

Chapter 1

Toxics Release Inventory Reporting and the 1996 Public Data Release

Introduction

With the release of this report, we bring to a close the first decade of TRI reporting and informed public involvement in the environmental decisions made by governments and industry. It has been a tremendously successful and challenging 10 years and the results speak loudly for themselves. Industries have reduced their on- and off-site

releases of TRI chemicals by almost 50% or 1.5 billion pounds. Governments—federal, state, and local—have used the TRI to set priorities, measure progress, and target areas of special and immediate concern. The public, perhaps our most important customer, has used the TRI data to understand their local environment, to participate in local and national debates about the choices being made that effect their health and the health of their children and, ultimately, has used the power of information

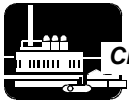
A Roadmap to the 1996 TRI Public Data Release

Chapter 1 articulates the purpose for the report and highlights new approaches to this year's data release. It also provides an overview of TRI reporting, describing who reports, what is reported, and the benefits and limitations of the data. It reviews the three-phase expansion of TRI's coverage of chemicals and industries, and looks at future modifications being considered. Chapter 1 concludes with guidance on obtaining additional TRI information. Note **Revised Presentation of TRI Data** on page 3 of this Introduction.

Chapter 2 presents an overview of the 1996 TRI data. To help put the data in context, it supplies more extensive definitions of releases and other waste management activities, and it offers information TRI users should consider in examining and analyzing TRI data. This chapter summarizes TRI data nationwide and presents more detailed analyses by state and by chemical. It also examines waste management data as a whole. Chapter 3 presents 1996 data in comparison to earlier reporting years.

Chapter 4 gives a comprehensive view of industry data in TRI and introduces the industry-specific chapters that have been added to this year's analyses. Chapters 5-10 examine five priority industrial sectors, plus reporting by federal facilities. See **Expanded Analysis of 1996 Industry Data** on page 3 of this Introduction.

In summer 1998, EPA will publish a completion of the expanded industry analyses, covering the remaining 15 sectors.



to exert their influence on the outcome of these debates.

Since 1987, the first year of TRI reporting, the TRI and the Right-to-Know Program has grown. The number of chemicals has doubled, federal facilities have been added, new sectors come on line with the 1998 reporting year and our progress in providing TRI data to the public is coming close to matching our commitment to an open and transparent environmental decision making process. The Agency applauds those who have worked with us to assure that we met the challenge that EPCRA posed, and we encourage those who continue to push us to assure and maintain the integrity and goals of the Program.

As we move into the next decade, many challenges in the Right-to-Know Program remain to be met. TRI was designed to be a program that would evolve, over time, to meet the changing needs of an informed and involved public. The program will never be static and will never be "finished." As new chemicals of concern are identified, they will be added. Sectors that appear to contribute significantly to environmental loadings will be added. Data collection will be modified to meet new information needs and access technologies will be developed over time to assure enhanced public access.

TRI Background

Following a fatal chemical-release accident in Bhopal, India, the Emergency Planning and Community Right-to-Know Act (EPCRA) provisions were enacted to promote emergency planning, to minimize the effects of an accident such as occurred at Bhopal, and to provide the public with information on releases of toxic chemicals in their communities.

Section 313 of EPCRA established the Toxics Release Inventory (TRI) Program, a national database that identifies facilities, chemicals manufactured and used at the identified facility, and

the annual amounts of these chemicals released (in routine operations and in accidents and other one-time events) and otherwise managed on- and off-site in waste.

In 1990, Congress passed the Pollution Prevention Act (PPA). Among its requirements was a mandate to expand TRI to include additional information on toxic chemicals in waste and on source reduction methods. Beginning in 1991, covered facilities were required to report quantities of TRI chemicals recycled, combusted for energy recovery, and treated on- and off-site. This waste management data has strengthened TRI as a tool for providing information on facilities' handling of TRI chemicals as well as for analyzing progress in reducing releases.

The *1996 Toxics Release Inventory Public Data Release (PDR)* provides an overview of the information collected through TRI. It summarizes data collected for calendar year 1996. For comparison purposes, this report also provides basic data for the two preceding years (1994 and 1995), for the period since the PPA mandated collection of waste management data (1991), and for the baseline year (1988). TRI's on-line computer database and CD-ROM contain data collected for all years, including those not found in this report.

1996 Public Data Release

Balancing TRI's aim to quickly provide information to the public and to offer meaningful analysis of the data collected, EPA will publish the 1996 data in two parts:

Release 1: *1996 State Fact Sheets* book and this *1996 Public Data Release* volume, including chapters on five priority industries (plus federal facilities): paper and allied products (SIC code 26); chemicals and allied products (SIC code 28); petroleum refining and related industries (SIC code 29); primary metal industries (SIC



code 33); and electronic and other electrical equipment and components, except computer equipment (SIC code 36).

Release 2, summer 1998: The additional 15 industry chapters: food and kindred products (SIC code 20); tobacco products (SIC code 21); textile mill products (SIC code 22); apparel and other finished products made from fabrics and similar materials (SIC code 23); lumber and wood products, except furniture (SIC code 24); furniture and fixtures (SIC code 25); printing, publishing, and allied industries (SIC code 27); rubber and miscellaneous plastics products (SIC code 30); leather and leather products (SIC code 31); stone, clay, glass, and concrete products (SIC code 32); fabricated metal products, except machinery and transportation equipment (SIC code 34); industrial and commercial machinery and computer equipment (SIC code 35); transportation equipment (SIC code 37); measuring, analyzing, and controlling instruments; photographic, medical, and optical goods, watches and clocks (SIC code 38); and miscellaneous manufacturing industries (SIC code 39) will be released to the public in the summer of 1998. With these 15, all SIC codes reported in 1996 will have been subject to analysis.

Expanded Analysis of 1996 Industry Data

As evident in this two-part publication schedule, EPA is expanding the industry analysis portions of the TRI data release. Industry-specific chapters in this report examine TRI data for five priority sectors, as designated by two-digit Standard Industrial Classification (SIC) codes. These chapters set the TRI data in a context of economic, regulatory, and technological developments that influence industry-wide releases, transfers, and waste management. In addition, this data release analyzes reporting by industrial activities within each sector at the four-digit SIC code level. A similar chapter reviews reporting by federal facilities.

This industry-by-industry focus permits a more detailed view of the sources of environmental releases of TRI chemicals, a closer perspective on industrial progress in reducing them, and a better understanding of industry practices in generating and managing TRI chemicals in waste. This sector-based approach supports sector-based assessments of future prevention and technology needs, and will, ultimately, enable goal-setting within sectors and across facilities.

Revised Presentation of TRI Data

This public release of TRI data departs from previous practice in presenting information from the TRI database. Previous data release publications have essentially followed TRI's reporting form (Form R) in organizing the data: on-site releases by environmental medium (Section 5 of Form R), off-site transfers by type (Section 6), and waste management by type (Section 8). TRI has collected release data and certain transfer data from its inception. Additional waste management data were added to the inventory in 1991 as a result of the PPA. This history is reflected in the structure of the reporting form and, therefore, in earlier presentations of data.

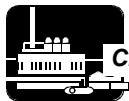
This year, however, the data are organized in keeping with the nature of the information rather than their origins on the reporting form. This results in two general categories: releases and waste management. Specifically, data tables in this year's report present:

◆ On- and off-site releases

- On-site releases (Section 5 of Form R)
- Off-site releases (transfers off-site to disposal, from Section 6)

◆ Other waste management

- On-site waste management, excluding on-site releases (from Section 8)



- Transfers off-site for further waste management (Section 6, except transfers to disposal)
- Total production-related waste (sum of all quantities reported in Section 8, except one-time events such as accidents or remediation activities)

Additions to 1996 TRI Public Data Release

In response to requests for additional information relating to chemicals reported to TRI, the 1996 TRI Public Data Release has been augmented with a number of new sections that will enable the public to gain a better perspective on the TRI data and to begin to assess the impacts of the release of these chemicals into the environment. The new sections include data on chemical releases from some diffuse sources (sources other than those facilities that are required to report under the TRI), as well as information on a number of tools to help assess the impacts of chemical releases on the environment. These tools include information on the availability of toxicity data (the Screening Information Data Set (SIDS)) on high production volume chemicals, EPA's Screening Information System/LAN (SIS/L), and EPA's Act Locally catalogue. Each of these new sections are described in more detail below.

Availability of Screening Information Data Set (SIDS) Testing

The Screening Information Data Sets (SIDS) is an Organisation for Economic Cooperation and Development (OECD) program where data on high production volume (HPV) chemicals are collected and shared. OECD member countries work cooperatively to select chemicals to be investigated; collect information from government and industry files; complete the agreed-upon Screening Information Data Set (SIDS) testing; make an initial assessment of the potential hazards and risks of each chemical; and identify the priority for additional international efforts (e.g., post-SIDS testing or exposure

information gathering). International authorities have agreed that six basic tests are necessary for a minimum understanding of a chemical's toxicity. These tests cover acute toxicity, chronic toxicity, developmental and reproductive toxicity, mutagenicity, ecotoxicity, and environmental fate.

EPA's Office of Pollution Prevention and Toxics (OPPT) is playing an integral role representing the U.S. Government in the SIDS Program. OPPT is committed to making non-confidential chemical information available to the public and promoting information sharing with industry and the scientific community. As part of this project, EPA has conducted a data availability survey to determine what SIDS data is available for high production volume chemicals, including those on the TRI. The results of the survey for the TRI chemicals are presented in Appendix C.

As sponsoring countries complete the SIDS process for HPV chemicals, OPPT is converting the documents into electronic formats under a pilot image processing technology project to augment information sharing and provide greater accessibility to the final version of the SIDS documents. The chemical industry in the U.S. and other OECD member countries fully supports the OECD HPV work and sharing of the results. The SIDS Program will enable industry to avoid duplicative testing in fulfilling requirements of various countries.

Screening Information System/LAN (SIS/L)

The SIS/L (Screening Information System/LAN) will enable the public to track chemicals across major OPPT, EPA and federal government databases, information systems, and document collections that contain information on production and use; release, exposure and monitoring; toxicity and hazard; and risk. Users will be able to search for chemicals by both CAS number and chemical name. Acting as a platform for multiple data sources, SIS/L will provide access to chemical information lists and databases



regardless of their origin. EPA is currently working to make SIS/L available on EPA's public access home page as a valuable information source for EPA, other federal agencies, state and local governments, public interest groups, research organizations, non-governmental organizations, industry, and the public.

More information relating to SIS/L and resources available through SIS/L is found in Appendix C of this publication. (See **Appendix C.**)

Act Locally Catalogue

Act Locally is an online catalogue that describes tools, resources, and programs that assist communities in pollution prevention. This catalogue developed by EPA's Office of Prevention, Pesticides, and Toxic Substances (OPPTS) provides information on the characteristics and effects of pesticides and industrial chemicals, and includes: databases; computer programs for chemical screening; funding resources; access to information hotline; and descriptions of programs and initiatives that may be useful in protecting local environments.

Act Locally describes activities developed by OPPTS that are compatible with the Agency's community-based environmental protection (CBEP) goals and initiatives. In addition, it describes OPPTS products that are useful tools for supporting CBEP activities in large and small communities. These tools can help communities learn about potential chemical risks, and can be used to develop strategies to mitigate those risks and help improve the local environment. *Act Locally* is available online at www.epa.gov/opptintr/cbep/actlocal/index.html and can be reviewed, printed, or downloaded. The online site also has hyperlinks to other OPPTS and related resources. A published version of *Act Locally* is expected by late summer 1998.

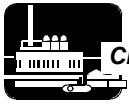
More information relating to *Act Locally* and resources available through *Act Locally* is found in Appendix B of this publication. (See **Appendix B.**)

Diffuse Sources

The 1996 TRI Public Data Release includes a new section on diffuse sources that provides more information on three types of chemical releases not reported to TRI -- fertilizer use, pesticide use, and volatile organic compounds (VOCs). While TRI provides key environmental data, it has certain limitations. Although additional sectors will begin reporting to TRI for the 1998 reporting year, TRI to date has covered only the manufacturing sector and, since 1994, federal facilities. Releases of chemicals from the manufacturing sector represent a significant, but limited, portion of all chemicals released into the environment, that is, they do not account for the releases associated with many of the post-manufacturing uses of chemicals. For example, manufacturers of fertilizers and pesticides must report their releases, transfers, and waste management to TRI, but the subsequent application and release of these chemicals by the agricultural sector are not captured in TRI. Similarly, the release of VOCs from nonindustrial and mobile sources is not captured in TRI. Therefore, EPA has assembled some data on releases from these sources not captured by TRI in order to put the TRI data in better perspective. This information is presented in Chapter 2.

TRI Reporting

The Toxics Release Inventory is a publicly available database that contains information on specific toxic chemical releases and other waste management activities from the manufacturing sector of the U.S. economy and, since 1994, federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA). Following passage of the Pollution Prevention Act of 1990, TRI was expanded to include mandatory reporting of



additional waste management and pollution prevention activities.

The information collected under these laws can be used by the public to identify facilities and chemical release patterns that warrant further study and analysis. Combined with hazard and exposure information, TRI has proven to be a valuable tool for risk identification.

Each year, facilities that meet certain thresholds must report their releases and other waste management activities for listed toxic chemicals to EPA and to the state or tribal entity in whose jurisdiction the facility is located. The TRI list for 1996 included more than 600 chemicals and 28 chemical categories. Each facility submits a TRI reporting form, known as Form R, for each TRI chemical it has manufactured, processed, or otherwise used in amounts exceeding the thresholds for 1996. Starting with the 1995 reporting year, facilities with lower levels of reportable amounts that do not *manufacture, process, or otherwise use* more than 1 million pounds of the chemical can file a much shorter certification statement, Form A (see section on **TRI Reporting Forms** later in this chapter).

Reports for each calendar year are due by July 1 of the following year. After completion of data entry and data quality assurance activities, the Agency makes the data available to the public in printed reports, in a computer database, and through a variety of other information products such as CD-ROMs. States also make available to the public copies of the forms filed by facilities in their jurisdiction. In addition, some states independently produce a data release report.

Who Must Report?

Manufacturing facilities that have the equivalent of 10 or more full-time employees and meet the established thresholds for manufacturing, processing, or “otherwise use” listed chemicals must report their releases, transfers, and waste management quantities. Manufacturing facilities are defined as

Box 1-2. Who Reported Toxic Chemical Release Inventory Reports for the 1996 Reporting Year?

Who Reported Toxic Chemical Release Inventory Reports for the 1996 Reporting Year?

A facility must report to TRI if it:

- Conducts manufacturing operations within Standard Industrial Classification (SIC) codes 20 through 39 (or is a federal facility in any SIC code),
- Has 10 or more full-time equivalent employees, and
- Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year.

facilities in Standard Industrial Classification (SIC) primary codes 20-39, which include, among others: chemicals, petroleum refining, primary metals, fabricated metals, paper, plastics, and transportation equipment. Federal facilities have been required to report since 1994, regardless of their SIC classification.

In May 1997, EPA added seven new industry sectors that will report to the TRI for the first time in July 1999 for reporting year 1998. Thresholds for manufacturing and processing are currently 25,000 pounds for each listed chemical, while the threshold for “otherwise using” is 10,000 pounds per chemical. Beginning with the 1995 reporting year, certain facilities are able to take advantage of a burden-reducing reporting threshold. (See “Form A” in **TRI Reporting Forms**, later in this chapter.)

What Must Be Reported?

Each year, facilities report to TRI the amounts of toxic chemicals released on-site to the air, water, and land and injected underground (Section 5 of TRI Form R), and the amounts of chemicals transferred off-site for recycling, energy recovery, treatment, and disposal (Section 6 of Form R). They also report production-related waste



Box 1-3. Who Will Report to TRI Starting in the 1998 Reporting Year?

Who Will Report to TRI Starting in the 1998 Reporting Year?

- Metal mining (SIC code 10 except for SIC codes 1011, 1081, and 1094)
- Coal mining (SIC code 12 except for extraction activities)
- Electrical utilities that combust coal and/or oil (SIC codes 4931 and 4939)
- Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste treatment and disposal facilities (SIC code 4953)
- Chemicals and allied products wholesale distributors (SIC code 5169)
- Petroleum bulk plants and terminals (SIC code 5171)
- Solvent recovery services (SIC code 7389)

management information on quantities recycled, combusted for energy recovery, treated, or released or otherwise disposed of, both on- and off-site, and catastrophic or other one-time releases (Section 8 of Form R). To some extent, data in Sections 5, 6, and 7 of Form R and those in Section 8 represent a different view of essentially the same information.

Facilities provide specific identifying information, such as:

- Name
- Location
- Type of business
- Contact names
- Name of parent company
- Environmental permit numbers

They also provide information about the manufacture, process, and otherwise use of the listed chemical at the facility and the maximum amount of the chemical on-site during the year. Facilities

Box 1-4. What Must Be Reported to TRI?

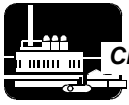
What Must Be Reported?

Information reported by facilities includes:

- Basic information identifying the facility;
- Name and telephone number of a contact person;
- Environmental permits held;
- Amounts of each listed chemical released to the environment at the facility;
- Amounts of each chemical shipped from the facility to other locations for recycling, energy recovery, treatment, or disposal;
- Amounts of each chemical recycled, burned for energy recovery, or treated at the facility;
- Maximum amount of chemical present on-site at the facility during the year;
- Types of activities conducted at the facility involving the toxic chemical; and
- Source reduction activities.

provide information about methods used to treat waste streams containing the toxic chemicals at the site and the efficiencies of those treatment methods. In addition to information about the amount of toxic chemicals sent off-site for waste management, facilities also must specify the destination of these transfers. Beginning with the 1991 reports, facilities were required to provide information about source reduction activities, along with the quantities managed in waste by activities such as recycling. Companies must provide a production index that can help relate changes in reported quantities of toxic chemicals in waste to changes in production.

These additional data elements facilitate tracking of industry progress in reducing waste generation and moving towards safer management alternatives. While current TRI data cannot provide an absolute measure of pollution prevention, the data can provide new insight into the complete toxics cycle.



What Are the Benefits and Limitations of the Data?

We believe that people know what is best for their own communities and, given the facts, they themselves will determine what is best to protect public health and the environment.

—Carol Browner, U.S. EPA Administrator

Benefits

The TRI Program has given the public unprecedented direct access to toxic chemical release and other waste management data at the local, state, regional, and national level. Responsible use of this information can enable the public to identify potential concerns, gain a better understanding of potential risks, and work with industry and government to reduce toxic chemical releases and the risks associated with them. When combined with hazard and exposure data, this information can allow informed environmental priority-setting at the local level. More than 1,500 citizen groups have used TRI data to achieve the goal of a cleaner and healthier neighborhood.

Federal, state, and local governments can use the data to compare facilities or geographic areas, to identify hot spots, to evaluate existing environmental programs, to more effectively set regulatory priorities, and to track pollution control and waste reduction progress. TRI data, in conjunction with demographic data, can help government agencies and the public identify potential environmental justice concerns.

Industry can use the data to obtain an overview of the release and management of toxic chemicals, to identify and reduce costs associated with toxic chemicals in waste, to identify promising areas of pollution prevention, to establish reduction targets, and to measure and document progress toward reduction goals. Public availability of the data has

prompted many facilities to work with communities to develop effective strategies for reducing environmental and human health risks posed by toxic chemical releases. Since 1988, facilities have reduced toxic releases, on- and off-site, by 45.6%, for chemicals reportable in all years.

Completion of Phase 1 of TRI expansion in the 1995 reporting year has significantly increased the usefulness of the data. The scope of the program was broadened to include 286 new chemicals and chemical categories¹ on the toxic chemical list for a total of 643 reportable chemicals and chemical categories. Many of these new chemicals are high production volume (HPV) chemicals and highly toxic substances. (See **TRI Expansion** later in this chapter for more information.)

Recognizing that the manufacturing sector is not the only industrial sector releasing toxic chemicals to the environment or otherwise managing them as waste, EPA undertook a thorough review of all U.S. industrial sectors. This effort, Phase 2 of TRI expansion, focused particular attention on sectors linked to manufacturing—those providing energy, further managing products, or further managing waste from the manufacturing sector. On May 1, 1997, EPA published a final rule expanding TRI's industry coverage. As a result of this effort, EPA added seven industry sectors: metal mining, coal mining, electrical utilities that combust coal and/or oil, hazardous waste treatment and disposal facilities, chemical wholesale distributors, petroleum bulk stations and terminals, and solvent recovery services. Facilities in these industries will begin reporting in July 1999 for the year 1998.

EPA believes this action will greatly enhance communities' Right-to-Know by requiring TRI reports from an estimated 6,600 additional facilities. EPA is conducting an aggressive outreach

¹ Of the 286 chemicals, 20 were diisocyanates and 19 were polyaromatic compounds. These are reported not as individual chemicals, but as two chemical compound categories. Not individually counting the members of these two categories converts 286 to 249. Furthermore, three other chemicals have been remanded, and one chemical was not reportable because of an administrative stay. Thus, the number of chemicals added to TRI in 1995, that were reportable in 1996, was 245.



campaign, including guidance, training, and technical assistance, to assist these new industries in understanding their reporting obligations. In addition, as a result of a Presidential Executive Order, federal facilities have been required to report since 1994.

Limitations

While TRI provides the public, industry, and state and local governments an invaluable source of key environmental data, it has some limitations that must be considered when using the data. Through the 1997 reporting year, the program applies to industries in the manufacturing sector and those owned by the federal government. It, therefore, does not cover all sources of releases and other waste management activities of TRI chemicals. With finalization of the facility expansion rule, industries providing energy, further managing products, or further managing waste from the manufacturing sector will also report. Although TRI is successful in capturing information on a significant portion of toxic chemicals currently being used by covered industry sectors, it does not cover all toxic chemicals or all industry sectors, nor will it do so after the facility expansion takes effect. In addition, facilities that do not meet the TRI threshold levels (those with fewer than 10 full-time employees or those not meeting TRI quantity thresholds) are not required to report. Thus, while the TRI includes 71,381 reports from 21,626 facilities for 1996, the 2.43 billion pounds of on- and off-site releases reported represent only a portion of all toxic chemical releases nationwide.

Another limitation of the existing TRI Program is that the data currently collected provide limited information on the life cycle of chemicals used by facilities. Beyond reporting on releases and other waste management, only limited and very general information on chemical storage is provided and none on the toxicity of the chemicals. In addition, although this report attempts to put certain releases in a broader context (such as pesticides, volatile organic compounds, and fertilizers), TRI does not

Box 1-5. Factors to Consider in Using TRI Data

Factors to Consider in Using TRI Data

Toxicity of the Chemical: TRI chemicals vary widely in their ability to produce toxic effects. Some high-volume releases of less toxic chemicals may appear to be a more serious problem than lower-volume releases of highly toxic chemicals, when just the opposite may be true.

Exposure Considerations: The potential for exposure is greater the longer the chemical remains unchanged in the environment. Sunlight, heat, or microorganisms may or may not decompose the chemical. For example, microorganisms readily degrade some chemicals, such as methanol, into less toxic chemicals, whereas metals are persistent and will not degrade when released to the environment.

Type of Release (Environmental Medium): Chemical exposure of a population depends on the environmental medium (air, water, land, etc.) to which a chemical is released. The medium also affects the types of exposures possible, such as inhalation, dermal exposure, or ingestion.

account for toxic emissions from cars and trucks and from many other non-industrial sources.

Furthermore, facilities report estimated data to TRI, and the program does not mandate that they monitor their releases. Various estimation techniques are used when monitoring data are not available, and EPA has published estimation guidance for the regulated community. Variations between facilities can result from the use of different estimation methodologies. These factors should be taken into account when considering data accuracy and comparability.

As discussed above, the TRI data summarized in this report reflect chemical releases and other waste management activities that occurred in the 1996 calendar year. Patterns of releases and other waste management activities can change dramatically from one year to the next. Thus, it is important to recognize that current facility activities may be different from those reported for 1996.



TRI reports reflect releases and other waste management activities of chemicals, not exposures of the public to those chemicals.

Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. Although additional information is necessary to assess exposure and risk, TRI data can be used to identify areas of potential concern. Furthermore, TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities of toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical after it is released, the locality of the release, and the human or other populations that are exposed to the chemical after its release.

TRI In Perspective

TRI has achieved tremendous results. The public now has a much better picture of toxic chemical risks in their communities, while industry and government have better data for identifying opportunities and measuring successes in preventing pollution. The sections below provide an overview of recent and proposed expansions to TRI. These expansions allow TRI to provide even more valuable information to the general public and industry.

TRI Expansion

There are few who would disagree that the 1987 Emergency Planning and Community Right-to-Know Act (EPCRA) provisions have proven to be among the most successful stimuli for reducing the amount of toxic chemicals that enter the environment. TRI, specifically, has focused public and industry attention on the billions of pounds of toxic materials that are released directly into our air, our land and our water, or injected underground, or are

recycled, burned for energy recovery or otherwise treated. While all releases are not equal, and some may not lend themselves to reduction or elimination, the TRI has forced a hard look at our approach to the use of toxic chemicals. This hard look has been beneficial. Between 1988, TRI's baseline year, and 1996, industrial on- and off-site releases have decreased 45.6%, from 3.35 billion pounds to 1.82 billion pounds, for chemicals reportable in all years (see Chapter 3 for additional information). This reduction reflects the hard work of manufacturing facilities that have refined their processes, looked for source reduction opportunities, assured outstanding housekeeping practices and worked to minimize the footprint they leave on their surrounding environment. Designed to be non-intrusive, TRI has provided the guide for all to use when seeking areas for environmental improvement.

One valid criticism of the program has been the limited breadth and depth of its chemical, facility and data coverage. In 1987, when the Congress passed EPCRA, 300-plus chemicals and chemical categories were presented as the "TRI Chemical List." This list combined two existing chemical lists: the New Jersey Environmental Hazardous Substance List and the Maryland Chemical Inventory Report List. Over time, through the EPA's petition process, the original list has been modified as the Agency responded to petitions to add and delete chemicals, given the law's toxicity listing criteria. These criteria focus on both acute and chronic health effects as well as environmental effects. TRI's coverage of facilities has been limited to the manufacturing sector (SIC codes 20-39), required to report under EPCRA section 313. Finally, data coverage was initially confined to information on releases and certain transfers off-site for further waste management.

Over time, EPA has worked to expand TRI to cover other industrial sectors, other chemicals that have similar adverse impacts on our environment, and further information about facilities' use of toxic chemicals. Towards that end, the Agency has pursued an expansion strategy that would enlarge



the boundaries of TRI in several directions. EPA has pursued a three-phase approach to broaden the scope of TRI: chemical expansion, facility expansion, and chemical use reporting. EPA's recent actions include a significant expansion of the number of chemicals in the program to give the public a more complete picture of toxic chemicals in their communities. At the same time, EPA provided a burden reducing option (Form A) for facilities with lower levels of reportable amounts. In Phase 2, EPA has expanded the facilities reporting to TRI. The third phase addresses a broader range of information about facilities' use of TRI chemicals.

Phase 1: Chemical Expansion

The Phase 1 Expansion included two major actions. The first occurred in 1993 with the addition of certain Resource Conservation and Recovery Act (RCRA) chemicals and certain hydrochlorofluorocarbons (HCFCs) to EPCRA section 313.

The second action of this phase was the addition of 286 chemicals and chemical categories on November 30, 1994 (59FR 61432). These 286 additional chemicals can be characterized as high or moderately high in toxicity, and they are currently manufactured, processed, or otherwise used in the U.S. This expansion of the chemical list raised the number of chemicals and chemical categories reported to TRI to over 600. Specifically, the rule added more than 150 pesticides, certain Clean Air Act chemicals, certain Clean Water Act Priority Pollutants, and certain Safe Drinking Water Act chemicals. Many of the chemicals are carcinogens, reproductive toxicants, or developmental toxicants. Of particular note is the addition of industrial chemicals such as diisocyanates, n-hexane, n-methylpyrrolidone, and chemicals such as polycyclic aromatic compounds that result from the combustion of fuels. This 1996 data release is the second year facilities have reported on these added chemicals.

While this constituted a major component of the chemical expansion, the TRI chemical list is always

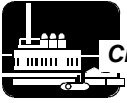
fluid and dynamic. EPA continues to review other chemicals for addition, including chemicals that were proposed for addition but not listed in 1994 because of the lack of available data. Other chemicals under consideration include, for example, persistent bioaccumulators. EPA may also add or delete a number of chemicals each year through the petition process. Chemicals may be added or deleted according to the toxicity criteria outlined in sections 313(c) and (d) of EPCRA.

Phase 2: Facility Expansion

Since the enactment of EPCRA, the TRI Program has focused on the releases and other waste management activities of the manufacturing sector—facilities classified as being primarily in SIC codes 20-39. To provide the public with a more complete picture of the toxics in their community, EPA undertook a detailed examination of other, non-manufacturing industries to determine which may be significant generators of toxic chemical releases and wastes. Factors used to evaluate which industries would be considered for this expansion included other available data on toxic chemical releases and other waste management activities, the interrelationship of non-manufacturing operations to manufacturing operations, the degree to which reporting would be expected to occur and the potential burden that TRI reporting might impose on these facilities.

As a result of its assessments, EPA added seven industry sectors to TRI in May 1997. The sectors are:

- Metal mining (SIC code 10 except for SIC codes 1011, mining of iron ores; 1081 metal mining services on a contract or fee basis, such as drilling or exploration and development; and 1094, mining of uranium-radium-vanadium ores);
- Coal mining (SIC code 12 except for 1241 and extraction activities);
- Electrical utilities that combust coal and/or oil (SIC codes 4911, 4931 and 4939);



- RCRA subtitle C hazardous waste treatment and disposal facilities (SIC code 4953);
- Chemicals and allied products wholesale distributors (SIC code 5169);
- Petroleum bulk plants and terminals (SIC code 5171); and
- Solvent recovery services (SIC code 7389).

The first reports from these facilities are due July 1, 1999, for the 1998 reporting year. As part of this rule, EPA revised its interpretation of otherwise use to clarify that the treatment for destruction, stabilization, and disposal of toxic chemicals in wastes received from other facilities is reportable. EPA estimates that about 6,600 additional facilities will submit more than 37,000 additional Form R reports because of the addition of these industry groups. EPA will continue to review other industries for possible inclusion in the TRI Program.

Since the final rule was published, EPA has developed guidance documents to help facilities in each of the newly added industries understand and comply with EPCRA Section 313 requirements. These documents were circulated to industry for review before being made final. The final guidance documents are available from EPA's Web site at <http://www.epa.gov/opptintr/tri>. In addition, the Agency is conducting training sessions around the country. The training sessions give an overview of EPCRA Section 313 reporting requirements, with training modules that provide exercises in interpretation and form completion.

Phase 3: Chemical Use Reporting

TRI serves as the public's primary source of easily accessible environmental information on a local, regional, and national level. EPA believes that chemical use information could expand the public's ability to evaluate a range of important environmental issues at all of these levels.

EPA has been exploring the nature, scope, and issues involved in requiring the collection of

chemical use information. Following several public meetings, extensive public dialogue, and publication of several issue papers, EPA issued an Advance Notice of Proposed Rulemaking (ANPR) in October 1997. The purpose of the ANPR was: 1) to describe the Agency's plan to further evaluate these issues; 2) to provide preliminary notice of additional public meetings; 3) to request comments and information on issues where additional assessment is needed; 4) to solicit actual assessments that have been performed using materials use data; and 5) to initiate public input concerning the development of regulation on this issue. EPA's Phase 3 expansion to assess the utility of materials accounting data is commonly referred to as "chemical use expansion."

The materials accounting information that EPA is considering focuses on the complete life cycle of chemicals used by TRI-covered facilities. This includes amounts of listed chemicals entering a facility, amounts consumed in processing activities, amounts released on-site to all environmental media, and amounts transferred off-site in products or as wastes. EPA believes that chemical use data could provide communities and government with information to better evaluate facilities' source reduction and pollution prevention performance, to focus emergency planning efforts related to the transportation of chemicals through their communities and the storage of chemicals within their communities, to identify amounts of toxic chemicals in products distributed in commerce, and to address worker safety and health concerns.

In the course of EPA's public dialogue on chemical use expansion, the Agency has identified several significant issues that will require extensive review. EPA has reviewed the comments submitted in response to the ANPR and the issues they identify, and is continuing to evaluate other issues as well. The Agency anticipates a decision in mid-1998 on the next steps for chemical use reporting.



TRI Reporting Forms

Form A

While expanding chemical and industry coverage, EPA has also provided a burden reducing option for facilities with relatively low quantities of listed toxic chemicals in waste. Beginning in 1995, as the expanded chemical list went into effect, facilities whose total annual reportable amount of a listed toxic chemical does not exceed 500 pounds can apply a higher activity threshold in determining their reporting obligations. The total annual reportable amount is defined as the sum of the waste management categories that would be reported to TRI: quantities released (including disposal), recovered as a result of on-site recycling operations, combusted on-site for energy recovery, and treated at the facility, plus amounts transferred off-site for recycling, energy recovery, treatment, and disposal. These amounts correspond to total production-related waste in this report.

If the facility does not exceed the total-production-related amount, and does not manufacture, process, or otherwise use more than 1 million pounds of the listed chemical, the facility does not have to file a Form R. Instead of filing a Form R detailing all its releases and waste management activities, the facility can submit a certification statement (Form A). Form A certifies that the facility met the conditions outlined above for the listed chemical, but does not require reporting of any amounts of the toxic chemical released or otherwise managed as waste.

Revisions to Form R

In 1997, EPA made several changes to Form R for the 1996 reporting year. Section 5.5, formerly titled “Release to Land On-site,” was renamed “Disposal to Land On-site.” This change was made to address concerns about public misperception and to help the public better understand the nature of various

methods of disposal. Section 5.5 now contains five subsections: RCRA subtitle C landfills; other landfills; land treatment/application farming; surface impoundment; and other disposal.

EPA also revised Form R for the 1996 reporting year to recognize the difference in the management and regulatory oversight provided by the Underground Injection Control program of Class I wells from other forms of injection into the land. Section 5.4 was previously titled “Underground Injections On-site,” and the 1995 guidance document specifically stated that this data element included the “Total annual amount of the toxic chemical that [is] injected to all wells, including Class I wells, at the facility.” On the 1996 Form R, two sections deal with underground injection: Section 5.4.1, “Underground Injection On-Site to Class I Wells,” and section 5.4.2, “Underground Injection On-Site to Class II-V Wells.” These changes provide an opportunity to better distinguish between the various types of underground wells.

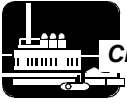
Beginning with the 1995 reporting year, Section 5 of Form R, previously titled “Releases of the Toxic Chemical to the Environment On-Site” was renamed “Quantity of the Toxic Chemical Entering Each Environmental Medium.”

Future TRI Modifications

Pollution Prevention Act Reporting

Under the Pollution Prevention Act of 1990 (PPA), EPA is required to collect information on source reduction and recycling activities on TRI’s Form R. In September 1991, all facilities subject to TRI reporting were required to provide the following data:

- Quantity of the chemical (prior to recycling, treatment, or disposal) entering any waste stream or released to the environment;
- Quantities of the chemical recycled at the facility and elsewhere;



- Quantities of the chemical treated at the facility and elsewhere;
- Information on source reduction activities and the methods used to identify those activities;
- Quantities of the chemical released in one-time events not associated with production processes;
- Quantities of the chemical expected to enter any waste stream or be recycled in future years; and
- Production ratio or activity index for the reported chemical.

This change in the program generated many comments (regarding, for example, definitions of waste stream, reportable recycling, and in-process recycling) from industry, environmental groups, and the public. Therefore, EPA sought to develop a consensus approach through a special subcommittee of the National Advisory Committee on Environmental Protection and Technology (NACEPT), which was composed of industry, environmental groups and governmental agencies. As a result of those discussions, the Agency is currently developing a supplemental notice of proposed rulemaking (SNPR) and final rule.

Redesign of TRI Reporting Forms and TRI Stakeholder Dialogue

Since 1987, EPA has used Form R to collect the facility-specific information required by TRI. The form has undergone a number of changes over the years, especially in 1990 when it was redesigned to capture the data required by the Pollution Prevention Act (PPA). There have been some more recent changes in the form, including those noted above for reporting year 1996. Currently, several efforts are underway to identify possible additional revisions to Form R and Form A.

In May 1997, when EPA finalized the industry expansion rule, the Vice President announced that

the Agency would initiate an intensive stakeholder process to comprehensively evaluate the current reporting forms (Form R and Form A) and reporting practices relating to the TRI Program. The goals of this process are to improve the type of right-to-know information available to communities and to help streamline right-to-know reporting to ease the paperwork burden for businesses affected by the requirements. EPA is using the Toxics Data Reporting Committee (TDR) of the National Advisory Council for Environmental Policy and Technology (NACEPT) and additional public stakeholder meetings to obtain input from interested parties on these issues.

NACEPT is a federal advisory committee under the Federal Advisory Committee Act, PL 92-463. It provides advice and recommendations to the Administrator of EPA on a broad range of environmental policy issues. The TDR is a committee created under NACEPT's auspices. The TDR committee currently consists of 24 members from industry, academia, government agencies, environmental groups, environmental justice groups, labor, and public interest groups. The committee is working to identify improvements and burden-reduction measures in the TRI Program. The committee may also make recommendations about how EPA presents the data to the public. EPA will review the recommendations received from NACEPT and use them to make decisions about changes to the TRI reporting forms, Form R and Form A. Changes to the forms will be made as expeditiously as possible, depending on whether they can be made administratively or require notice-and-comment rulemaking. As of April 1998, four TDR Committee meetings have been held. Three more are planned in 1998.

In addition to the NACEPT process, EPA is obtaining additional views and information from stakeholders by holding a number of smaller meetings for interested parties. As of April 1998, EPA has held five public meetings to solicit comments from stakeholders regarding the issues outlined above. These meetings were held in Washington, DC; San



Francisco, CA; Chicago, IL; Dallas, TX; and New York, NY. EPA may convene several more public meetings in 1998. Both of these efforts are aimed not only at reducing the burden to industry, but at improving the quality and practical utility of the information in the TRI Program.

Persistent Bioaccumulators

TRI currently includes information on several persistent bioaccumulators (PBTs), and EPA is considering adding others. EPA is also considering lowering the reporting thresholds for these chemicals because of their persistence and bioaccumulative nature and the relatively small amounts being manufactured (often below current TRI threshold levels).

Persistent bioaccumulators are chemicals that are stable for long periods of time (sometimes many years), and build up in the environment, particularly in food chains. Those PBTs on the TRI list are toxic to humans and/or animals and plants. Small release amounts of such chemicals, not reported to TRI because they do not meet current reporting thresholds, may accumulate in the environment. Persistent bioaccumulators include high-volume industrial chemicals, such as hexachlorobenzene, that are used to manufacture other chemicals; currently produced pesticides, such as lindane; metals, such as lead and mercury compounds; and by-products of industrial processes or products of combustion during waste destruction or energy generation, such as benzo(a)anthracene.

Although certain PBTs are not currently produced in the U.S., chemical manufacturers, federal facilities, and other industrial sources that made or used the now-discontinued chemicals release these PBTs during treatment and disposal activities. Chlordane and polychlorinated biphenyls (PCBs) are examples of chemicals not currently being produced in the U.S., but which are being released and reported to TRI. TRI reporting of these PBTs may increase in the 1998 reporting year, as treatment, storage, and disposal (TSD) facilities

Box 1-6. Some Toxic Persistent Bioaccumulators Listed on the Toxics Release Inventory

Some Toxic Persistent Bioaccumulators Listed on the Toxics Release Inventory

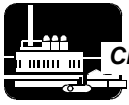
Chemical	Source/Use
Chlordane	Pesticide; no longer in use in the United States
Benzo(a)anthracene	Burning of coal, oil
Mercury compounds	Many industrial uses
Lindane	Pesticide; currently in use in the United States
PCBs	No longer in production, but still found in electrical equipment

(hazardous waste management facilities) begin reporting under the Phase 2 facility expansion rule. Reporting of mercury releases is also expected to increase, as electric utilities similarly begin reporting to TRI.

Airports Petition

On April 16, 1997, EPA received a petition from the Natural Resources Defense Council, the Defenders of Wildlife, the National Audubon Society, and the Humane Society of the U.S. requesting EPA to initiate rulemaking to add SIC code 45, transportation by air, to the list of facilities required to report to TRI. The petitioners stated that airports should report because they meet EPA's three criteria for adding facilities under section 313 of EPCRA. In addition, the petitioners asserted that requiring such reporting would further the purposes of EPCRA by making TRI information publicly available to communities located near airports.

In response, EPA issued a Notice of Receipt and request for comments in the *Federal Register* on February 10, 1998. In the notice, the Agency published the full text of the petition and requested comments on 1) whether the use of TRI chemicals would or should be exempt under the Motor Vehicle Maintenance Exemption, 40 CFR 372.38(c), and 2) the practical impacts of requiring



airports to report under section 313 of EPCRA. The Agency recognizes that if airports were required to report under section 313 of EPCRA and 6607 of the PPA, there could be unique reporting issues associated with their ownership, operation, and control. Therefore, information gathered from those who commented on the February 10, 1998, *Federal Register* notice will be instrumental in helping the Agency determine whether to add airports as facilities that should report to TRI.

Oil and Gas Expansion

During the facility expansion analysis, several industry sectors were identified as sources that routinely manage materials containing TRI-listed toxic chemicals, but were not added in the May 1, 1997 rule. These included the oil and gas exploration and production industry, which appears to be a source that manages significant amounts of TRI chemicals. A number of questions existed regarding the application of EPCRA section 313 requirements to this industry, which prevented EPA from including it in the expansion rulemaking, but which the Agency is now reconsidering.

International Aspects of TRI

Toxic chemical releases know no boundaries. While TRI data provide a wealth of information about releases, on-site waste management, and off-site transfers of toxic chemicals within the U.S., information from other countries is limited. This, however, is changing. There are an increasing number of countries developing TRI-like systems. The international term for these systems is Pollutant Release and Transfer Registers (PRTRs).

The real stimulus for PRTRs was the 1992 United Nations conference on the environment, popularly known as the Earth Summit. One conclusion from this conference was the benefit and value of PRTRs. Countries were encouraged to develop these systems. In an important step, the Earth Summit also linked these PRTR systems with public Right-to-Know, an integral aspect of TRI.

Since 1992, there has been a growing interest in PRTRs. The Organisation for Economic Cooperation and Development (OECD), an organization of 29 industrialized democracies, created a guidance document for governments on PRTRs. Development of this guidance manual included the participation of representatives from government, industry, and other non-governmental organizations. Following the publication of this manual in 1996, and recognizing the value and importance of PRTR systems to environmental protection, the OECD environment ministers issued a Council Recommendation that encourages all OECD nations to establish PRTR systems.

For developing nations, the United Nations Institute for Training and Research (UNITAR) developed a step-by-step process, with accompanying guidance manuals, on how to implement a PRTR system. In an initial phase, UNITAR selected three countries to serve in a pilot program (Mexico, Czech Republic, Egypt). The goal was to take the lessons learned from this pilot stage to help other industrializing nations develop PRTR systems.

Currently, PRTR work now has entered its second stage. While the initial work, including the OECD's guidance manual and UNITAR's pilot program, focused on creating the framework for PRTR development, the second stage is shifting to greater coordination between countries and international organizations. The OECD is hosting a PRTR conference in Japan that will be a venue for discussions between countries with PRTR systems. The OECD also is integrating its PRTR work with other chemicals management projects. UNITAR is using its materials developed in the pilot stage to help the Slovak Republic and South Africa create PRTR systems.

Recognizing this new focus, the international community has formed a PRTR Coordination Group to coordinate and prevent duplication of efforts. The U.S. is the chair of the group, while the OECD is the Secretariat. With the number of



countries with operational PRTR systems growing from the present eight (Australia, Canada, France, Mexico, Netherlands, Norway, United Kingdom, U.S.) to over 30 in the next few years, the need for this PRTR Coordination Group is obvious.

On a more regional scale, North America offers the first opportunity to collect PRTR data across a continent. The U.S. has collected PRTR data since 1987. The first year of Canadian data is 1993. Mexico is phasing in its PRTR system starting with the 1997 reporting year. Facilities must file air emissions data for 1997, while voluntarily reporting for other releases and transfers. Mexico intends to make these other media mandatory.

Supporting this work is the Commission on Environmental Cooperation (CEC), an organization created by the environmental side-agreements to the North American Free Trade Agreement (NAFTA). The CEC has developed two important reports. The first compares PRTR systems in the three North American nations. The second report, developed annually, compiles and analyzes the data from the North American PRTR systems. The 1994, 1995, and planned 1996 reports include only U.S. and Canadian data. When the Mexican data are available, starting with the 1997 reporting year, the report will cover all three nations.

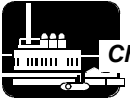
The U.S. will continue to work closely with other countries and international organizations on PRTR issues. The expanding work on PRTRs will require the commitment and guidance of the U.S. and rely on the growing experience of the TRI.

How Can I Obtain Additional TRI Information?

The TRI data are available in an on-line computer database and in a variety of common computer and hard copy formats to ensure that everyone can easily use the information. Information about accessing the TRI database is provided on the inside front cover of this report as well as in Appendix B. The TRI User Support Service (**202-260-1531**) can provide assistance in accessing and using the TRI data. On-line services include the EPA's Envirofacts, the National Library of Medicine's TOXNET system, and the Right-to-Know Computer Network (RTK NET). Appendix B provides additional information on these and other means of access to TRI data.

To request copies of TRI and EPCRA documents or to obtain further information about the program, contact the toll-free Emergency Planning and Community Right-to-Know Information Hotline at **1-800-424-9346**. TRI information is also available on the TRI Web site at www.epa.gov/opptintr/tri.

Other potential sources of TRI information include the state EPCRA section 313 contact, the EPA Regional Office, or the facility itself. Information about EPA regional and state EPCRA section 313 contacts appears in Appendix A.



Chapter 1 TRI Reporting and the 1996 Public Data Release