

5/29/02

2000 Toxics Release Inventory Data Release

Questions and Answers

FINAL

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2000 Public Data Release**

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TRI Background

Q Who was required to report to TRI in 2000?

A A facility was required to report to TRI in the 2000 reporting year if it met the following three criteria:

- Conducted manufacturing operations within SIC codes 20 through 39 and/or was in one of the following industries, metal mining, coal mining, electrical utilities, RCRA Subtitle C hazardous waste treatment and disposal facilities, chemicals distributors, petroleum terminals, and solvent recovery services. Federal facilities report regardless of SIC code.
- Employed 10 or more full-time employee equivalents.
- Manufactured or processed more than 25,000 pounds or otherwise used more than 10,000 pounds of any listed chemical, except for PBT chemicals, whose reporting thresholds were lowered from the existing thresholds to 10 and 100 pounds. The TRI PBT chemicals also include a category of dioxin and dioxin-like compounds with a 0.1 gram reporting threshold.

Q What is EPA's role in releasing TRI data versus the role of the states?

A Facilities are required to report their data both to EPA and to the states. EPA makes its data available to the public through the Internet as well as other electronic and hard copy products. A number of states also make their data available through electronic as well as hard copy products. EPA's information products tend to take a more national focus while state products may focus on more local and regional issues.

Q What are the limitations of how the data can be used or interpreted?

A 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. First, users of TRI information should be aware that TRI data reflect releases and other waste management 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. TRI data, in conjunction with other information, such as chemical toxicity, chemical fate after release, release location, and population concentrations, can be used as a starting point in evaluating exposures that may result from releases and other waste

management activities of toxic chemicals.

Also, TRI collects data from a specific set of industry sectors, including the manufacturing sector (SIC codes 20-39), metal mining, coal mining, electric utilities, petroleum terminals and bulk storage, chemical wholesalers, RCRA commercial hazardous waste treatment, and solvent recovery. Federal facilities also report to TRI regardless of their SIC classification. 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. In addition, facilities that do not meet the TRI reporting threshold levels (including an employee threshold and manufacturing processing/use threshold) are not required to report.

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 storage of chemicals is provided. In addition, this report does not account for toxic emissions from cars and trucks, nor from the majority of sources of releases of pesticides, volatile organic compounds, fertilizers or 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.

Summary of 2000 TRI Release Data

General Questions

Q Reporting year 2000 is the first year that facilities have been required to report PBTs based on the lower reporting thresholds. How is EPA doing trend analysis in this year's Public Data Release (PDR) given that some PBTs have been reportable in prior years with the higher thresholds?

A For the 2000 reporting year, some PBT chemicals already on the list had the reporting thresholds lowered and other PBT chemicals were added to the list. In addition, vanadium compounds were added to the list and vanadium was changed to exclude vanadium when contained in alloys. Also, since 1995, EPA has deleted three chemicals from the TRI list, including phosphoric acid in 1999. These chemicals, as well as the PBT chemicals and vanadium and vanadium compounds, are excluded from analyses of the 1995–2000 data. The

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reporting by new industries is also excluded from the 1998, 1999 and 2000 data for analyses covering the 1995–2000 period.

Q Since the PBT rule is in effect, what change has resulted in the number of forms and facilities in reporting year 2000?

A The new PBT rule has resulted in EPA receiving an additional 6,947 forms from 3,543 facilities. Of the 3,543 facilities, 762 facilities that reported on a PBT chemical in 2000 did not report on any chemical in 1999.

Dioxin

Q What are dioxins?

A "Dioxins" refers to a group of chemical compounds that share certain similar chemical structures and biological characteristics. Several hundred of these toxic compounds exist and are members of three closely related families: the chlorinated dibenzo-*p*-dioxins (CDDs), chlorinated dibenzofurans (CDFs) and certain polychlorinated biphenyls (PCBs). Only 7 of the CDDs and 10 of the CDFs are considered toxic and are included in the TRI category of dioxin and dioxin-like compounds. The PCBs are part of the TRI PCBs category. Sometimes the term dioxin is also used to refer to the most well-studied and one of the most toxic dioxins, 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD). CDDs and CDFs are not created intentionally, but are produced inadvertently by a number of human activities. CDDs and CDFs are also produced by natural processes. PCBs are man-made, but are no longer produced in the United States.

Dioxins are released into the air from combustion processes such as commercial or municipal waste incineration and from burning fuels (like wood, coal or oil). Dioxins can also be formed when household trash is burned, from volcanoes, and during forest fires. Chlorine bleaching of pulp and paper, certain types of chemical manufacturing and processing, and other industrial processes all can create small quantities of dioxins. Cigarette smoke also contains small amounts of dioxins.

Over the past decade, EPA and industry have worked together to dramatically reduce dioxin emissions. Because dioxins are extremely persistent compounds, levels of dioxins still exist in the environment from both man-made and natural sources and will take years to decline. A large part of the current exposures to dioxins in the United States are due to man-made dioxins from releases that occurred in the past, even decades ago. Even if all human-generated dioxins could somehow be eliminated, low levels of naturally produced dioxins will remain. EPA is

continuing to look for ways to reduce dioxin levels entering the environment and to reduce human exposure to them.

Q Why are people concerned about dioxins?

A Scientists and health experts are concerned about dioxins because animal studies, as well as some human epidemiological evidence, have shown that even low levels of exposure may cause a number of adverse health effects. Because dioxins exist throughout the environment, almost every living creature, including humans, has been exposed to dioxins. The health effects associated with dioxins depend on a variety of factors including: the level of exposure, when someone was exposed, and how long and how often. Because dioxins are so widespread, we all have some level of dioxins in our bodies, with the majority of the population having very low levels. In fact, EPA expects that each succeeding generation of the current population will be exposed to less and less dioxins in the environment and thus, their levels are expected to be lower than the preceding generations'.

Adverse health effects associated with exposure to high levels of dioxins can include chloracne (a severe skin disease with acne-like lesions) and cancer. Other health effects that may be associated with exposure to lower levels include reproductive or developmental effects, impaired immune system, behavioral changes, and endocrine effects. While some of the non-cancer effects, such as developmental changes, have been observed in animal studies at levels which are comparable to those in the general population, it remains uncertain whether they are occurring at environmental levels.

Q What was the basis for listing dioxin and dioxin-like compounds on TRI and was the data only for 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD)?

A EPA added the category of dioxin and dioxin-like compounds because it was determined that they cause or can reasonably be anticipated to cause cancer and other serious chronic health effects in humans (e.g., chloracne, liver disorders, neurological changes, reproductive and developmental toxicity). In the proposed rule, EPA cited the extensive data on 2,3,7,8-TCDD but also cited data for a mixture of 1,2,3,6,7,8- and 1,2,3,7,8,9- hexachlorodibenzo-*p*-dioxin that have shown that these compounds are also carcinogenic. In addition, EPA cited the Toxicity Equivalence Factors (TEFs) that have been established for dioxin-like compounds based on observed mechanisms of toxicity and structure activity relationships. TEFs represent order of magnitude estimates of the relative potency of dioxin-like compounds compared to 2,3,7,8-TCDD, and have been considered by EPA and the international scientific community to be a valid and scientifically sound approach for assessing the likely health hazard of dioxin-like compounds. The range of the TEFs for the dioxin-like compounds is between 1.0 and 0.0001,

indicating that they are estimated to range from equal to about four orders of magnitude less toxic than 2,3,7,8-TCDD. However, all of these dioxin-like compounds are considered to be carcinogens and highly toxic compounds given the level of toxicity of 2,3,7,8-TCDD and therefore they all meet the listing criteria of EPCRA section 313(d)(2)(B). In responding to comments on the proposed rule EPA also noted that there are data from subchronic studies for both octa- and heptachlorinated dibenzo-*p*-dioxins and dibenzofurans which demonstrate dioxin-like effects.

Q What happens to dioxins when they enter the environment?

A When released into the air, some dioxins may be transported long distances. Because of this, dioxins are found in most places in the world. When dioxins are released into water, they tend to settle into sediments where they can be further transported or ingested by fish and other aquatic organisms. Dioxins are broken down in the environment very slowly and can be deposited on the leaves of plants where they are then eaten by domestic animals, such as cattle and poultry. Dioxins may be concentrated in the food chain so that animals have higher concentrations than plants or water. Within animals, dioxins tend to accumulate in fat.

Q How might I be exposed to dioxins?

A Most of the population has low level exposure to dioxins. EPA estimates that most dioxin exposure occurs through the diet, with over 95% coming through dietary intake of animal fats. Small amounts of exposure occur from breathing air containing trace amounts of dioxins on particles and in vapor form, from inadvertent ingestion of soil containing dioxins, and from absorption through the skin contacting air, soil, or water containing minute levels.

Some people may have higher exposures than the general population. They may have experienced elevated exposures to dioxins as a result of particular food contamination incidents, through workplace exposures, from industrial accidents, or from consumption of unusually high amounts of fish, meat, or dairy products containing elevated levels of dioxins.

Q Do all dioxin compounds pose the same amount of danger?

A No. While all dioxin compounds in the TRI dioxins category are toxic, different dioxin compounds have different toxicities. In addition, dioxins are most often found in mixtures rather than as single compounds in the environment. The most toxic form of dioxin is 2,3,7,8-TCDD. Scientists use a shorthand method for comparing the toxicity of different types or mixtures of dioxins to the toxicity of 2,3,7,8-TCDD. This method is called the "Toxicity Equivalence" or TEQ.

Q How are dioxins reported?

A Dioxins are reported to the Toxics Release Inventory in terms of total mass of the 17 compounds that make up the dioxin category. In addition, reporting facilities are required to provide data on the percentage distribution of the 17 dioxin congeners that make up their dioxin releases if they have the data. While all toxic chemicals other than dioxins are reported to TRI in pounds, dioxins are reported in grams because they are present in very small quantities and because gram units are a common unit of measurement for these chemicals.

Quantities of dioxins are sometimes expressed in terms of “toxic equivalents” or TEQs. This measure is calculated by multiplying the mass of each dioxin compound by a toxicity weighting factor based on its relative toxicity compared to the most toxic dioxin congener, 2,3,7,8 TCDD.

Q What is the relationship between the TRI data on dioxin and the EPA dioxin inventory?

A The Toxics Release Inventory was established under the Emergency Planning and Community Right to Know Act of 1986 (EPCRA). EPCRA requires that industrial facilities report annually to EPA and the states on the quantities of chemicals they release into the environment if they meet the following three criteria:

- they are in an SIC code (industry classification) covered by TRI
- they have 10 or more full-time employees, and
- they exceed established reporting manufacture, processing, or otherwise use thresholds for a TRI-listed chemical.

For dioxins and dioxin-like compounds, the reporting threshold is 0.1 grams. Like other TRI chemicals, dioxins are reported in terms of mass. However, while other TRI chemicals are reported in pounds, dioxins are reported in grams because they are present in very small quantities and because gram units are a common unit of measurement for these chemicals.

Facility reports to EPA are chemical-specific and media-specific, and are based on the facility’s best estimate of their releases.

The Toxics Release Inventory differs from the dioxin inventory in a number of ways:

C TRI data is reported by individual facilities whereas the dioxin inventory is a database constructed by EPA that reports emissions based on source categories. In many cases, facilities and source categories may be the same (e.g. electric utilities or cement kilns); however, in other cases, source categories may cut across many types of facilities (e.g.

industrial boilers) and some facilities may include several source categories, such as integrated chemical manufacturing facilities.

- C TRI data includes dioxin releases to all media, including land. Land releases include those to landfills, surface impoundments, RCRA Subtitle C-permitted landfills, etc. The dioxin inventory has focused on releases to air, water, and surface land application; it does not include placement in landfills and surface impoundments.

- C TRI requires reporting from industrial facilities in manufacturing and certain related industries such as metal mining, coal mining, electric utilities, and hazardous waste treatment facilities. The dioxin inventory attempts to characterize all sources of dioxins and therefore, includes some source categories not included in the Toxics Release Inventory such as municipal incinerators, medical waste incinerators, POTWs, and residential burning of household waste. However, for some sources the dioxin inventory only has qualitative data.

- C The Toxics Release Inventory data is reported in mass (grams), and is therefore presented in grams in TRI reports. In contrast, the dioxin inventory presents the dioxin data in terms of toxic equivalents (TEQs) even though it was primarily derived from data in grams.

Q Why did EPA decide to collect TRI dioxin data in terms of mass rather than TEQs?

A The Emergency Planning and Community Right to Know Act (EPCRA) states that EPA must collect the annual "quantity" of a toxic chemical entering each environmental medium. Since TEQs are not mass quantities, but rather units based on relative toxicity, we did not believe that TEQs meet that requirement.

Also, TEQ reporting would be different than all other reporting under TRI which is strictly based on mass and not on the relative toxicity of the listed chemicals.

In addition, EPA believed that collecting mass data would provide the best way to track trends in dioxin releases over time. Since the TEFs that make up the TEQ calculation can change over time, collecting only TEQ data would make it very difficult or impossible to compare year to year data if the TEFs changed (unless you also captured the congener distribution data as well).

When EPA added dioxins there was concern that not all facilities could report in TEQs since they must know the distribution of the members of the category in order to calculate the TEQ. [Note: The dioxin reporting data indicates that about 1/3 of the facilities that reported for the

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dioxin and dioxin-like compounds category did not provide a distribution for the members of the category which suggests that they also could not have reported in TEQs, confirming our original concern.]

Q Is TEQ data available for facilities that reported to TRI?

A Yes, for some facilities it is. The American Chemistry Council and the Chlorine Chemistry Council worked with their member companies to have them submit TRI data in terms of TEQs. EPA has agreed to make that TEQ data available through a link from the TRI website.

In addition, this year's TRI reporting form allowed for facilities to provide data on their congener (member of the dioxin category) distribution if they had it. Facilities were asked to provide the percentage distribution of their dioxin congeners that either best represented their overall dioxin profile or best represented their dioxin profile for a single media. For facilities that provided this information, EPA can apply these congener profiles to calculate an approximate TEQ measure.

Q What are the major man-made sources of dioxins?

A The amounts of dioxin that have been released from various sources have changed significantly over time. Historically, commercial or municipal waste incineration, manufacture and use of certain herbicides and chlorine bleaching of pulp and paper resulted in the major releases of dioxins to air and water. Government regulatory actions along with voluntary industry actions have resulted in dramatic reductions in each of these sources, and they are no longer major contributors of dioxins to the environment in the United States. While the United States has taken action to control this type of emission, these sources of dioxin still occur in the world. Currently, the uncontrolled burning of residential waste is thought to be among the largest sources of dioxins to the environment in the United States. Also, a number of potential sources are poorly characterized and additional sources continue to be discovered.

The TRI data on dioxins shows that most of the dioxin releases reported to the TRI were from the chemical industry, i.e., approximately 89,000 grams out of the total of almost 100,000 grams. The main chemical industry sector releasing dioxins was the inorganic pigments manufacturing sector, which released approximately 68,000 grams. The primary metals industry released approximately 4,300 grams, and the electric utilities, approximately 2,000 grams.

Q Where are the dioxins going according to the TRI data?

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A Out of the total 99,814 grams of dioxin releases reported in 2000, 92,521 grams were reported as releases to land (including underground injection), 5,218 grams to air, and 2,075 grams to water.

Q **What is EPA doing to control dioxin releases into the environment?**

A Over the last 20 years, EPA has aggressively looked for ways to reduce and control dioxins in all environmental media in the United States. Collectively, these actions have resulted in strict controls on all of the quantifiable major industrial sources of dioxin releases. As a result of EPA's efforts, along with efforts by state government and private industry, quantifiable industrial emissions in the United States will be reduced by more than 90% from 1987 levels within the next year or so. Specific regulatory actions that have reduced dioxin emissions include:

- CAA regulations to limit dioxin emissions from municipal waste combustors (1995) and medical waste combustors (1997)
- Recent CAA and RCRA rules limiting dioxin emissions from hazardous waste incinerators (2002)
- EPA published ambient water quality criteria in 1984 for 2,3,7,8-TCDD
- EPA issued final effluent guidelines for the pulp and paper industry which were expected to reduce dioxin discharges by 96%
- Under RCRA, EPA regulates dioxin disposal by issuing Hazardous Waste Identification and Disposal rules that identify and strictly limit the disposal of dioxin containing waste (for example, the Hazardous Waste Listing Determination for Chlorinated Aliphatics Production Wastes Final Rule, 2000).

Following completion of the dioxin reassessment, EPA plans to release a draft Agency-wide dioxin strategy to address the findings of the final document. This draft strategy will be published for public comment. Also, federal agencies will be working together on a coordinated response to the science of the reassessment.

Q **What is EPA's "Dioxin Reassessment"?**

A EPA is in the final stages of completing a major scientific report entitled, "*Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds.*" This report is commonly referred to as the EPA dioxin reassessment.

In April 1991, EPA announced that it would conduct a scientific reassessment of the health risks of exposure to dioxin and dioxin-like compounds. EPA decided to perform this reassessment because of significant advances in the scientific understanding of dioxin toxicity and significant new studies on its potential adverse health effects.

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In 1994, EPA completed a draft of the dioxin reassessment and submitted it to the EPA's Science Advisory Board (SAB) for review. The SAB recommended revision of two draft sections of the dioxin reassessment -- the dioxin risk characterization and the dose-response modeling chapter -- and the development of a new section on dioxin toxicity equivalence factors (TEF). Because of the complexity of the science issues related to dioxin, the SAB recommended that these three sections undergo an additional level of review by independent external peer reviewers prior to being brought back to the SAB for review. These independent external peer reviews have been completed, providing an additional level of scrutiny to improve the scientific credibility of the dioxin reassessment.

Following the independent external reviews, the drafts were revised to address peer review and public comments. The revised drafts were then submitted by EPA to the SAB for review at its November 2000 public peer review meeting. On May 31, 2001, EPA received the SAB's final review report, *Dioxin Reassessment - An SAB Review of the Office of Research and Development's Reassessment of Dioxin*. The SAB's final report "...recommends that the Agency proceed expeditiously to complete and release its Dioxin Risk Assessment Review, taking appropriate note of the findings and recommendations of this [SAB] report and other public comments." EPA will not use the conclusions of the draft dioxin reassessment for regulatory purposes until the dioxin reassessment is released in final form.

Q What will be the contents of the final dioxin reassessment?

A The final dioxin reassessment will consist of three parts. *Part I: Estimating Exposure to Dioxin Compounds* will include three volumes that focus on sources, levels of dioxin-like compounds in environmental media, and human exposures. *Part II: Health Assessment for 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds* will consist of two volumes that include information on critical human health end points, mode of action, pharmacokinetics, dose-response, and TEFs. Part II will have nine chapters. *Part III: Integrated Summary and Risk Characterization for 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds* is intended as a stand alone document. Part III summarizes the overall conclusions of the reassessment. In this part, key findings pertinent to understanding the potential hazards and risks of dioxins are described including a discussion of all important assumptions and uncertainties.

Mercury

Q Where does mercury come from?

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A Mercury is an elemental metal that exists in nature. Mercury is also a naturally-occurring contaminant of some other natural resources, such as certain types of coal.

Q **How do people become exposed to mercury?**

A Human activities can lead to human exposure to mercury. We are particularly concerned about methylmercury, an organic form of mercury that bioaccumulates in the food chain, resulting in contaminated fish that are then eaten by people and wildlife. Although there are several pathways of human exposure to mercury, in the U.S. the primary pathway of exposure, by far, is from eating mercury-contaminated fish.

Mercury is a persistent, highly bioaccumulative, and toxic pollutant, and presents significant health risks to humans and wildlife. Mercury causes serious neurological damage at very low levels of exposure, especially to fetuses and young children. The developing fetus is exposed to mercury if the mother eats mercury-contaminated fish during pregnancy. Recent data indicate that 8% to 10% of women of childbearing age in the U.S. currently have blood mercury levels higher than EPA considers to be a “safe” level of exposure. Children can be exposed to mercury if they routinely eat large quantities of contaminated fish.

The problem of mercury-contaminated fish is wide-spread in the U.S. At least 42 states have issued fish consumption advisories (i.e., warnings) due to mercury contamination. Contaminated fish result primarily from deposition of air-borne mercury pollution to water.

Mercury emissions to the air from combustion and industrial processes is the major source of mercury contamination of waterbodies. Today the largest single source of mercury emissions is coal-fired electric power generation. Additional significant sources include other coal combustion, mercury-cell chlor-alkali facilities, and waste combustion.

On a local basis, people may also become exposed to mercury from other sources, such as accidental mercury spills, or handling mercury supplies in laboratories and manufacturing plants, or releases from mineral mining sites. However exposure to mercury from such localized sources is much less insidious and wide-spread than dietary exposure to mercury-contaminated fish.

Q **What is EPA doing to address human health concerns regarding mercury?**

A EPA has taken many significant actions over the past decade to reduce mercury pollution and exposure, and will continue to do so in the future.

Mercury air pollution is being reduced by new regulations of mercury air emissions from municipal waste combustors and medical waste incinerators, along with national bans on

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mercury in most batteries and in latex paint. The remaining major uncontrolled sources of mercury air emissions are coal-fired power plants, industrial boilers, and chlor-alkali plants that use mercury cells. Mercury air emissions standards are now being developed for these three remaining major sources. The President's "Clear Skies" proposal would also help reduce mercury emissions from coal-fired power plants.

Human exposure to mercury is being reduced through continuing communication efforts to promote limits on consumption of mercury-contaminated fish. In 2001, EPA published a national advisory (warning) on mercury in non-commercial freshwater fish, in close coordination with FDA's national advisory on mercury in commercial fish. EPA continues to provide technical help to states who have primary responsibility for issuing fish consumption advisories for water bodies within state borders.

Wastewater discharges that contain mercury also contribute to bioaccumulation of mercury in fish. On a national basis, these discharges appear to be much smaller than air releases. However, they can be significant in specific local areas, especially those affected by active or inactive mining sites and by industries that use mercury. Under the Clean Water Act, EPA regulates direct wastewater discharges of pollutants through the National Pollution Discharge Elimination System (NPDES).

EPA sets water quality criteria that States and Tribes then use to set water quality standards to limit the amount of pollutants allowed in lakes, streams and other waterbodies. In 2001, EPA issued a more stringent ambient water quality criterion for methylmercury. Over time this will further reduce mercury levels in water, which will in turn reduce mercury contamination of fish.

EPA is looking for ways to reduce mercury pollution by encouraging voluntary reductions of mercury use in products and industrial processes. This in turn leads to reductions of mercury in wastes that can release mercury air emissions during subsequent treatment for disposal. EPA has a very successful national partnership program for hospitals to voluntarily eliminate mercury from hospital wastes by 2005. Partners involved in this "Hospitals for a Healthy Environment Program" include EPA, the American Hospital Association, Health Care Without Harm, and the American Nurses Association. EPA is also encouraging voluntary reductions in mercury use by dental offices, schools, federal facilities, chlor-alkali manufacturing plants, and iron and steel manufacturing plants.

EPA continues to conduct and sponsor important research concerning control of mercury releases and the transport, fate and effects of mercury pollution. The Agency is also encouraging greater international focus on the problem of global mercury pollution, especially

the global circulation of mercury air pollution. EPA is actively participating in a two-year Global Mercury Assessment study being conducted by the United Nations Environment Programme.

Q How has the inclusion of new industry reporting to TRI in reporting year 1998 and the lowering of thresholds for PBT chemicals in reporting year 2000 impacted mercury and mercury compounds reporting?

A The addition of new industries to TRI in reporting year 1998 resulted in the submission of 22 additional forms and the reporting of an additional 9.3 million pounds of total releases of mercury. All of these releases were reported by the metal mining industry (97%) and the hazardous waste/solvent recovery industries (3%).

The lowering of thresholds for PBT chemicals in reporting year 2000 resulted in the submission of 1,518 additional mercury forms and the reporting of an additional 1.1 million pounds of total releases. The top industries reporting increases in total releases from 1999 to 2000 were metal mining, hazardous waste/solvent recovery, and electric utilities. The metal mining sector submitted 9 forms in 1999 and 59 forms in 2000. Total reported releases increased approximately 529,000 pounds from 2.6 million pounds to 3.2 million pounds. The hazardous waste/solvent recovery sector submitted 9 forms in 1999 and 62 forms in 2000. Total reported releases in that sector increased approximately 277,000 pounds from 560,000 pounds to 837,000 pounds. The electric utilities sector submitted 7 forms in 1999 and 504 forms in 2000. Total reported releases increased approximately 157,000 pounds from almost 2,800 pounds to nearly 160,000 pounds.

Q From 1998 to 1999 there was a decrease in the reporting of mercury and mercury compounds of 6.1 million pounds, from 9.4 million pounds to 3.3 million pounds. What accounted for this large decrease?

A From 1998 to 1999, a few industries had small increases in reporting; however, these small increases were offset by a large decrease in reporting from the metal mining industry. The metal mining sector reported a decrease of 6.4 million pounds from 9.0 million pounds in 1998 to 2.6 million pounds in 1999. One metal mining facility in Nevada accounted for more than 80% of this decrease.

TRI 2000 Chemical Release Data

2000 Chemical Release Data—All Industries

Q What are the total on- and off-site releases for 2000?

A The total on- and off-site releases for 2000 are 7.1 billion pounds.

Q For the total on- and off-site releases reported in 2000, what is the breakdown between original (manufacturing) industries and new industries?

A The original industries reported 2.3 billion pounds and the new industries reported 4.8 billion pounds.

Q 2000 was the third year that EPA collected information from the commercial hazardous waste treatment sector. Is there double counting of some releases in TRI now that EPA collects information from this sector?

A In the analysis of the 2000 data, EPA has taken steps to adjust for possible double counting of some releases in TRI. These facilities were required to report to TRI for the first time in 1998. The potential for double counting arises because some manufacturing facilities report transfers of chemicals to other facilities that may then report the release of these chemicals. TRI facilities transfer off-site chemicals in waste to other facilities for disposal. These other facilities can dispose of the wastes in on-site landfills, disposal surface impoundments, in land treatment facilities, other types of land disposal, and underground injection wells or, if metals are sent to a wastewater treatment facility, they may be discharged to surface waters. These other facilities are generally treatment, storage and disposal (TSD) facilities regulated under the federal Resource Conservation and Recovery Act (RCRA).

To avoid counting the transfers to the TSD facilities that are also reported to TRI as on-site releases by the TSD facilities, off-site transfers for disposal to these TSD facilities have been omitted from tables that compare or summarize on-site and off-site releases nationally or at a state level. Only the on-site releases from the TSD facilities have been included. Conducting this exercise required that EPA match amounts transferred to TSD facilities with amounts reported by these TSD facilities by using the reported RCRA ID number. In some cases, these RCRA ID numbers were not reported correctly by the facility so there are some quantities that cannot be matched and, therefore, these quantities could not be omitted from the analysis.

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Q What are the top 3 sectors for total releases for all industries?

A In 2000, the total releases for all industries was 7.1 billion. The top 3 sectors for total releases are the following:

- metal mining (SIC code 10) - 3.4 billion pounds or 47%
- manufacturing sector (SIC codes 20-39) - 2.3 billion pounds or 32%
- electric utilities (SIC code 491/493) - 1.2 billion pounds or 16%

Q What are the top 3 chemicals for total releases for all industries?

A The top 3 chemicals for total releases are the following:

- C copper compounds
- C zinc compounds
- C hydrochloric acid

2000 Chemical Release Data--Original (Manufacturing) Industries

Q What are the top 3 sectors for total releases in the original (manufacturing) industries?

A The original industries reported 2.4 billion pounds of total releases. The top 3 sectors for total releases are the following:

- C primary metals sector (SIC code 33) - 664.0 million pounds or 28%
- C chemical manufacturing sector (SIC code 28) - 661.1 million pounds or 27%
- paper sector (SIC code 26) - 227.4 million pounds or 9.6%

Q What are the top 3 chemicals for total releases in the original (manufacturing) industries?

A The top 3 chemicals for total releases are:

- C zinc compounds
- C nitrate compounds
- C methanol

1999-2000 Chemical Release Data--All Industries

Q Were there any significant increases or decreases in releases to air, land, water, etc. from 1999 to 2000?

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- A From 1999 to 2000, releases to underground injection wells increased 7.3% or 19 million pounds. Most of this increase was due to Class I underground injection wells from the hazardous waste/solvent recovery industries and the chemical industry.

1999-2000 Chemical Release Data--New Industries

- Q Between 1999 and 2000, coal mines reported an increase in total releases of 4.6 million pounds or 42.8%. What accounted for this increase in releases?**

- A There is no one cause for this increase. The top 10 facilities for increases from 1999 to 2000 in the sector accounted for much of this increase. Three of these facilities reported for the first time in 2000; this accounted for 1.7 million pounds of the increase in reporting from 1999 to 2000.

1999-2000 Chemical Release Data--Original Industries

- Q Were there any significant increases or decreases in any of the original industry sectors from 1999 to 2000 or from 1995 to 2000?**

- A The primary metals sector reported the largest total releases, 659 million pounds, in 2000. Although releases from the primary metals sector decreased 3.3% between 1999 and 2000, this sector has reported a 19.3% increase in total releases since 1995 (from 552 million pounds in 1995 to 658 million pounds in 2000). The chemical sector reported the second largest quantity of total releases, 654 million pounds, in 2000. This sector reported a 2.4% decrease in releases between 1999 and 2000, and a 19.0% decrease in releases between 1995 and 2000 (from 828 million pounds in 1995 to 671 million pounds in 2000). It should be noted that, because phosphoric acid was deleted from the TRI list as of the 1999 reporting year, this trend information excludes phosphoric acid which had accounted for a fairly large volume of releases for the chemical industry in previous TRI Public Data Release reports.

The machinery sector (SIC code 35) reported the largest increase in total releases from 1999 to 2000, 1.7 million pounds or 9.9%. This sector reported a decrease in total releases from 1995 to 2000 of 8.5 million pounds or 30.6%.

Waste Management Background

- Q What is waste management?**

A Under TRI, a toxic chemical is considered to be managed as waste if it is released (including disposal), treated for destruction, burned for energy recovery, or recycled. It also includes any toxic chemical shipped off-site to another location for one of these waste management activities. Thus, for purposes of TRI, waste management includes: quantities released to the environment both at the facility and sent off-site for disposal; quantities treated at the facility or sent off-site for treatment; quantities used for energy recovery at the facility or sent off-site for energy recovery; and quantities recycled at the facility or sent off-site for recycling. The amount of chemicals in waste reported includes both waste generated and waste received by the facility. Production-related wastes do not include quantities reported as released to the environment due to one-time events.

Q **How accurate are the data on toxic chemicals in waste reported by industry? Aren't there real definitional and reporting issues associated with this data?**

A EPA collects the TRI data under the authority of two laws, EPCRA and the PPA (Emergency Planning and Community Right-to-Know Act and the Pollution Prevention Act). When Congress enacted these laws, they required facilities to use monitoring data if it was required under other laws. In the absence of these data Congress directed the facilities to make reasonable estimates.

Waste Management Data

Q **What sectors manage the most production-related waste?**

A In 2000, a total of 37.7 billion pounds of TRI chemicals in production-related waste was reported as managed. More than 80% of the production-related waste was managed by original (manufacturing) industry facilities. Another 9% was reported by metal mines, and electric utilities reported managing 4%.

Q **What accounted for the large increase in production-related waste managed between 1999 and 2000?**

A Overall, production-related waste increased by almost 26 percent from 1999 to 2000. The original (manufacturing) industries reported an increase of 34 percent while the new industries reported a decrease of 4.2 percent. The overall increase came primarily from amounts treated on-site and recycling on-site where the original (manufacturing) industries reported increases of 85.2% and 24.3% respectively. Two chemical manufacturing facilities accounted for almost all of the increase in production-related waste managed from 1999 to 2000. One facility reported a very large increase in the on-site treatment of ethylene. The other facility reported for the first

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time in 2000 and reported large amounts of cumene recycled on-site. Both the original (manufacturing) and new industries reported decreases in quantities released on- and off-site.

Under the Pollution Prevention Act, Congress authorized EPA to collect certain source reduction and waste management information. In 1991, EPA issued a proposal that would have provided the regulated community with regulatory definitions and reporting guidance to implement the PPA. However, this proposal raised complex issues that were not easily resolved, given the wide variety of manufacturing facilities that exist in the United States. To help resolve these issues, EPA has engaged in a series of formal and informal discussions with all stakeholders. Based on these discussions, and the experience gained from several years of collecting data under the PPA, the Agency is working on an amended proposal. Until EPA promulgates regulations, facilities may report based on their interpretation of the statutory requirements.

TRI Data Quality

Q What are the top things that EPA does to insure that the TRI data are of high quality?

A

- C EPA provides extensive compliance assistance such as general or industry-specific or chemical-specific guidance documents, industry training workshops for both the manufacturing industry and the new industry sectors and updated Reporting Forms and Instructions with examples from data quality technical surveys.
- C EPA's Data Entry Process is virtually (99.9%) error free. A key component of this process is double key entry.
- C Once a facility's data is entered into the EPA database, EPA prints out the entered data in a "facility data profile" (FDP) that is sent back to the facility to check. The FDP automatically checks for data errors and notes those on the FDP that is sent back to the facility. Facilities can then make revisions to their data if needed.
- C Independent of the "FDP process," EPA has a process for facilities to revise or withdraw their chemical reports if they discover they have made an error in reporting. For the 2000 reporting year, EPA processed approximately 350 requests from facilities to withdraw reported data from the TRI database and about 10,000 revisions to data.

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- C EPA sends each state a list of all the facilities that submitted a TRI report to EPA and all the chemicals that they reported so that the states can check this against the TRI reports they directly receive.
- C EPA sends each state a list of the 100 facilities with the largest releases in that state. EPA asks the state to make sure that there are no facilities included or excluded that should not be. EPA follows up with telephone calls to the states.
- C Once all the data has been entered into the TRI database, EPA calls facilities that may have an error in reporting, e.g. those facilities that reported very large increases or decreases in their releases from one year to the next and facilities with very large quantities of releases and total production-related waste. EPA called over 200 facilities this year that met that criteria. Approximately 27 of the facilities called had significant errors that needed to be corrected.
- C This year, because of concerns over the quality of the newly-reported PBT data, EPA identified 560 facilities to be called regarding their PBT chemical reports. As a result of these calls, approximately 130 facilities revised their reported release and other waste management data for PBT chemicals. For example, facilities revised their total release quantity of dioxin and dioxin-like compounds to 95,910 grams from the 750,226 grams originally reported.

Reducing Reporting Burden

Q What is the Agency doing to make data collection more efficient? What is TRI-ME ?

A The Toxics Release Inventory Made Easy (TRI-ME) software is an interactive, user-friendly software application that guides facilities through the entire TRI reporting experience, including “one-stop” guidance searching, threshold calculations, and reporting forms completion. This user friendly software is available from the TRI website at www.epa.gov/tri/report/trime. For Reporting Year 2001, TRI-ME has been distributed with the TRI Reporting Forms and Instructions package.

In addition, TRI-ME has been integrated with EPA’s Central Data Exchange (CDX). CDX is EPA’s single portal for reporting environmental data via the internet. By using TRI-ME, facilities can submit their RY 2001 Form R and/or Form A submissions through CDX. When submitting by CDX, facilities automatically receive a receipt acknowledgment through an email message. By using TRI-ME and CDX, data submitted by facilities are uploaded directly into

the TRI database, thus eliminating potential data entry mistakes and significantly reducing data entry time.

Q What is CDX?

A The EPA has established a single portal via the internet for reporting all environmental data to the Agency. This portal is known as the Central Data Exchange (CDX). CDX offers companies, facilities, and other entities a faster, easier, more secure option for reporting environmental data to the Agency. For more information regarding CDX, visit the CDX website at <http://www.epa.gov/cdx>. The TRI program is now in its third year of working with CDX to integrate TRI reporting. Facilities who use TRI-ME for their RY 2001 Form R and/or Form A submissions will be able to select the option to submit to CDX via the internet.

Q What is the TRI Assistance Library?

A The Assistance Library is a Windows-based help utility containing key policy and guidance documents such as the EPCRA Section 313 Questions and Answers book, and industry-specific and chemical-specific regulatory guidance documents.

Electronic Reporting to TRI

Q What percentage of the current TRI reporting community is reporting electronically?

A TRI facilities may report via the internet to CDX by using EPA's *Toxics Release Inventory Made Easy Software (TRI-ME)*. Facilities may also report their data on a 3-1/2 inch diskette using *TRI-ME*, the *Automated TRI Reporting Software (ATRS)*, or other reporting software. TRI-ME both simplifies facility reporting and improves data quality and processing. Approximately 79% of all TRI submissions were submitted either by CDX or diskette for RY 2000 submissions.

Federal Facilities

Q Are federal facilities, such as Department of Defense (DOD) military bases complying with the TRI reporting requirements?

A Most federal facilities comply with the TRI reporting requirements. Where EPA learns that a federal facility is not in compliance, it has been in contact with the federal agency to discuss the subject. A recent example is the agreement by DOD to report for the releases and other waste management of chemicals associated with vehicles from other military bases.

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Federal facilities typically are very different from the types of private sector facilities that report to TRI. While manufacturing facilities or electric utilities typically focus on the manufacture of a particular product, federal facilities mostly focus on providing a service. For example, a military base trains soldiers; a national park manages natural resources. EPA must therefore provide tailored guidance for federal facilities and work directly with their parent federal agency.

Q Why did the number of Federal facilities reporting to TRI drop from 1994 to 2000? (193 federal facilities reported in 1994 and 153 federal facilities reported in 2000)

A There appear to be a variety of reasons for this change. As a result of Executive Order 13148, as well as internal policies, Federal Agencies are pursuing pollution prevention activities to lower the amount of toxic chemicals used at Federal facilities. An example is the Defense Logistics Agency, which changed the formulation of fuels stored at its bulk storage facilities. Other reasons include changes in reporting requirements for ammonia and sulfuric acid and hydrochloric acid, as well as military base closures.

Q Did any federal facilities report to TRI prior to 1994?

A Prior to the 1994 reporting year, government owned government operated (GOGO) facilities were not required to report by law, but some reported voluntarily. In the 1993 reporting year, 36 federal facilities voluntarily reported to TRI including: 23 facilities from the Department of Energy (DOE), nine from the Department of Defense (DoD), two from the National Aeronautics and Space Administration (NASA), and two from the U.S. Enrichment Corporation (USEC). Government-owned facilities operated by contractors always have been subject to EPCRA and have had to report if they exceeded thresholds.

Q Why are there new EPA facilities reporting in 2000?

A EPA has reviewed the Superfund sites for which EPA is conducting the clean-ups to determine if any of these sites would qualify for TRI reporting. Although EPA is not the responsible party for these sites, it has determined that it should report for them. For the 2000 reporting year, there were two EPA-Lead Superfund sites that submitted TRI reports for the first time. EPA is currently reviewing the Superfund sites for the 2001 reporting year.

Q Even with the reporting from the new facilities, there are still very few EPA facilities reporting to TRI. Why is that the case?

A Most EPA facilities do not handle or generate significant quantities of TRI chemicals. EPA facilities voluntarily use a lower reporting threshold of 8,000 pounds instead of the regulatory

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10,000 pound use threshold. Only one facility, the National Fuel and Vehicle Emissions Laboratory in Ann Arbor, Michigan, exceeded that lower reporting threshold and filed TRI reports.