$41,423**

The previous tables have detailed the total burden and cost for complying with section 313 and for submitting a petition independently. Table 13 presents the total burden and cost for both activities.

Table 13
Total Annual Respondent Burden and Cost

Activity	Annual Burden Hours	Annual Costs (millions of 2004 dollars)
Form Rs	3,745,665	$170.46
Petitions	925	$0.04
Total	**3,746,590**	**$170.50**

6(e) Reasons for Change in Burden

As a result of OMB's October, 2003 approval of the last ICR renewal, OMB's inventory reflects 84,000 responses and 3,888,752 hours for this information collection. This ICR supporting statement is for 82,000 responses and 3,746,590 hours. The reduction in the estimate of total burden of approximately 142 thousand hours is due to 1) the fact that approximately 2,000 fewer forms were filed in RY2002 than in RY2001 and 2) Form R has been modified to eliminate certain data elements and to simplify others. Table 14 summarizes the major program changes and adjustments that have been made over the last several years.

TABLE 14
Recent Changes in TRI Form R Burden

Activity - Explanation	**TRI Form R ICR (EPA # 1363, OMB #2070-0093)**			
	Change		Total	
	# Responses	Burden Hours	Total Responses	Total Burden Hours
1997 Baseline	—	—	90,362	5,538,727
1997 Program Change - Industry Expansion: This rule added 7 new industries to the list of industries subject to TRI reporting beginning in RY98.	39,033	2,467,463	129,395	8,006,190
1999 Adjustment - Form R Correction Worksheet: This adjustment revised the number of responses to be more consistent with actual reporting levels. However, it did not correct for overestimation of expected reporting from the Industry Expansion rule.	(13,226)	(665,666)	116,169	7,340,524
1999 Program Change - PBT Rule: This rule lowered reporting thresholds for certain PBT chemicals, and added other PBT chemicals at lower thresholds beginning in RY00.	19,990	1,485,411	136,159	8,825,935
2000 Program Change - Lead Rule: This rule lowered reporting thresholds for lead and lead compounds beginning in RY01.	9,813	786,169	145,972	9,612,104
January 2003 Form R ICR Renewal: This request incorporated accounting adjustments to reflect actual number of responses.	(57,855)	(4,045,540)	88,117	5,566,564
October 2003 Form R ICR Renewal: This request reflects actual number of responses and accounts for a lower subsequent year reporting burden for non-PBT chemicals.	(4,117)	(1,677,812)	84,000	3,888,752
May 2005 Form R ICR Renewal: This request reflects actual number of responses.	(2,000)	(91,413)	82,000	3,797,339
2005 Program Change - TRI Reporting Forms Modification Rule: This rule eliminates certain data elements and simplifies others beginning in RY2005.	—	(50,749)	82,000	3,746,590

CURRENT TOTALS	**—**	**—**	**82,000**	**3,746,590**

6(f) Burden Statement (To appear on Collection Instrument)

The annual public burden related to the Form R for form completion and recordkeeping, which is approved under OMB Control No. 2070-0093, is estimated to average 51.3 hours per response for PBT chemicals and 29.6 for Non PBT chemicals. There is additional burden associated with rule familiarization, compliance determination and supplier notification as described in Table 9.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR Part 9 and 48 CFR Chapter 15.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this ICR under Docket ID No. EPA-HQ-OEI-2004-0006, which is available for public viewing at the Office of Environmental Information Docket in the EPA Docket Center (EPA/DC), EPA West Building, Room B102, 1301 Constitution Ave., NW, Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Office of Environmental Information Docket is (202) 566-1752. An electronic version of the public docket is available through the Internet at http://www.regulations.gov. Use the Regulations.gov Web site to submit or view public comments, access the index listing of the contents of the public docket, and to access those documents in the public docket that are available electronically. You may also submit comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503, Attention: Desk Office for EPA. Please include the EPA Docket ID No. EPA-HQ-OEI-2004-0006 and OMB control number 2070-0093 in any correspondence.

The completed forms should be submitted in accordance with the instructions accompanying the form, or as specified in the corresponding regulation.

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