June 30, 2003

2001 Toxics Release Inventory Data Release

Questions and Answers

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TRI Background

Q Who was required to report to TRI in 2001?

A A facility was required to report to TRI in the 2001 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.

Summary of 2001 TRI Release Data

General Questions

Q Reporting year 2001 is the second 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 PBT chemicals have been reportable in prior years with the higher thresholds?

A The 2001 reporting year is only the second 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 second 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 1998–2001 data. However, they are included in comparing 2000-2001 data.

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 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 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 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.

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 percent coming from 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 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.

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.

- 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.

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 met 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).

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

A Yes, for some facilities they are. 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, the TRI reporting form allows for facilities to provide data on their congener (member of the dioxin category) distribution if they have it. Facilities are 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, the congener profiles can be used 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 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 chemical manufacturers accounted for the largest releases on- and off-site of dioxin and dioxin-like compounds in 2001-- 136,827 grams or 92.0 percent of all industry sectors reporting releases of dioxin and dioxin-like compounds. The primary metals industry reported the second largest amount of releases of these compounds-- 4,551 grams or 3.1 percent of total releases for all industry sectors. The paper industry reported the third largest amount of releases, with 2,854 grams (Note that 2,777 grams of this was a one time release from one facility that cleaned out sludge from an old treatment system that contained dioxin and dioxin-like compounds from the time when the facility used chlorine). Electric utilities reported the largest amount of air releases of dioxin and dioxin-like compounds in 2001 with 771 grams, accounting for 26.7 percent of all air emissions of dioxin and dioxin-like compounds from all industry sectors.

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

A On- and off-site releases for dioxin and dioxin-like compounds totaled 148,759 grams in 2001. Over half of total releases were released off-site as transfers to disposal, which totaled 91,101 grams or 61.2 percent. The second largest release type was on-site land management in other than RCRA subtitle C landfills, which totaled 42,808 grams (or 28.8 percent). Much smaller amounts of other types of releases were reported. On-site land management in RCRA subtitle C landfills in 2001 totaled 9,964 grams or 6.7 percent of total releases. Air emissions were 2,888 grams, and surface water discharges were 1,851 grams. Underground injection of dioxin and dioxin-like compounds was 148 grams.

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 percent 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 percent, and
- 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.

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.

Lead and Lead Compounds

Q 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.

Q 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.

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

A The reason why EPA lowered the 25,000 pound and 10,000 pound reporting thresholds is that lead and lead compounds are persistent, bioaccumulative, and toxic (PBT) chemicals. 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 release reports (Form Rs) are filed with EPA. Many of these additional reports were filed by those entities that previously did not file release reports for lead and lead compounds because they did not meet the 25,000 pound and 10,000 pound thresholds.

Q Why doesn't the new 100 pound reporting threshold apply to lead when it is contained in stainless steel, brass, or bronze alloys?

The TRI lead rule lowered the previous 25,000 pound and 10,000 pound reporting thresholds for lead and lead compounds to 100 pounds, with the exception of lead contained in stainless steel, brass, and bronze alloys. For stainless steel, brass or bronze alloys that contain lead, the quantity of lead contained in these alloys is still applied to the 25,000 pound and 10,000 pound reporting thresholds. EPA deferred its decision on lowering the 25,000 pound and 10,000 pound reporting thresholds for lead when it is contained in stainless steel, brass, and bronze alloys because the Agency is currently evaluating a previously submitted petition as well as comments received in response to previous petition denials that requested the Agency revise the EPCRA section 313 reporting requirements for certain metals contained in stainless steel, brass, and bronze alloys. EPA is currently reviewing whether there should be any reporting changes regarding the listed constituents (e.g., lead) of stainless steel, brass and bronze alloys.

Q What are the major sources of lead and lead compounds?

A Lead, either in the form of the pure metal or a compound, is released into the environment from a variety of sources. Current sources of lead releases to the air include: burning of fossil fuels such as coal or oil, industrial processes, and burning solid waste. Before EPA banned the use of leaded gasoline for highway transportation in 1995, a large portion of the total amount of lead released into the environment came from car exhaust. Much of this lead eventually deposited onto soils, in which it may still remain. Concentrations of lead in air have declined dramatically as a result of its being banned from automotive fuel. Nowadays, the highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incineration, electric utilities, and lead-acid battery manufacturers.

Sources of lead in dust and soil include:

- Lead that precipitates out of the air,
- 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 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. Lead bound to soil particles in water is unlikely to end up in underground water or drinking water unless the water is acidic. Small amounts of lead may enter rivers, lakes, and streams when soil particles from the land run-off into water bodies during rainstorms. Lead compounds present in water may combine with different chemicals depending on the acidity and temperature of the water.

Q **What happens to lead and lead compounds following release into the environment?**

A Lead released into the environment in the form of lead metal or a lead compound may remain as such or convert to another lead compound. 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 can eventually migrate to other media.

Lead fumes or particles emitted to air 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. Lead can remain in soils for many years. Release of the lead from the soil particles will depend on the type of lead compound and on the physical and chemical characteristics of the soil. However, even 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.

Lead may be mobile in soils under a range of environmental conditions. Variables including soil pH, soil organic matter content and the particular form(s) of lead present in soil play a significant role in the mobility of lead in soil. The degree to which lead sorbs to soil organic matter has been shown to be dependent on soil acidity. An increase in soil acidity (i.e., a decrease in soil pH) will cause lead bound to soil organic matter to become unbound, and can cause the concentrations of lead in soil water to increase. On the other hand, a decrease in soil acidity (i.e., an increase in soil pH) will cause lead in soil water to become bound to soil organic matter and, consequently, cause a decrease in the concentration of lead in soil water.

Lead that was released to air can adhere to dust particles and eventually deposit to surface waters such as lakes, rivers and streams. Lead in wastewaters released from industries that process lead (primarily iron and steel industries and lead producers), can eventually enter surface and ground waters. Other sources of lead in surface and ground waters include urban runoff, mining piles, and leaching from soils. Lead bound to soil particles in water is unlikely to end up in underground water or drinking water unless the water is acidic. Small amounts of lead may enter rivers, lakes, and streams when soil particles from the land run-off into water bodies during rainstorms. Lead compounds present in water may combine with different chemicals depending on the acidity and temperature of the water.

Q How might I be exposed to lead or lead compounds?

A People can be exposed to lead in a variety of ways. The principal sources of exposure for people in the general population is through oral consumption of food and non-food items that contain lead, or inhalation of air or dust particles that contain lead. Specific examples under this source include: consumption of lead-based interior paint in older dwellings; inhalation of dust contaminated with lead from environmental sources; consumption of drinking water contaminated with lead; inhalation of air contaminated with lead from combustion of industrial wastes or products that contain lead; hand-to-mouth activities of young children living in areas polluted with lead.

While people may be exposed to lead from inhalation of lead fumes or particles emitted to air, lead fumes and particles can eventually contaminate other media, which can also serve as sources of exposure. Lead fumes or particles 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. Lead can remain in soils for many years. Release of the lead from the soil particles to drinking or ground waters can occur, but will depend on the type of lead compound and on the physical and chemical characteristics of the soil. However, even 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.

Q Where are lead and lead compounds going according to the most recent TRI data?

A There were 8,561 TRI release forms submitted for lead and lead compounds for 2001. On- and off-site releases of lead and lead compounds totaled 443.0 million pounds, with 422.2 million pounds of this reported as lead compounds. On-site releases represented 87.5 percent of total releases of lead and lead compounds, and off-site releases represented 12.5 percent in 2001.

For 2001, on-site land releases were 379.4 million pounds (85.6 percent of total releases) including 18.6 million pounds to RCRA Subtitle C landfills and 360.8 million pounds of other on-site land releases. Underground injection of lead and lead compounds was 6.0 million pounds to Class II-V wells and 206,138 pounds to Class I wells. Air emissions were 1.6 million pounds and surface water discharges were 413,420 pounds.

The total amount of lead (from both lead metal and lead compounds) reported as being in production-related waste in 2001 was 1.23 billion pounds. Over 78 percent of this quantity of lead was reported as having come from lead compounds.

Over 44 percent (543.7 million pounds) of the total production-related waste of lead and lead compounds was recycled on-site. An additional 258.8 million pounds (21.0 percent) was recycled off-site. Over one-third of production-related waste of lead and lead compounds (428.7 million pounds) was released on- and off-site in 2001. Other types of waste management accounted for less than one percent of the total.

Transfers off-site for further waste management, including disposal, of lead and lead compounds totaled 320.2 million pounds in 2001. Transfers of lead compounds accounted for 78.7 percent of the total.

Transfers to recycling were 255.5 million pounds or 79.8 percent of all transfers for further waste management, including disposal, and other transfers off-site to disposal were 64.6 million pounds or 20.2 percent. Other types of transfers off-site for further waste management, including disposal, of lead and lead compounds totaled less than one percent of the total for 2001.

Q What is EPA doing to control releases of lead and lead compounds into the environment and address human health concerns of lead and lead compounds?

A Over the last 25 years or so EPA has, through regulatory and voluntary actions, acted aggressively to reduce and control releases of lead to all environmental media in the United States. EPA has been successful with these actions, and some are described here. For example, the use of lead in automotive gasoline was a major source of environmental lead contamination and human exposure to lead. In the early 1970s, EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline

was introduced for motor vehicles equipped with catalytic converters. The use of leaded gasoline in highway vehicles was banned by EPA in 1995.

In 1978, EPA set national air quality standards for lead. EPA's lead air quality monitoring strategy focuses on areas surrounding industrial sources of lead such as primary and secondary lead smelters and battery manufacturers. Areas that have lead levels that exceed acceptable levels must develop and implement a plan to reduce their air emissions of lead. EPA also has standards aimed to reduce air emissions (including lead) from medical waste incinerators, municipal waste combustors, and hazardous waste incinerators.

In 1978, EPA banned the use of lead in most paints, including paints used in residential structures (e.g., houses). Therefore, homes built after 1978 should not contain lead-based paints, except in those homes built within a few years after 1978 in which surplus supplies of lead-based paints may have been used. Federal regulations require a person selling a home to disclose any known lead-based hazards on the property. The use of lead in solder for cans is banned, and lead content in dishes and other eating utensils is restricted.

EPA has established several programs designed to further reduce the releases of lead into the environment, increase public awareness to the toxic properties of lead, and reduce exposure to lead. More information on these EPA programs can be obtained from the Internet at http://www.epa.gov/opptintr/lead . EPA's Lead Awareness Program (http://www.epa.gov/lead/leadpbed.htm) develops regulations, conducts research, and designs educational materials and outreach efforts in a continuing program to protect human health.

Q **How has the lowering of the reporting threshold for lead and lead compounds beginning with reporting year 2001 impacted on the reporting of releases of lead and lead compounds?**

A The lowering of the reporting thresholds for lead and lead compounds beginning with reporting year 2001 has increased reporting of releases over four-fold when compared to the number of release forms submitted between 1998-2000, which averaged approximately 2,000 release 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 8,561 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 release 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 release 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 releases and other waste management quantities of lead and lead compounds.

Q **The data in the Public Data Release Report for 2001 indicate a large increase in the total releases of lead and lead compounds from 2000 to 2001. What accounted for this large increase?**

A The lead and lead compounds release data for reporting year 2001 do not necessarily indicate a large increase in the total releases of lead and lead compounds from 2000 to 2001, nor can this be discerned from an analysis of the release data reported for 2000 and 2001.

For reporting year 2000, total on-and off- site releases reported for lead and lead compounds was slightly more than 374 million pounds. The total number of release forms submitted for reporting year 2000 was 2,025 forms. Reporting for lead and lead compounds for the 2000 reporting year was based on the higher TRI reporting 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. 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 activity (reporting) thresholds, and did not have to file release 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 now required to report their

annual releases and other waste management quantities of lead and lead compounds, but these same facilities may have been releasing lead prior to 2001: they just never had to report these releases.

For reporting year 2001, a total of 8,561 release forms were submitted for lead and lead compounds for 2001, which represents more than a four-fold increase when compared to 2000. On- and off-site releases reported for lead and lead compounds for reporting year 2001 totaled 443 million pounds, which represents release reporting of an additional 69 million pounds of lead when compared to the quantity reported for reporting year 2000.

While the number of facilities *reporting* releases increased over four-fold in 2001, and the *reported* release quantities are greater for reporting year 2001, the *actual* environmental release quantities of lead and lead compounds may or may not have increased. Therefore, it cannot be concluded from the 2001 reporting year data that actual releases of lead and lead compounds have increased.

Mercury

Q 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.

Q How did the release data change for mercury and mercury compounds from 2000 to 2001?

A On- and off-site releases of mercury and mercury compounds increased from 4.3 million pounds to 4.9 million pounds from 2000 to 2001, an increase of 13.7 percent. On-site releases increased by 35.2 percent, or 1.2 million pounds. This was due to an increase in management in other than RCRA subtitle C landfills, which increased by 1.3 million pounds or 39.1 percent. All other types of on-site releases of mercury and mercury compounds decreased from 2000 to 2001. On-site management in RCRA subtitle C landfills decreased by 21,998 pounds or 26.8 percent. On-site air releases decreased by 11,180 pounds or 6.9 percent, surface water discharges decreased by 622 pounds or 25.6 percent and underground injection decreased by 1,937 pounds or 16.5 percent.

Transfers to disposal of mercury and mercury compounds also decreased from 2000 to 2001, by 73.3 percent or 626,185 pounds. This was primarily due to decreases in mercury and mercury compounds being sent for solidification/stabilization and sent to landfills/surface impoundments. Transfers for solidification/stabilization decreased by 347,076 pounds or 83.6 percent. Transfers to landfills/surface impoundments decreased by 285,043 pounds or 74.9 percent.

TRI 2001 Chemical Release Data

2001 Chemical Release Data–All Industries

Q What are the total on- and off-site releases for 2001?

A The total on- and off-site releases for 2001 were 6.2 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.

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

A In 2001, the total releases for all industries was 6.2 billion pounds. The top 3 sectors for total releases are the following:

- metal mining (SIC code 10) - 2.78 billion pounds or 45 percent
- electric utilities (SIC code 491/493) - 1.06 billion pounds or 17 percent
- chemical manufacturing (SIC code 28) - 582.6 million pounds or 9 percent

Q 2001 was the fourth 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 2001 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.

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

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

- copper compounds - 1.02 billion pounds or 17 percent
- zinc compounds - 962.1 million pounds or 16 percent
- hydrochloric acid - 588.1 million pounds or 10 percent

2000-2001 Chemical Release Data

Q Were there any significant increases or decreases in releases to air, land, water, etc. from 2000 to 2001?

A From 2000 to 2001, releases to underground injection wells decreased 22.6 percent or 61.2 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.

2000-2001 Chemical Release Data–Industries

Q Were there any significant increases or decreases in any of the industry sectors from 2000 to 2001 or from 1998 to 2001?

A The metal mining sector reported the largest total releases and the largest change from 2000 to 2001. Their releases decreased by 602.5 million pounds or 19.8 percent from 2000 to 2001 (from 3.0 billion pounds to 2.4 billion pounds). From 1998 to 2001, the metal mining sector reported a decrease of 942.2 million pounds or 28.2 percent. The electric utility sector reported the second largest change in total releases from 2000 to 2001, with a decrease of 98.3 million pounds or 8.5 percent. However, this sector reported an overall decrease of 8.7 percent or 97.2 million pounds from 1998 to 2001.

It should be noted that, because the reporting threshold was lowered for lead and lead compounds for 2001, data for lead and lead compounds is not included in the changes comparing years before 2001. Also, the comparison of years 1998 to 2001 does not include any PBT chemicals because of lower reporting thresholds for 2000 for PBT chemicals other than lead and lead compounds nor does it include vanadium and vanadium compounds because the reporting definition changed for these chemicals.

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 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.

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 largest amounts of TRI chemicals in production-related waste?

A In 2001, a total of 26.7 billion pounds of TRI chemicals in production-related waste was reported as managed. Forty percent (40%) of this total amount of production-related waste (10.69 billion pounds) was reported by the chemical manufacturing sector. The primary metals industry ranked second in 2001, with 3.1 billion pounds (11.6%) reported. Metal mining ranked third, reporting 2.87 billion pounds of toxic chemicals in production-related waste (10.7%).

Q What accounted for the large decrease in TRI chemicals in production-related waste managed between 2000 and 2001?

A Overall, toxic chemicals in production-related waste decreased by more than 20 percent from 2000 to 2001. The chemical manufacturing sector reported the largest absolute decrease from 2000 to 2001 (from 15.7 billion pounds to 10.7 billion pounds), a reduction of 5 billion pounds or 32.2 percent. The primary metals industry reported the second largest decrease, with a net reduction of 1 billion pounds (27.4 percent) and the metal mining industry accounted for the third largest decrease of 464 million pounds (15.5 percent). All three of these sectors experienced a decrease in industrial production between 2000 and 2001. From 2000 to 2001, the chemical manufacturing sector showed a decrease of 2.1 percent in industrial production, the primary metals industry showed a 15.1 percent decrease in industrial production, and the metal mining industry experienced a 14.1 percent decrease in production.

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

- 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.

C EPA's Data Entry Process is virtually (99.9%) error free. A key component of this process is double key entry.

- Once a facility's data is 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.

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 2001 reporting year, EPA processed approximately 350 requests from facilities to withdraw reported data from the TRI database and about 10,000 revisions to data.

- 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.

- 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.

- This year, because of concerns over the quality of newly-reported lead and lead compounds data under lower reporting threshold, EPA calls facilities that may have an error in reporting, for example, those facilities that reported very large increases or decreases in their releases from one year to the next; facilities with very large quantities of releases and total production-related waste; facilities that reported wrong SIC codes; facilities that reported wrong RCRA ID in their transfers; facilities that reported wrong state code in their transfers; facilities that reported wrong quantities for waste management activities (release, treatment, energy recovery and recycling); and facilities that reported range reporting for PBT chemicals. EPA called over 850 facilities this year that met that criteria. As a result of these calls, approximately 377 facilities revised/withdrew their reported release and other waste management data for PBT and non-PBT chemicals.

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 Certification Statement submissions will be able to select the option to submit to CDX via the Internet, and for their RY 2002 submissions they have a 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.

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)* (for prior year revisions only), or other reporting software. TRI-ME both simplifies facility reporting and improves data quality and processing. Approximately 80% of all TRI submissions were submitted either by CDX or diskette for RY 2001 submissions.

Q Of all facilities reporting to TRI in 2001, what percentage used TRI-ME?

A Of the 24,896 facilities reporting in 2001, approximately 40% (10,000 facilities) used TRI-ME.

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.

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 increase from 2000 to 2001 but total releases reported decreased?**

A From 2000 to 2001, there was a 12.8 percent increase in the number of forms submitted by federal facilities that reported to TRI (from 632 forms to 713 forms). Despite this, the total releases between these two years dropped from 82.0 million pounds reported in 2000 to 75.7 million pounds reported in 2001. This 7.6 percent (6.3 million pounds) decline was primarily due to the net decrease reported by the Tennessee Valley Authority (TVA) facilities. TVA facilities reported the largest decrease in on- and off-site releases of any federal agency. TVA facilities reported a decrease of 10.3 million pounds from 2000 to 2001, which represented a decrease of 14.5 percent. However, most other federal agencies reported increases in total releases. In fact, the quantity of TRI chemicals in production-related waste managed by federal facilities rose 1.4 percent between 2000 and 2001 (from 210.5 million pounds to 213.6 million pounds).

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 did total releases of PBT chemicals and the quantity of PBT chemicals in production-related waste reported by federal facilities increase by over 200 percent from 2000 to 2001?**

A From 2000 to 2001, on- and off-site releases of PBT chemicals reported by federal agencies increased by over 200 percent, from 15,988 pounds to 50,039 pounds. Most of the increase was due to the increase in 33,313 pounds reported by Navy facilities. The quantity of PBT chemicals managed in production-related waste by federal facilities increased from 26,976 pounds to 78,925 pounds from 2000 to 2001. Once again, this increase of almost 200 percent was largely due to an increase in reporting from Navy facilities, which reported 33,352 pounds of PBT chemicals in production-related waste in 2001 as compared to 144 pounds in 2000. Comparisons of TRI data for PBT chemicals from 2000 to 2001 do not include data on lead and lead compounds because reporting thresholds for these chemicals were lowered for 2001.

Q Why were there new EPA facilities reporting in 2001?

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 2001 reporting year, there were two EPA-Lead Superfund sites that submitted TRI reports for the first time.

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 10,000 pound use threshold. From 2000 to 2001, however, EPA Fund-Lead Superfund Sites reported a net increase of almost 719,000 pounds in total releases (a 65.4 percent increase) related to clean-up activities at hazardous waste sites.