June 23, 2004

2002 Toxics Release Inventory Data Release

Questions and Answers

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2002 Public Data Release

TRI Background

Q1) What is the Toxics Release Inventory (TRI)?

A The Toxics Release Inventory (TRI) is a publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. Through their availability, TRI data have become a useful resource for many different organizations, such as:

- Communities use TRI data to begin dialogues with local facilities and to encourage them to reduce their emissions, develop pollution prevention (P2) plans, and improve safety measures;
- Public interest groups, government, academicians, and others use TRI data to educate the public about toxic chemical emissions and potential risk;
- Industry uses TRI data to identify P2 opportunities, set goals for toxic chemical release reductions, and demonstrate its commitment to and progress in reducing emissions;
- Federal, state, and local governments use TRI data to set priorities and allocate environmental protection resources to the most pressing problems;
- Regulators use TRI data to set permit limits, measure compliance with those limits, and target facilities for enforcement activities;
- Public interest groups use TRI data to demonstrate the need for new environmental regulations or improved implementation and enforcement of existing regulations;
- Investment analysts use TRI data to provide recommendations to clients seeking to make environmentally sound investments;
- Insurance companies use TRI data as one indication of potential environmental liabilities;
- Governments use TRI data to assess or modify taxes and fees based on toxic emissions or overall environmental performance; and
- Consultants and others use TRI data to identify business opportunities, such as marketing P2 and control technologies to TRI reporting facilities.

For more information on the TRI Program's please visit EPA's web site at www.epa.gov/tri.

Q2) What are the limitations of the TRI data?

A The TRI data reflect releases and other waste management activities of chemicals, not whether (or to what degree) the public has been exposed 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, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities which involve toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical, and the amount and duration of human or other exposure to the chemical after it is released. For more detailed information on this subject refer to *The Toxics Release Inventory (TRI) and Factors to Consider When Using TRI Data* document at **www.epa.gov/tri/tridata/index.htm#pdr.**

Q3) Who was required to report to TRI in 2002?

A A facility was required to report to TRI in the 2002 reporting year if it met the following three criteria:

- Conducted manufacturing operations within SIC codes 20 through 39 and/or, beginning in the 1998 reporting year, was in one of the following industry categories: metal mining, coal mining, electrical utilities, chemical wholesale distributors, petroleum terminals and bulk storage facilities, Resource Conservation and Recovery Act (RCRA) subtitle C regulated hazardous waste treatment and disposal facilities, and solvent recovery services. Also, federal facilities must report to TRI regardless of their industrial classification;

- Employed 10 or more full-time employee equivalents, and

- 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.

Q4) 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.

Summary of 2002 TRI Release Data

General Questions

Q5) Why Did EPA change the format of how the data is presented to the public such as the new format in *TRI Explorer*?

A The new format provides all of the same information as before, however, it provides the information in a different format. Specifically, stakeholders have been requesting that EPA provide more clarity in the data that is presented (e.g., Stakeholder Phase I process, ICR renewal process in 2003, letters, meetings, etc.). These changes do not collect any new or different information than what has been previously collected. Instead it now clearly identifies the categories for reporting releases and other waste management activities of toxic chemicals. Also, this change in the presentation of the data is consistent with the recent minor changes EPA made to the Form R.

Q6) Reporting year 2002 is the third year that facilities have been required to report PBT chemicals based on the lower reporting thresholds. How is EPA doing trend analysis in TRI Explorer given that some PBT chemicals have been reportable in prior years with the higher thresholds?

A The 2002 reporting year is only the third year in which previously listed PBT chemicals have been reported under lower reporting thresholds and for which newly added PBT chemicals have been reported at all. In addition, it's only the third year for reporting of vanadium compounds and for vanadium with its new "except when contained in alloys" qualifier. Therefore, the PBT chemicals and vanadium and vanadium compounds were excluded from the trend analyses of the 1998–2002 data. However, they are included in comparing 2000-2002 data.

2002 Disposal or Other Releases–All Industries

Q7) What are the total on- and off-site disposal or other releases for 2002?

A The total on- and off-site disposal or other releases for 2002 were 4.79 billion pounds. This includes material managed in RCRA Subtitle C landfills and other management practices that EPA has determined do not pose serious risks to human health. Even that portion of materials actually released to the environment may or may not result in human exposures or serious risks to human health.

Q8) What are the top 4 sectors for total disposal or other releases for all industries?

A In 2002, the total disposal or other releases for all industries was 4.79 billion pounds. The top 3 sectors for total disposal or other releases are the following:
- Metal mining (SIC code 10) – 1.30 billion pounds, 26 percent
- Electric utilities (SIC code 491/493) – 1.10 billion pounds, 23 percent
- Primary metals (SIC 33) – 743.5 million pounds, 16 percent (one facility reported 248.7 million pounds in one-time mining-related disposal or other releases)
- Chemical manufacturing (SIC code 28) – 551.2 million pounds, 12 percent

Q9) 2002 was the fifth year that EPA collected information from the commercial hazardous waste treatment sector. Is there double counting of some disposal or other releases in TRI now that EPA collects information from this sector?

A In the analysis of the 2002 data, EPA has taken steps to adjust for possible double counting of some disposal or other 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 disposal or other releases of these chemicals on-site. 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 disposal or other releases by the TSD facilities, off-site transfers for disposal to these TSD facilities are omitted in analyses that compare or summarize on-site and off-site disposal or other releases nationally or at a state level. Only the on-site disposal or other releases from the TSD facilities are 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.

Waste Management Background

Q10) 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 disposed of in landfills 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.

Q11) 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

Q12) What sectors manage the largest amounts of TRI chemicals in production-related waste?

A In 2002, a total of 26.2 billion pounds of TRI chemicals in production-related waste was reported as managed. The chemical manufacturing sector reported 43 percent (over 11 billion pounds) of this total amount of production-related waste. The primary metals industry ranked second in 2002, with 13 percent (over 3 billion pounds).

Dioxin

Q13) 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 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 intentionally produced in the United States.

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.

Q14) 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 that of 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.

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.

Q15) 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.

Q16) 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:

- TRI data are 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.

- 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.

- The Toxics Release Inventory data are reported in mass (grams) and are, 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.

Q17) 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 releases 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 show that 452,209 grams of disposal or other releases of dioxin and dioxin-like compounds were reported for 2002. However, one electric utility reported 311,022 grams in error. Without reporting by this facility, total disposal or other releases of dioxin and dioxin-like compounds were 141,187 grams. Chemical manufacturers accounted for the largest on- and off-site disposal or other releases of dioxin and dioxin-like compounds in 2002 – 125,179 grams or 89 percent of all industry sectors reporting releases of dioxin and dioxin-like compounds. The primary metals industry reported the second largest amount —5.636 grams or 4 percent of the total for all industry sectors. The primary metals sector reported the largest amount of air releases of dioxin and dioxin-like compounds in 2002 with 1,285 grams, accounting for 29 percent of all air emissions of dioxin and dioxin-like compounds from all industry sectors. Electric utilities reported the second largest, with 1,028 grams of air emissions or 23 percent of all air emissions of dioxin and dioxin-like compounds in 2002.

Q18) Where are the dioxins going according to the TRI data?

A On- and off-site disposal or other releases for dioxin and dioxin-like compounds totaled 141,187 grams in 2002 (excluding the error in reporting by one facility). Over half of total disposal or other releases were disposal or other releases off-site as transfers to disposal or other releases, which totaled 87,142 grams or 62 percent. On-site disposal or other releases were 38 percent or 54,045 grams. Air emissions were 4,409 grams. From 2001 to 2002, total on- and off-site disposal or other releases decreased by 5 percent (7,802 grams, excluding reporting by the facility with the error). An overall increase of 43 percent (42,188 grams) was reported from 2000 to 2002. The 43 percent increase resulted from reporting by two facilities, one in Texas that improved their release estimation techniques and another in Delaware reporting a one-time shut down and closure of a process impoundment.

Q19) 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.

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.

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.

Lead and Lead Compounds

Q20) What is lead and what are lead compounds?

A Lead is a metal. Lead exists in either one of two ways: as the pure metal (i.e., lead metal) or as a lead compound, in which the lead is combined with some other chemical or

chemicals. In its pure (elemental) form, lead is silver-white in appearance. When exposed to air it slowly turns bluish-gray in appearance, but it still retains its properties. Lead compounds vary in appearance and properties. Examples of lead compounds include: lead oxide, lead sulfide, and lead acetate, to name just a few. Lead metal and lead compounds are widely used in a variety of products and applications that include, for example: lead-acid batteries, ammunition, construction materials, solder, metal castings, and glass and ceramic products, plastics, electrical cable coverings, lubricating oils and greases, and certain paints. In 2001, an estimated 1,590,000 metric tons of lead were used in the form of products used in the United States. Lead is also present in low concentrations in ores and some fuels.

Q21) Why are people concerned about lead and lead compounds?

A Lead and lead compounds are of concern because these are ubiquitous chemicals that persist indefinitely in the environment, accumulate in humans and certain seafood consumed by humans, and are highly toxic to humans and other mammals. Lead mainly affects the nervous system and kidneys in adults, fetuses, infants and children. Long-term exposure of adults to lead at work has resulted in decreased performance in some tests that measure functions of the nervous system. Lead exposure may also cause weakness in fingers, wrists, or ankles, or cause anemia. At higher levels of exposure, lead can severely damage the brain and kidneys in adults, fetuses, infants and children. In pregnant women, high levels of exposure to lead may cause miscarriage. The toxic effects of lead are the same whether it enters the body through inhalation or ingestion.

Compared to adults, fetuses, infants and children are more susceptible to exposure to lead, and more sensitive to the toxic effects it causes. A child who ingests a significant amount of lead may develop anemia, kidney damage, colic, muscle weakness, and brain damage. If smaller amounts are ingested, much less severe effects on blood and brain function may occur. At still lower levels of exposure, lead can affect a child's mental and physical growth. Fetuses exposed to lead in the womb may be born prematurely and have lower weights at birth. Exposure in the womb, in infancy, or in early childhood may also slow mental development and lower intelligence later in childhood.

The ability of humans to accumulate lead and the effects that such accumulation can have on human health is well documented. To summarize the many studies regarding the uptake and disposition of lead in humans, the results of these studies show or at least indicate that: 1) lead is absorbed by humans; 2) a significant portion of that quantity which is absorbed accumulates within the skeleton; 3) lead can remain in bone for many years; 4) continuous or periodic exposure to low levels of lead from environmental sources results in a continual build-up (accumulation) of lead in the human body, and this build-up is likely to continue for at least several years; and 5) lead that has accumulated in

bone can later leave bone, especially during periods of increased bone mineral loss (such as occurs for example during pregnancy, breast feeding, menopause, and old age), enter the blood stream and travel to other areas of the body to which lead is toxic. This latter scenario is particularly likely to occur when the individual has an increased demand for calcium, such as during pregnancy. Fetuses can be exposed to lead that had previously accumulated in their mother's bones. There is evidence that suggests that infants and children and African Americans may be especially susceptible to bioaccumulating lead, and certain genetic factors may increase an individual's susceptibility to accumulating lead.

Elevated levels of lead in water can cause reproductive damage in some aquatic species and blood and neurological changes in others. Wild and domestic animals may ingest lead while grazing. They experience the same kind of effects as people who are exposed to lead.

Q22) Why did EPA lower the TRI reporting thresholds for lead and lead compounds to 100 pounds?

A Lead and lead compounds are persistent, bioaccumulative, and toxic (PBT) chemicals and therefore EPA lowered the reporting threshold to 100 pounds from 25,000 pounds and 10,000 pounds. Not only are lead and lead compounds toxic, the additional properties of persistency and an ability to bioaccumulate in different types of organisms increase the likelihood of exposure to these chemicals. As with other PBT chemicals, even relatively small releases of lead or compounds that contain lead could eventually become problematic because these types of compounds don't breakdown and go away. Rather, they remain in the environment and accumulate in different organisms, thereby increasing the likelihood that an organism sensitive to the toxicity caused by these chemicals (such as humans) will be exposed.

Under the previous 25,000 pound and 10,000 pound reporting thresholds a significant amount of the releases and other waste management quantities of lead and lead compounds were not being reported. Therefore, the public did not have important release information about lead or lead compounds being released in their communities. By lowering the 25,000 pound and 10,000 pound reporting thresholds for lead and lead compounds, additional releases and other waste management quantities of these chemicals are being collected. As a result of the 100 pound thresholds, many more reports (Form Rs) are filed with EPA. Many of these additional reports were filed by those entities that previously did not file reports for lead and lead compounds because they did not meet the 25,000 pound and 10,000 pound thresholds.

Q23) How do the lead data for 2001 and 2002 compare with the data before the threshold was lowered?

A The lowering of the reporting thresholds for lead and lead compounds beginning with reporting year 2001 increased reporting of releases over four-fold when compared to the number of release forms submitted between 1998-2000, which averaged approximately 2,000 reports per year. Reporting for lead and lead compounds prior to the 2001 reporting year was based on the higher TRI thresholds of 25,000 pounds for manufacture or processing of lead or lead compounds and 10,000 pounds for otherwise using lead or lead compounds.

Beginning with the reporting year 2001, the reporting thresholds for lead and lead compounds were reduced to 100 pounds for manufacture, processing or otherwise using lead or lead compounds. There were 8,837 TRI release forms submitted for lead and lead compounds for 2001, which represents more than a four-fold increase when compared to reporting years 1998-2000. The reason for the increase in the number of report submissions is because lowering the threshold to 100 pounds required the reporting of releases of lead or lead compounds by those facilities that did not exceed the previous 25,000 pound and 10,000 pound reporting thresholds, and did not have to file reports for lead or lead compounds prior to reporting year 2001. In other words, as a result of the lower reporting threshold, more facilities are required to report their annual disposal or other releases and other waste management quantities of lead and lead compounds.

Q24) What are the major sources of releases of lead and lead compounds into the environment, and what happens to lead and lead compounds following release into the environment?

A Lead, either in the form of the pure metal or a compound, is released into the environment from a variety of sources. Current primary anthropogenic sources of lead releases to air include: burning of fossil fuels such as coal or oil (e.g., from electric utilities), industrial processes involving lead, and burning of solid wastes that contains lead. The highest levels of lead in air are generally found near lead smelters. Major sources of lead contamination of soils include: lead that precipitates out of the air (e.g., from a lead smelter); weathering and chipping of lead-based paint from buildings and other structures; disposal of lead in municipal and hazardous waste dump sites; and mining wastes that have been used for development of sandlots, driveways, and roadbeds. Sources of lead in surface water include: deposits of lead-containing dust from the atmosphere, wastewater from industries that process lead (primarily iron and steel industries and lead producers) urban runoff, mining piles, and leaching from soils into groundwater and into water systems.

Like all metals, lead persists indefinitely in the environment and, once released into the environment will persist indefinitely in the form of lead metal or a lead compound(s) or both. As with many metals, the specific form or forms in which lead will exist in a given locality depend largely on the prevailing environmental conditions of that locality. Following its release into a particular environmental media, lead may eventually migrate to other media. Lead fumes or particles emitted to air, for example, can attach to dust and be carried long distances in the air, and then subsequently deposited on surface soils and waters. Once lead touches soil, it usually adheres to the soil particles. Depending upon environmental lead can remain in soils for many years, or migrate from soils and contaminate surface or ground waters. Lead that is bound in soils can still be absorbed by humans. Children are particularly susceptible to exposure to lead because they often play in dirt and lead is absorbed more efficiently by children than adults. Once in waters, either from direct discharge or migration from soils, lead can exist in the water as a soluble (dissolved) form or it may adhere to sediments or other organic matter in the waters and exist as an insoluble form. In most waters, lead will exist in both forms to some degree, depending upon acidity and organic content. Increased acidity of water favors solubilization of lead and, hence, human exposure to lead from drinking water.

Q24) Where are lead and lead compounds going according to the 2002 TRI data?

A For reporting year 2002, 8,606 TRI forms were submitted for lead and lead compounds. Total on- and off-site disposal or other releases of lead and lead compounds decreased slightly, by 0.5% or 2.0 million pounds from 2001 to 2002. However, one facility reported in error a decrease of 15.7 million pounds. Without this error, total disposal or other releases of lead and lead compounds increased by 3% or 13.7 million pounds. The metal mining sector reported largest amounts of lead and lead compounds and the largest increase from 2001 to 2002, an increase of 3% or 11.6 million pounds. Without considering the reports for lead submitted by the metal mining sector and the reports by the one facility in error, total disposal or other releases of lead and lead compound increased by 2% or 2.1 million pounds from 2001 to 2002.

Mercury

Q25) Where does mercury come from?

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.

Q26) What do the RY 2002 TRI data show for mercury and mercury compounds?

A Total on- and off-site disposal or other releases of mercury and mercury compounds was 5.3 million pounds in 2002. Three facilities accounted for 75 percent of the total, mainly as on-site surface impoundments and on-site landfills other than RCRA Subtitle C landfills. Without the reporting by the three facilities, total disposal or other releases were 1.3 million pounds, with almost 142,000 pounds of on-site air emissions.

Q27) How did the data change for mercury and mercury compounds from 2001 to 2002?

A From 2000 to 2002 total disposal or other releases of mercury and mercury compounds increased by 22 percent or almost 966,000 pounds. Without the reporting by the three facilities with the largest amounts (and which reported a combined increase of 1.7 million pounds), total disposal or other releases decreased by 36 percent (over 754,000 pounds). On-site air emissions decreased by 11 percent (about 18,000 pounds).

Q28) Where can I get more information about mercury?

A For additional information, please see EPA's mercury website at www.epa.gov/mercury/.

Federal Facilities

Q29) 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.

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.

Q30) What do the TRI data on federal facilities show for 2002?

A For 2002, 315 federal facilities reported 85.2 million pounds of on- and off-site disposal or other releases. Total production-related waste managed was 204.4 million pounds.

Q31) How did the data change for federal facilities from 2001 to 2002?

A Total on- and off-site disposal or other releases reported by federal facilities increased by 9 percent (6.8 million pounds) from 2001 to 2002. Tennessee Valley Authority facilities reported an overall increase of 2.5 million pounds (from 61.4 million pounds in 2001 to 63.9 million pounds in 2002). Two Department of Energy facilities reported a combined increase of 1.5 million pounds of lead. The increased lead reporting was as non-production-related waste related to clean-up activities.

Q32) 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.

Q33) 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 10,000 pound use threshold. In 2002, however, EPA Fund-Lead Superfund Sites reported almost 1.78 million pounds in total disposal or other releases (a 2 percent decrease from 2001) related to clean-up activities at hazardous waste sites.

Electronic Reporting to TRI

Q34) What percentage of the current TRI reporting community is reporting electronically?

A The preferred method of reporting to TRI is the use of *TRI Made-Easy* (*TRI-ME*) Software and submit through the internet via the Central Data Exchange (CDX). Facilities may also report their data on a 3-1/2 inch diskette using *TRI-ME,* the *Automated TRI Reporting Software (ATRS)* (for prior year revisions only), or other reporting software. TRI-ME both simplifies facility reporting and improves data quality and processing. 81% of submissions received for RY 2002 were received electronically. Of the submissions received electronically, 23% of the submissions were received via CDX. If all facilities reported over the Internet using CDX, EPA estimates it would save the taxpayers over $1.5 million annually.

Reducing Reporting Burden

Q35) Does the Toxics Release Inventory Made Easy (TRI-ME) reporting software assist the Agency in more efficient data collection?

A Yes, 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 2002, TRI-ME was 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.

Q36) 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 fourth year of working with CDX to integrate TRI reporting. Facilities that use TRI-ME for their Form R and/or Form A Certification Statement submissions are able to select the option to submit to CDX via the Internet. In addition, for RY 2002 submissions, facilities had the additional new option of using "electronic signature." The TRI Program expects that substantially increased Internet reporting along with facility owners' and operators' electronic signature will increase the speed with which the program receives, processes, quality-assures and releases TRI data to the public.

Q37) 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.

Q38) How does EPA plan to use TRI's Stakeholder Dialogue to reduce TRI reporting burden?

A EPA initiated Phase II of the Stakeholder Dialogue in November 2003, by requesting comment on a series of options aimed at reducing the burden associated with TRI reporting. Those options, including an additional request for comment on the utility of the Toxics Release Inventory - Made Easy (*TRI-ME*) Software are listed here:

Option #1 - Higher Reporting Thresholds for Small Businesses
Option #2 - Higher Reporting Thresholds for a Category of Facilities or Class of Chemicals with Small Reportable Amounts
Option #3 - Expanding Eligibility for the Form A Certification Statement
Option #4 - Creating a new, "No Significant Change" Certification Statement
Option #5 - Use of Range Reporting for Section 8 of the Form R
Option #6 - Other Options for Burden Reduction
Request for Comment on the Ongoing Toxics Release Inventory - Made Easy (*TRI-ME*) Software Initiative; Enhancing the *TRI-ME* Software

Further discussion of these options can be found in the EPA stakeholder dialogue white paper available online at: http://www.epa.gov/tri/phase2/phase_2.htm.
Over 750 comments were submitted during the comment period on this phase of the Stakeholder Dialogue, which closed on February 4, 2004.

EPA is now considering how to proceed. TRI program staff are reviewing and assessing the comments and conducting additional research in order to evaluate all options. Implementation of one or more of the options noted above would require a rulemaking. A proposed rule is not expected prior to 2005.

TRI Data Quality

Q39) What are the top things that EPA does to insure that the TRI data are of high quality?

A 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.

Beginning with reporting year 2001, EPA began distributing, as a part of its Reporting Forms and Instructions package, an interactive, intelligent, and user-friendly software that guides facilities through the entire TRI reporting experience. The *TRI-ME* (Toxics Release Inventory - Made Easy) software walks the user through compliance determinations, guidance searches, forms completion, including validation of the data, and submission of the completed forms to EPA by one of three methods: paper, diskette with paper certification letter, and electronically via the Internet with electronic signature.

Submission over the Internet using CDX is by far the most efficient means to transmit TRI data to the TRI Information System (TRIS). CDX is EPA's single portal for reporting environmental data via the Internet. By using TRI-ME, facilities can submit their 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.

Once a facility's data are entered into the TRIS database, a Facility Data Profile (FDP) is generated in a PDF file format and is placed on a secure, password protected website for the facilities to retrieve their data. The TRIS database automatically checks for errors and

notes those on the FDP. Facilities can make revisions to their data as outlined in the TRI Reporting Forms and Instructions.

EPA allows facilities to revise or withdraw their chemical reports if they discover they have made an error in reporting. EPA is taking steps to minimize these correction steps by enhancing data quality steps in TRI-ME and the FDP.

In some cases, EPA has actually made individual phone calls to facilities when EPA staff have spotted what appear to be anomalous results.