State of Utah
Department of Environmental Quality

# Utah Toxic Release Inventory
# 2002 Data Summary Report

Division of Environmental Response and Remediation
July 2004

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# EXECUTIVE SUMMARY

## Introduction

The Toxic Release Inventory (TRI) is a database providing information concerning releases of certain chemicals into the environment, and transfers to off-site facilities. Facilities in certain industrial sectors using more than established volumes of TRI-listed chemicals report their TRI information annually to the U.S. Environmental Protection Agency (EPA) and to the state in which they are located. Reports must be submitted by July 1 of the following year in which the releases occurred. This report is a summary of data submitted to the Utah Department of Environmental Quality (UDEQ) for calendar year 2002.

## 2002 TRI Summary

TRI information includes only selected industrial sectors using larger volumes of certain listed chemicals. Therefore, TRI data only includes a relatively small portion of all chemical releases of environmental significance. TRI data can be used to provide basic information on the types and volumes of waste and emissions at a facility, but the data must be used with other concentration, migration, environmental target, and exposure information to assess a level of human health or environmental risk.

For calendar year 2002, 178 facilities filed a total of 764 TRI reports for 121 different TRI-listed chemicals and chemical categories. One hundred-sixteen of the 178 TRI facilities (63%) are located along the Wasatch Front in Weber, Davis, Salt Lake, and Utah counties.

## Total Releases

On-site and off-site release totals of TRI listed chemicals decreased from 258.3 million pounds in 2001 to 180.6 million pounds in 2002. This is a reduction by 77.7 million pounds, which represents a decrease of 30.1% between 2001 and 2002. This decrease is largely attributable to increased copper recovery efficiencies and decreased total mining at Kennecott Utah Copper.

## Releases to Air

TRI-reported releases to the air totaled 18.5 million pounds in 2002. This is a reduction of 768,000 pounds from 19.3 million pounds in 2001. This reduction represents a decrease of 4% between 2001 and 2002.

## Releases to Land

TRI chemical releases to land in Utah totaled 154.5 million pounds in 2002. This represents a 33% decrease of 74 million pounds from the 229.3 million pounds reported released in 2001. Kennecott facilities reported a decrease in releases to land that accounts for the majority of the decrease of releases to land for Utah. The combined total release to land for all three Kennecott facilities in 2002 was 138.7 million pounds. This represents a 36% reduction from the combined total of 216.1 million pounds reported by the three Kennecott facilities in 2001.

In the court decision *Barrick Goldstrike Mines, Inc., Plaintiff, v. Christine T. Whitman and United States Environmental Protection Agency, Defendants*, filed on April 2, 2003 in United States District Court for the District of Columbia, the Court nullified the requirement for mining facilities to report certain chemicals present at low concentrations in waste rock. Several mining facilities filed amended reports for previous years as a result of this decision. The impact was that "release to land" totals were significantly lower than previously reported levels for those years for which a revision was submitted. Thus, "release to land" totals in this report for years prior to 2002 are significantly less than totals published in TRI annual reports for those previous years. A more detailed discussion of this is provided later in this report.

**Releases to Surface Water**

TRI releases to surface water in 2002 dropped significantly since 2001. Total TRI chemical releases to surface water showed a 93.7 % decrease from just over 1 million pounds in 2001 down to 63,000 pounds in reporting year 2002. This reduction is attributable to the cessation of operations at Geneva Steel and related reporting of TRI data from that facility. In 2001 Geneva accounted for 96% of the total release to surface waters. Releases to surface water consisted almost entirely of nitrate compounds. Chevron Products Company has replaced Geneva as the primary contributor for releases to surface water. For reporting year 2002 Chevron reported a release of 33,000 pounds of nitrate compounds, which is the same amount Chevron reported in reporting year 2001. Approximately 25,000 pounds of various TRI chemicals were released to surface waters from Kennecott facilities.

**Transfers to POTWs**

Publicly Owned Treatment Works (POTWs) are publicly owned wastewater treatment plants. During 2002 reported discharges of TRI chemicals to POTWs in Utah totaled 1.18 million pounds. This represents a 29.4% increase above the 2001 release of 912,000 pounds. Nitrates constitute 75% of the total chemicals released, while the remaining 25% is comprised of a variety of organic and inorganic chemicals.

TRI-reported releases to POTWs do not include information concerning the rate of release or concentrations of chemicals in the release. However, State and Federal law requires industrial facilities with wastewater flows exceeding federally established chemical concentrations to operate industrial pretreatment equipment to reduce such concentrations below harmful levels before discharging to the POTWs.

**Other Off-Site Transfers**

Transfers to "other off-site" locations are transfers to facilities other than POTWs. Often these facilities include chemical recyclers and waste disposal sites. In 2002 7.5 million pounds of TRI chemicals were transferred to these "other off-site" locations. This is a 1 million pound decrease (12.5%) from the 8.6 million pound total reported for 2001.

**Persistent Bioaccumulative Toxic (PBT) Chemicals**

The total amount of dioxins reported released in 2002 was 2641.92 grams. The amount of dioxins reported in 2001 was 2502.43 grams. The increase of 139.5 grams reported in 2002 represents a 5.6% increase in the amount of dioxin releases reported.

# INTRODUCTION

## What is the Toxic Release Inventory?

The Toxic Release Inventory (TRI) is a database providing information about releases of certain chemicals into the environment, and transfers to off-site facilities. Facilities report their TRI information annually to the U.S. Environmental Protection Agency (EPA) and to the state in which they are located. Reports must be submitted by July 1 of the following year in which the release(s) occurred. This report is a summary of data submitted to the Utah Department of Environmental Quality for calendar year 2002.

## Who Must Report a TRI?

A facility must report to TRI if it:

- Conducts operations within specified Standard Industrial Classification (SIC) Codes; and
- Has 10 or more full-time employees (or equivalent); and
- Manufactures or processes more than 25,000 pounds or uses more than 10,000 pounds of any TRI listed chemical during the calendar year.

Before 1998, TRI data only included reports from manufacturing and federally owned facilities. Beginning in 1998, EPA expanded coverage of the TRI program to include additional industry sectors. These additional industrial sectors included: coal mining, metal mining, electrical generation facilities combusting coal or oil, hazardous waste disposal, wholesale bulk petroleum distribution, chemical wholesale distribution, and solvent recycling.

## What Type of Information Must Be Reported?

A facility must report the:

- Amount of each listed chemical released to the air, water, or soil;
- Amount of each listed chemical transferred off-site or sent to a wastewater treatment plant;
- Amount of each listed chemical recycled, treated, or disposed; and
- Facility's pollution reduction activities.
- Starting with reporting year 2002, facilities can determine their latitude and longitude by using the TRI Facility Siting Tool found on the TRI home page.

## What Types of Chemicals are Subject to Reporting?

Over 600 chemicals and chemical categories were included in the reporting list for 2002, based on acute or chronic human health or environmental effects. There were no additions to the list of chemicals for reporting year 2002.

Starting in reporting year 2001, lead and lead compounds were classified as persistent, bioaccumulative and toxic (PBT) chemicals. The reporting thresholds for lead and lead compounds, except when lead is contained in stainless steel, brass, or bronze alloys, have been

lowered to 100 pounds; the *de minimus* exemption is no longer applicable for lead and lead compounds except for lead when it is contained in stainless steel brass or bronze alloys.

Starting with reporting year 2000 an additional seven chemicals and two chemical-compound categories were added to the list of toxic chemicals subject to reporting under EPCRA section 313. EPA made the determination that 18 of the chemicals and chemical categories meet the EPCRA section 313 criteria for persistence and bioaccumulation. Thus EPA lowered the reporting threshold for all of these toxic chemicals. These modifications are for chemicals considered to be highly persistent in the environment, to bio-accumulate, or to be highly toxic.

**What Are the Benefits and Uses of TRI Data?**

TRI data can be used in a variety of ways:

- The public can use TRI data to identify potential concerns.
- Governments can use TRI data to evaluate environmental programs and establish regulatory priorities.
- The data can be used to provide basic information on the types and volumes of waste being generated or managed at a facility and, in conjunction with other data, can be utilized to study and identify potential hazards to the public health or environment.
- Industry can use TRI data to establish release reduction targets and document release reduction progress.

**What Are the Limitations of the Data?**

- *Not All Toxic Releases/Transfers Are Reported.* Only a few sectors of industry are currently required to submit TRI reports. Thus, only a portion of all chemical releases or transfers is included in the inventory. Additionally, the list of chemicals for which reporting is required is not inclusive of all chemicals known to have significant public health or environmental impact.

- *Reported Release/Transfer Totals Usually Are Based on Estimations Only.* No special monitoring is required to calculate emission or transfer totals. Reported data is often based on estimations.

- *Smaller Release Totals Are Reported as Ranges, Not Exact Numbers.* If a chemical release or transfer estimate was below 1,000 pounds, companies were allowed to report ranges of 1-10, 11-499, and 500-999 pounds. In such cases, staff entered the mid-point of the range in the State database. These estimations may, therefore, be above or below the actual figure.

- *TRI Statewide Totals Cannot Be Compared Easily From Year to Year.* The TRI list of chemicals requiring reporting and methods requiring the estimating of emissions have changed significantly through the 16-year history of TRI reporting. Facilities may meet the TRI reporting requirements and submit TRI reports for some years and not others. These changes make accurate multi-year comparisons of statewide release or transfer totals very difficult.

**What Cautions Should Be Used in Interpreting TRI Data?**

- *TRI Reports Releases, Not Exposures.* Release estimates alone are not sufficient to determine exposure, risk of exposure, or calculate potential adverse health or environmental affects.

- *TRI Does Not Report Concentrations.* TRI emission totals do not include information on the concentration of chemicals in air, water, or wastes placed on land. A large release may be a large volume at low concentration.

- *TRI Releases Are Often Permitted by State or Federal Law*. TRI releases are often permitted by state or federal environmental agencies after an evaluation has concluded the release will not adversely affect human health or the environment.

**How Can the Public Obtain TRI Information?**

Extracts of TRI information can be obtained from several sources:

- Computer summaries of Utah TRI information or copies of original TRI submissions can be obtained by submitting a written request to:

  Utah Division of Environmental Response and Remediation
  168 North 1950 West, 1st Floor
  P.O. Box 14840
  Salt Lake City, Utah 84114-4840

  Or email the request to mzucker@utah.gov

A customer may choose to have pages copied by a DERR employee at a cost of $0.25 per single-sided page. Pages copied by the customer are $0.05 per single-sided page with the first 10 pages free. Specialized computer summaries are available for a fee charged at an hourly rate. Most reports require less than one hour's time to create a specialized summary. Please call DEQ (801-536-4100) for current hourly rates.

The EPA offers access to TRI data on the World Wide Web at the following two websites:

- www.epa.gov/tri
- www.epa.gov/enviro/html/tris

EPA and EPA Region VIII provides a variety of information about the Emergency Planning and Community Right-To-Know Act at these websites:

- http://www.epa.gov/Region8/toxics_pesticides/epcra/epcra.html
- http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/epcraoverview.htm

## FACILITY OVERVIEW

### Number of Reporting Facilities

For calendar year 2002, 178 Utah facilities filed a total of 764 TRI reports for 121 different TRI-listed chemicals. Figure 1 shows the annual trend of the count of facilities and quantity of chemical reports submitted. In comparison with 2001 data, the number of facilities that submitted under TRI increased by 3, while the number of chemical reports decreased by 12.

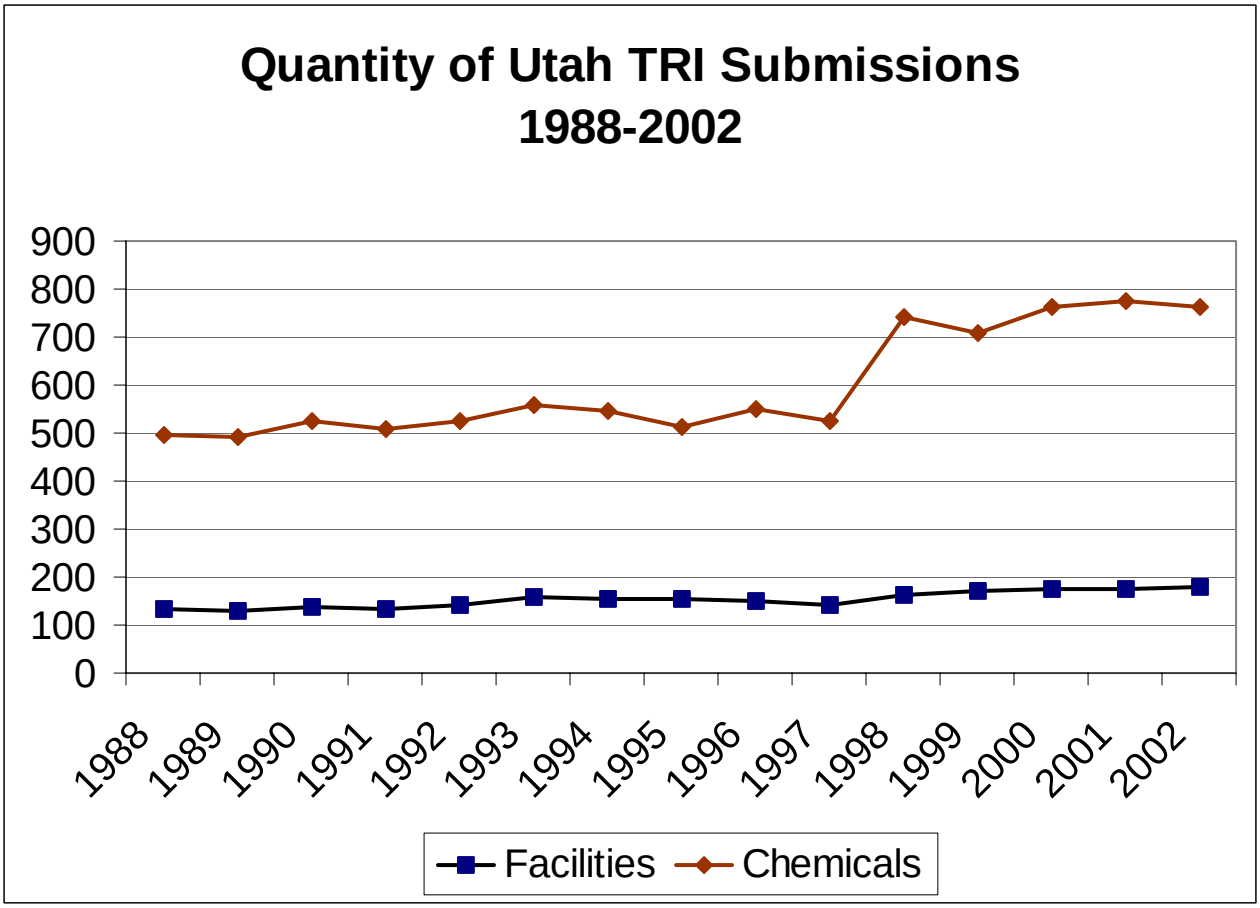


Figure 1

**Facility Location**

Each facility reports its latitude and longitude as part of the TRI submission. This information permits mapping of the TRI facility location. In Figure 2, each dot represents the location of a TRI facility. The majority of TRI reporting facilities (116 out of 178 or 65%) are located along the Wasatch Front.

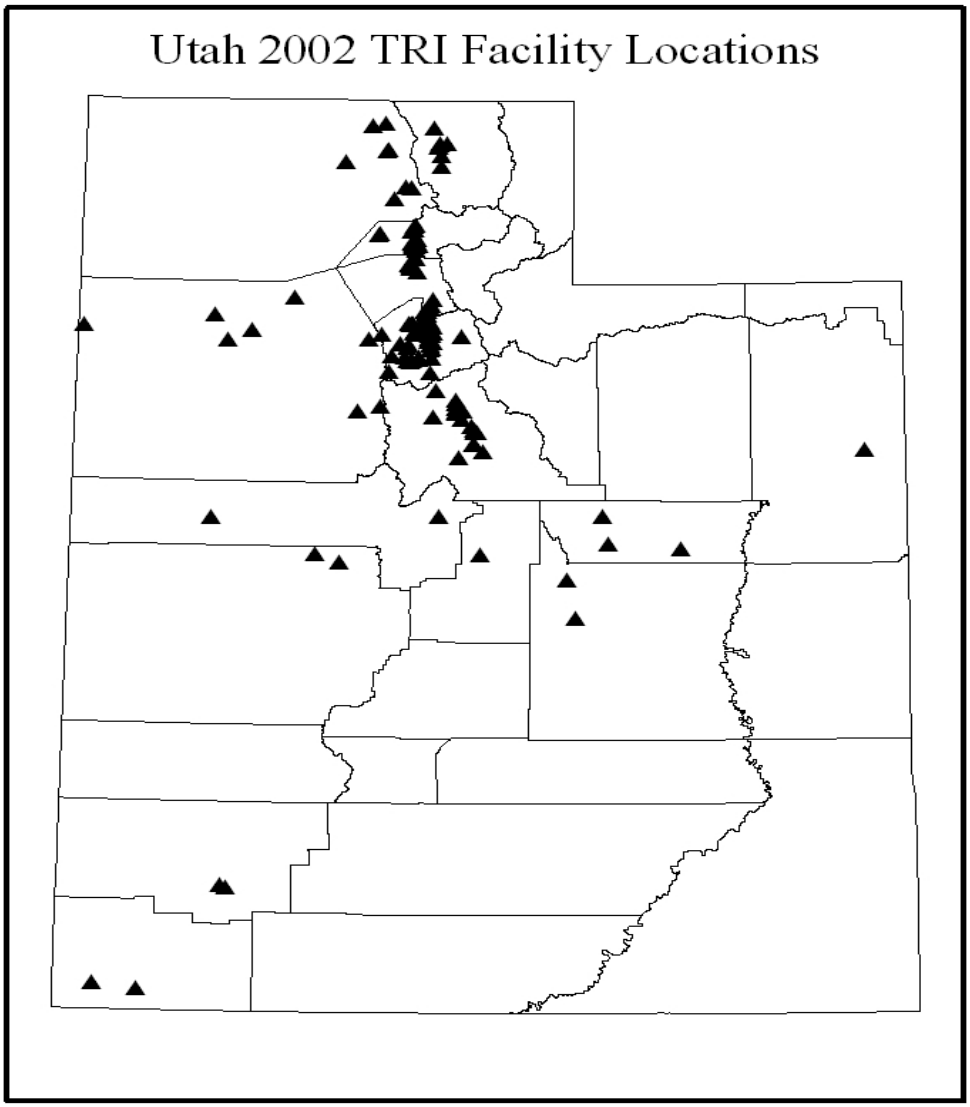


Figure 2

Figure 3 below displays the 2002 TRI reporting by industry sector category. The 175 facilities reporting are categorized into 21 industrial sectors based on Standard Industrial Classification (SIC) Code groups. The eight industrial sectors with the greatest number of facilities reporting are identified in Figure 3. The remaining 13 industrial sectors comprise the "Other" category from which 50 facilities reported. The greatest number of facilities reported from the Fabricated Metal Products (26 facilities) and Chemicals and Allied Products (22 facilities) industry sectors.

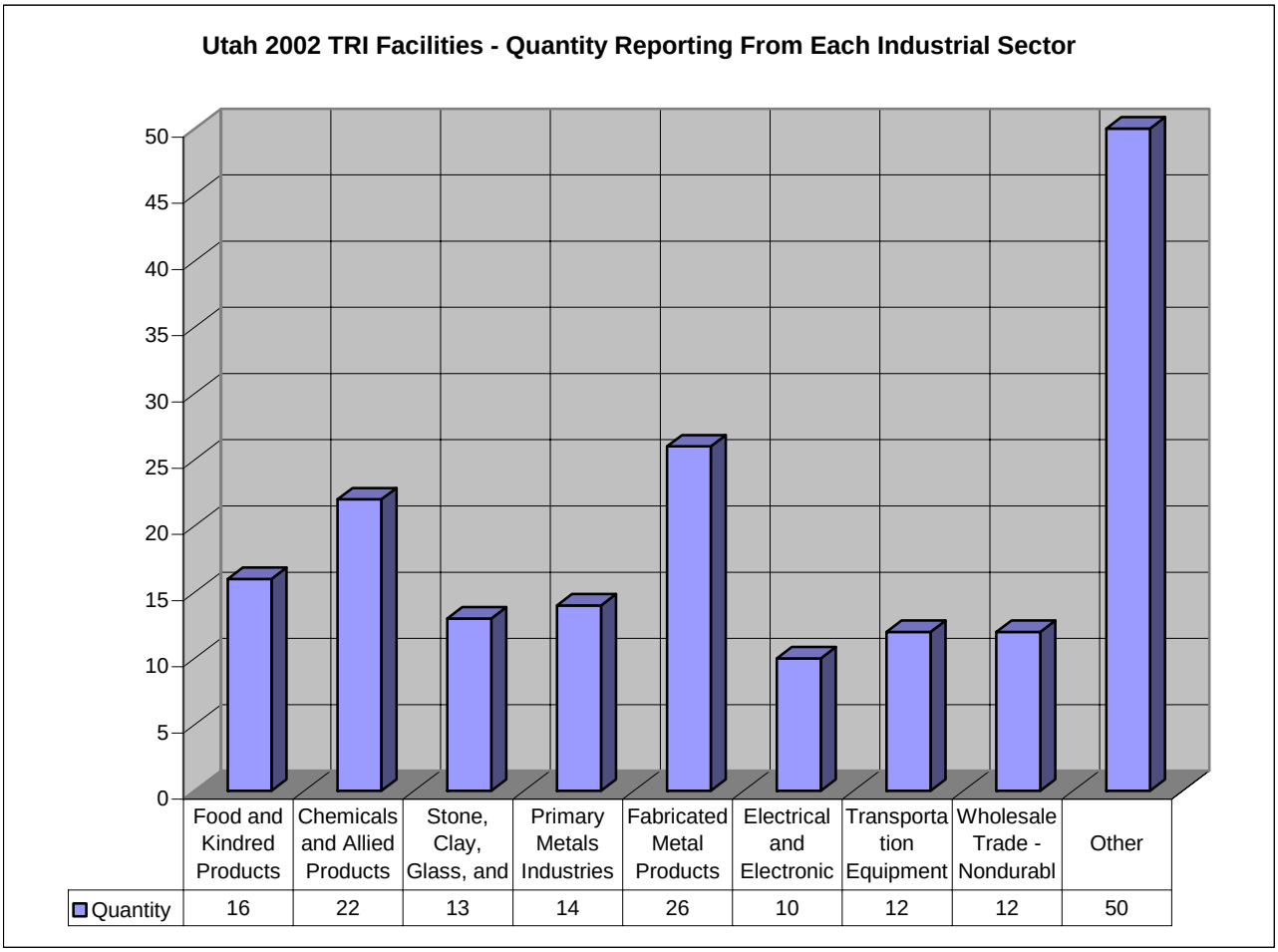


Figure 3

The 13 industrial sectors that comprise the "Other" category are:

1. Metal Mining
2. Coal Mining
3. Lumber and Wood Products
4. Furniture and Fixtures
5. Printing and Publishing
6. Petroleum and Coal Products
7. Rubber and Miscellaneous Plastics Products
8. Industrial Machinery and Equipment
9. Instruments and Related Products
10. Miscellaneous Manufacturing Industries

11. Electric Gas and Sanitary Services
12. Business Services
13. National Security and International Affairs

**Total Releases**

Total releases from Utah facilities decreased from 258 million pounds in 2001 to 180 million pounds in 2002. This represents a 30% reduction in total releases.

The decrease in total releases is largely attributable to increased copper recovery efficiencies and decreased total mining at Kennecott Utah Copper[1].

Total on-site and off-site releases include:

- On-site releases at the reporting facility to air, land, and water.
- Transfers of TRI-listed metals to municipal wastewater treatment plants. Generally, metals pass untreated through conventional treatment plants and are discharged in the plant effluent.
- TRI chemicals transferred to and disposed at off-site facilities, which are released to the environment.

*Barrick v. EPA Court Decision – Impact on Total Releases*

In a decision filed on April 2, 2003, by the United States District Court for the District of Columbia, under Civil Action No. 99-958 (TPJ) Barrick Goldstrike Mines, Inc. (Plaintiff) v. Christine T. Whitman and United States Environmental Protection Agency (Defendants), the court determined that non-PBT (Persistent Bio-accumulative, Toxic) chemicals present in a mixture (waste rock) below concentrations of 1% (or 0.1% for OSHA carcinogens) are not subject to reporting under the TRI program.[2]

As a result of the Barrick decision, Kennecott Utah Copper Mine Concentrators and Power Plant facility filed revised Form R data submissions for reporting years 2001, 2000, 1999, and 1998. This resulted in much lower release totals for the mining category of facilities for these years. The differences are shown in Figure 4 below. Tabular data provided in this report includes only the revised totals submitted in compliance with the court decision.

[1] Personal conversation with Kennecott Environmental Management personnel June 25, 2004.
[2] Barrick Goldstrike Mines, Inc., Plaintiff, v. Christine T. Whitman and United States Environmental Protection Agency, Defendants; Civil Action No. 99-958 (TPJ), April 2, 2003.
[3] Personal conversation with Kennecott Environmental Management personnel, June 14, 2004.

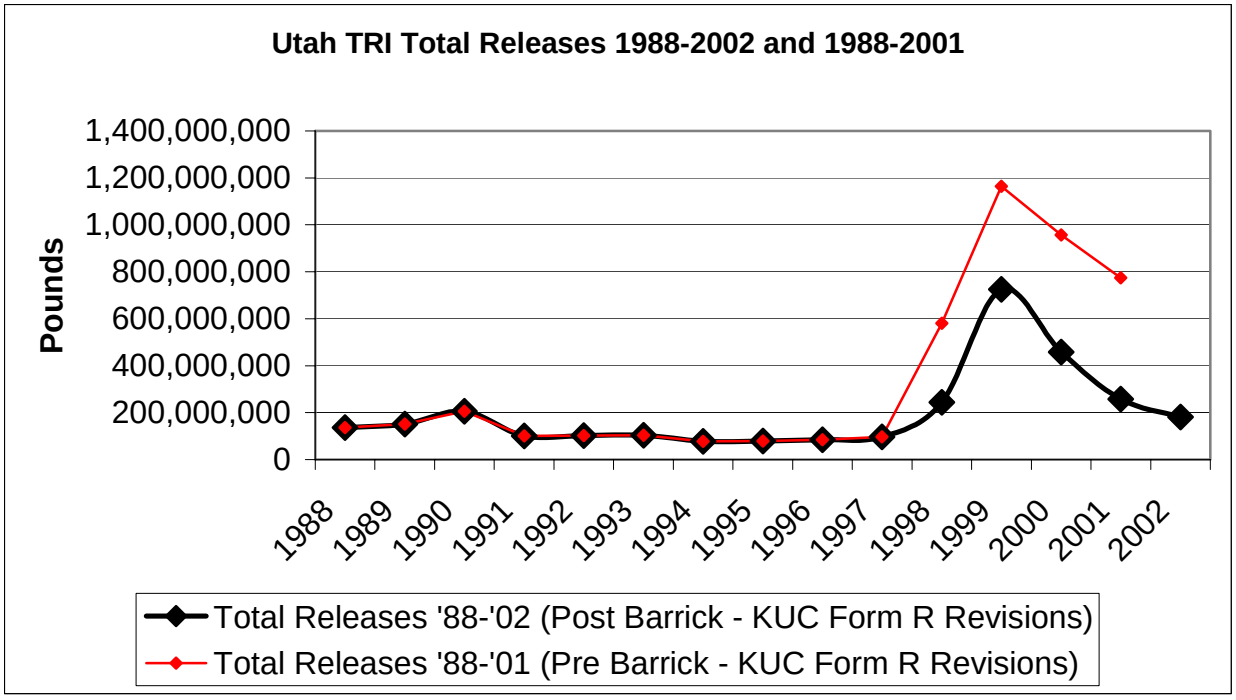


Figure 4

The trend analyses shown in Figure 4 depict two data series. The 2002 series (large diamond, 1988-2002) shows revised total release data following the Barrick decision. The 2001 series (small diamond, 1988-2001) shows total release data prior to the Barrick decision. As Figure 4 illustrates, the Barrick decision resulted in a significant reduction in total reported releases beginning in 1998 compared to releases reported prior to the Barrick decision.

The top 10 facilities for on-site and off-site releases are given in Tables 1. As indicated in Table 1, Kennecott Mine, Kennecott Smelter facilities, and U.S. Magnesium were the three top contributors to total releases occurring in 2002 in Utah.

**Table 1**
**Utah 2002 TRI Top 10 Facilities - Total On- and Off-Site Releases**

| Lbs/Year | Facility Name |
|---|---|
| 113,641,044 | KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT |
| 25,231,982 | KENNECOTT UTAH COPPER SMELTER & REFINERY |
| 14,776,851 | US MAGNESIUM, LLC |
| 7,354,987 | NUCOR STEEL - A DIV. OF NUCOR CORP |
| 6,318,152 | CLEAN HARBORS GRASSY MOUNTAIN, LLC |
| 1,956,540 | PACIFICORP HUNTINGTON PLANT |
| 1,695,855 | WESTERN ZIRCONIUM |
| 1,637,617 | BONANZA POWER PLANT |
| 1,270,938 | PACIFICORP HUNTER PLANT |
| 1,216,481 | INTERMOUNTAIN POWER GENERATING STATION |

The top 10 chemicals for on-site and off-site releases are given in Table 2. Copper compounds, lead compounds, chlorine and zinc compounds constitute the chemicals released in greatest quantities.

**Table 2**
**Utah 2002 TRI Top 10 Chemicals**
**Total On- and Off-Site Releases**

| Lbs/Year | Chemical Name |
|---|---|
| 80,066,300 | Copper Compounds |
| 51,713,799 | Lead Compounds |
| 13,874,160 | Chlorine |
| 12,711,764 | Zinc Compounds |
| 3,854,605 | Barium Compounds |
| 3,177,305 | Arsenic Compounds |
| 2,470,453 | Hydrochloric acid (aerosol forms only) |
| 2,368,596 | Nitrate Compounds |
| 1,250,278 | Manganese Compounds |
| 1,185,184 | Ammonia |

Totals for on-site releases include releases to air, land, and water occurring strictly at the facility and exclude releases that may occur after materials are transferred off-site. The top 10 facilities totals for on-site releases are given in Table 3. A comparison of the data presented in Table 2 and Table 4 shows little change. The differences between on-site and off-site reporting, and off-site only reporting are comprised of (1) metals released from POTWs and (2) TRI chemicals transferred off-site for disposal. Thus the small differences found in on- and off-site compared to off-site (only) shows that TRI metals released by POTWs and other TRI chemicals transferred off-site for disposal is relatively low.

| Table 3<br>Utah 2002 TRI Top 10 Facilities - Total On-Site Releases | |
|---|---|
| **Facility Name** | **Lbs/Year** |
| KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT | 113,640,794 |
| KENNECOTT UTAH COPPER SMELTER & REFINERY | 25,220,896 |
| US MAGNESIUM, LLC | 14,776,851 |
| CLEAN HARBORS GRASSY MOUNTAIN, LLC | 6,311,180 |
| PACIFICORP HUNTINGTON PLANT | 1,954,933 |
| WESTERN ZIRCONIUM | 1,695,855 |
| BONANZA POWER PLANT | 1,637,617 |
| PACIFICORP HUNTER PLANT | 1,270,566 |
| INTERMOUNTAIN POWER GENERATING STATION | 1,216,481 |
| PACIFIC STATES CAST IRON PIPE COMPANY | 1,173,208 |

The top 10 chemicals for on-site releases to air, land, and water are shown in Table 4.

| Table 4<br>Utah 2002 TRI Top 10 Chemicals -<br>Total On-Site Releases | |
|---|---|
| **Lbs/Year** | **Chemical Name** |
| 79,965,624 | Copper Compounds |
| 51,064,221 | Lead Compounds |
| 13,874,160 | Chlorine |
| 6,738,249 | Zinc Compounds |
| 3,845,403 | Barium Compounds |
| 3,176,292 | Arsenic Compounds |
| 2,470,453 | Hydrochloric acid (aerosol forms only) |
| 2,368,596 | Nitrate Compounds |
| 1,184,690 | Ammonia |
| 1,012,712 | Chromium Compounds |

### Releases to Air

As illustrated in Figure 5, Releases to air decreased from 19.3 million pounds in 2001 to 18.5 million pounds in 2002, a decrease of 4%. This is the lowest release to air total for Utah in the 16-year history of the TRI program. Several Pacificorp power plants, ATK Thiokol, and Geneva Steel, (the latter of whom has ceased operations), noted the largest decreases. These facilities contributed approximately 88% of the total decrease.

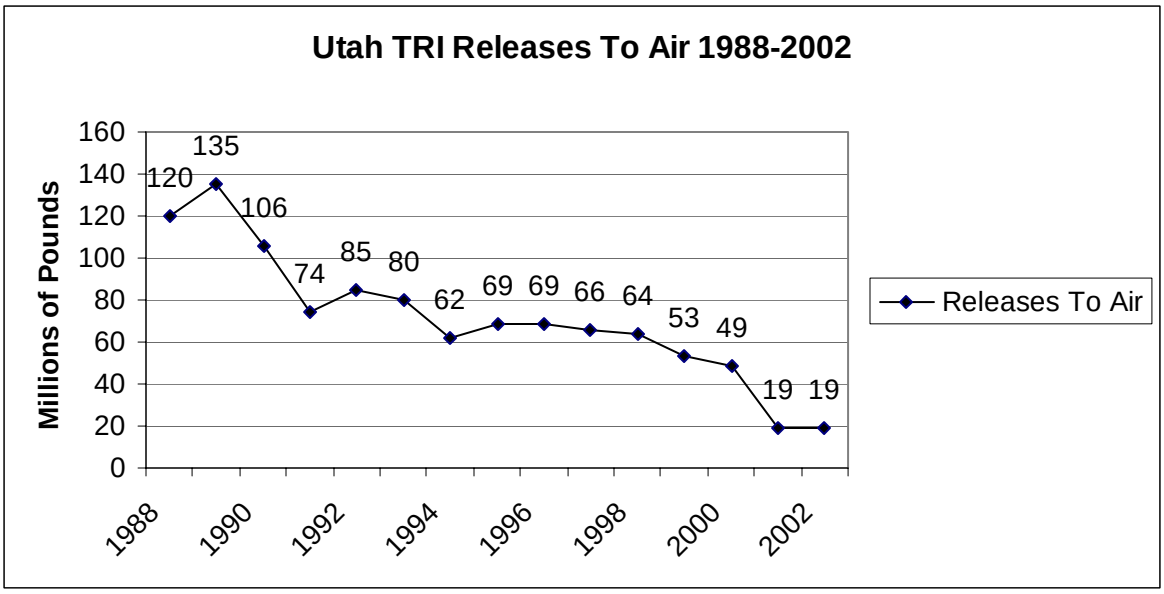


Figure 5

Top 10 facility totals for releases to air are shown in Table 5 and the top 10 chemical totals for releases to air are shown in Table 6 below. U.S. Magnesium is the primary contributor to the 14 million pounds of chlorine reported released. Primary industry contributors to the release of 2.4 million pounds of hydrochloric acid (aerosols only) include: coal fired power plants (850,000 pounds), U.S. Magnesium (930,000 pounds), and rocket motor manufacturing (540,000 pounds).

**Table 5**
**Utah 2002 TRI Top 10 Facilities - Total Releases to Air**

| Lbs/Year | Facility Name |
|---|---|
| 14,764,046 | US MAGNESIUM, LLC |
| 756,296 | PACIFICORP HUNTINGTON PLANT |
| 577,000 | ATK THIOKOL PROPULSION |
| 295,228 | PACIFICORP CARBON PLANT |
| 196,588 | PACIFICORP HUNTER PLANT |
| 166,204 | BD MEDICAL SYSTEMS |
| 154,362 | TESORO REFINING AND MARKETING COMPANY |
| 142,883 | INTERMOUNTAIN POWER GENERATING STATION |
| 134,130 | U.S. DOD, U.S. AIR FORCE, OGDEN AIR LOGISTICS CENTER |
| 102,640 | KENNECOTT UTAH COPPER SMELTER & REFINERY |

| Table 6<br>Utah 2002 TRI Top 10 Chemicals – Total Releases to Air | |
|---|---|
| **Lbs/Year** | **Chemical Name** |
| 13,874,160 | Chlorine |
| 2,398,453 | Hydrochloric acid (aerosol forms only) |
| 478,533 | Hydrogen fluoride |
| 282,344 | Sulfuric acid (aerosol forms only) |
| 262,629 | Ammonia |
| 206,473 | 1,1-Dichloro-1-fluoroethane |
| 130,776 | Toluene |
| 79,402 | n-Hexane |
| 73,433 | Styrene |
| 73,090 | Xylene (mixed isomers) |

*U.S. Magnesium*

U.S. Magnesium is historically the largest contributor to TRI releases to air in Utah. Nationally, USM has been among the highest-ranking facilities in emissions of TRI chemicals to air. U.S. Magnesium is located along the west side of the Great Salt Lake in the western desert of Tooele County and produces magnesium metal by extraction of magnesium chloride from brines drawn from the lake. Chlorine and hydrochloric acid are produced as by-products of the magnesium extraction process.

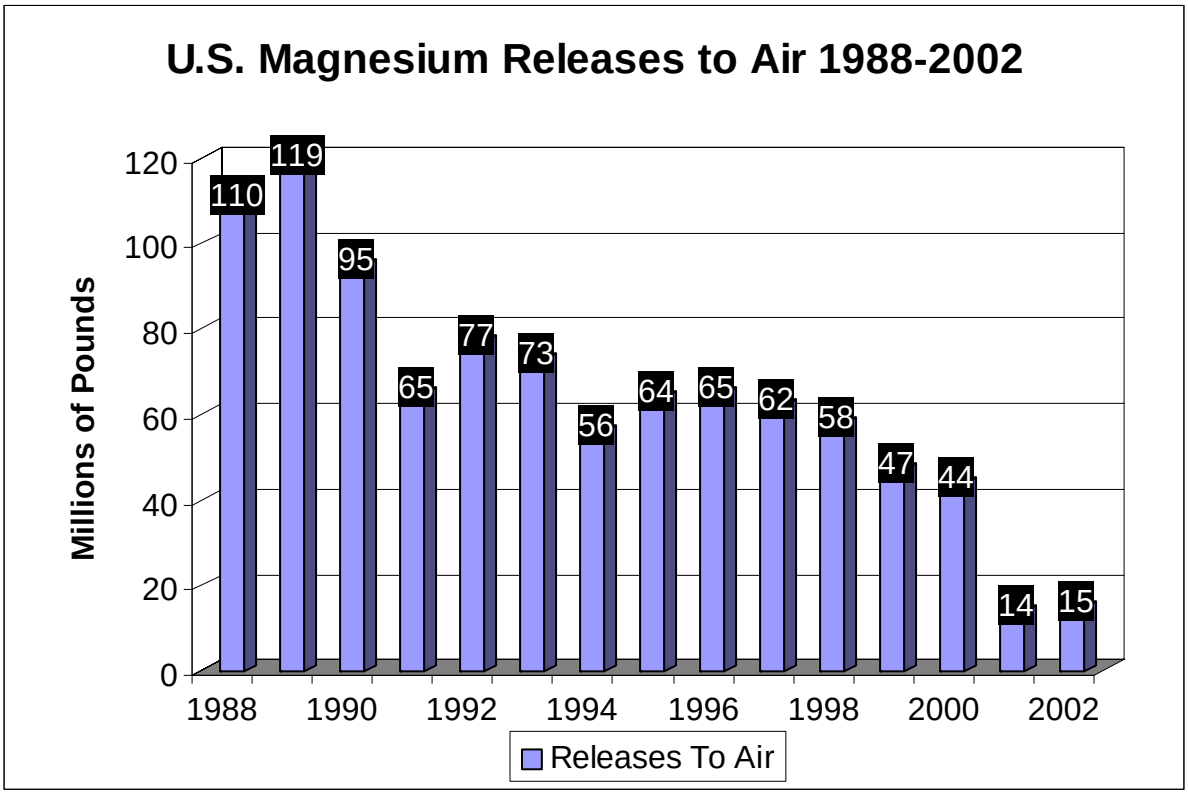

Figure 6

As shown in Figure 6, U.S. Magnesium emissions of TRI chemicals increased slightly from 14.4 million pounds in 2001 to 14.8 million pounds in 2002. The amount of chlorine released increased slightly from 13.1 million pounds in 2001 to 13.8 million pounds in 2002, an increase of 5.3 percent. The facility's output of hydrochloric acid decreased by 23.7%, from 1.2 million pounds in 2001 to 926,000 pounds in 2002.

## RELEASES TO LAND

Releases to land include releases made to: (1) landfills designed to receive solid waste; (2) surface impoundments for liquid waste; (3) land treatment, incorporating the waste into the soil; or (4) other disposal, such as placing material containing TRI chemicals on land.

TRI chemical releases to land in Utah totaled 154 million pounds in 2002. This represents a decrease of 74.8 million pounds or a 33% decrease from 229 million pounds reported in 2001. This decrease is largely attributable to increased copper recovery efficiencies and decreased total mining related activities at Kennecott Utah Copper.

As shown in Table 7, the top two release-to-land totals were from Kennecott facilities. Kennecott facilities contributed 90% of the total releases to land, and 76% of the total amount of TRI chemicals released in Utah.

**Table 7**
**Utah 2002 TRI Top 10 Facilities - Total Releases to Land**

| Lbs/Year | Facility Name |
|---|---|
| 113,603,195 | KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT |
| 25,110,922 | KENNECOTT UTAH COPPER SMELTER & REFINERY |
| 6,310,899 | CLEAN HARBORS GRASSY MOUNTAIN, LLC |
| 1,641,668 | WESTERN ZIRCONIUM |
| 1,575,229 | BONANZA POWER PLANT |
| 1,198,637 | PACIFICORP HUNTINGTON PLANT |
| 1,169,161 | PACIFIC STATES CAST IRON PIPE COMPANY |
| 1,073,978 | PACIFICORP HUNTER PLANT |
| 1,073,598 | INTERMOUNTAIN POWER GENERATING STATION |
| 544,790 | BRUSH RESOURCES INC, MILL |

Table 8 identifies the top 10 chemicals released to land. Kennecott Utah Copper Mine Concentrators & Power Plant and Smelter & Refinery comprise the largest releases consisting of 78.4 million pounds of copper compounds and 49.8 million pounds of lead compounds contained in waste rock and tailings processed through these facilities. Additional metals compounds of zinc, barium, arsenic, chromium, and nickel, and nitrate compounds comprise the remaining majority of largest quantity releases to land.

**Table 8**

**Utah 2002 TRI Top 10 Chemicals - Total Releases to Land**

| Lbs/Year | Chemical Name |
|---|---|
| 79,906,868 | Copper Compounds |
| 51,050,893 | Lead Compounds |
| 6,722,143 | Zinc Compounds |
| 3,838,686 | Barium Compounds |
| 3,172,750 | Arsenic Compounds |
| 2,327,455 | Nitrate Compounds |
| 1,009,653 | Chromium Compounds |
| 921,561 | Ammonia |
| 891,693 | Nickel Compounds |
| 798,943 | Manganese |

## Mining

Three mining facilities reported under the TRI program for reporting year 2002:

- Kennecott Barneys Canyon Mining Company
- Kennecott Utah Copper Mine, Concentrators & Power Plant
- Brush Resources, Inc., Mill

For 2002 virtually 100% of releases reported from mines are releases to land. According to the mining industry, major sources of TRI releases to land totals are:

- Metals in materials no longer undergoing heap leaching; and
- Processed materials such as tailings placed on-site, often near the mine or mill.

*Kennecott Facilities*

Kennecott Utah Copper (KUC) operates extensive mining, milling, smelting, and refining operations in western Salt Lake County. The company's mine is one of the world's largest open pit mines. Annually the facility extracts millions of tons of overburden, waste rock, and ore as part of its operations. Ore is concentrated and shipped by pipeline to the smelter, which produces copper, gold, and sulfuric acid. The Kennecott Barneys Canyon Mine is an open pit gold mine. About 74% of the Utah release-to-land total was reported by Kennecott facilities in the form of copper, lead, manganese, chromium, arsenic and other metals compounds.

Releases to land reported under TRI from Kennecott facilities consist largely of metals present at lower concentrations in mill tailings.

The Kennecott Utah Copper Smelter and Refinery has submitted TRI reports separate from Kennecott's mining facilities since 1987. As shown in Figure 7, releases to land that originated from smelter operations decreased from 27.7 million pounds reported in 2001 to 25.1 million pounds in 2002.

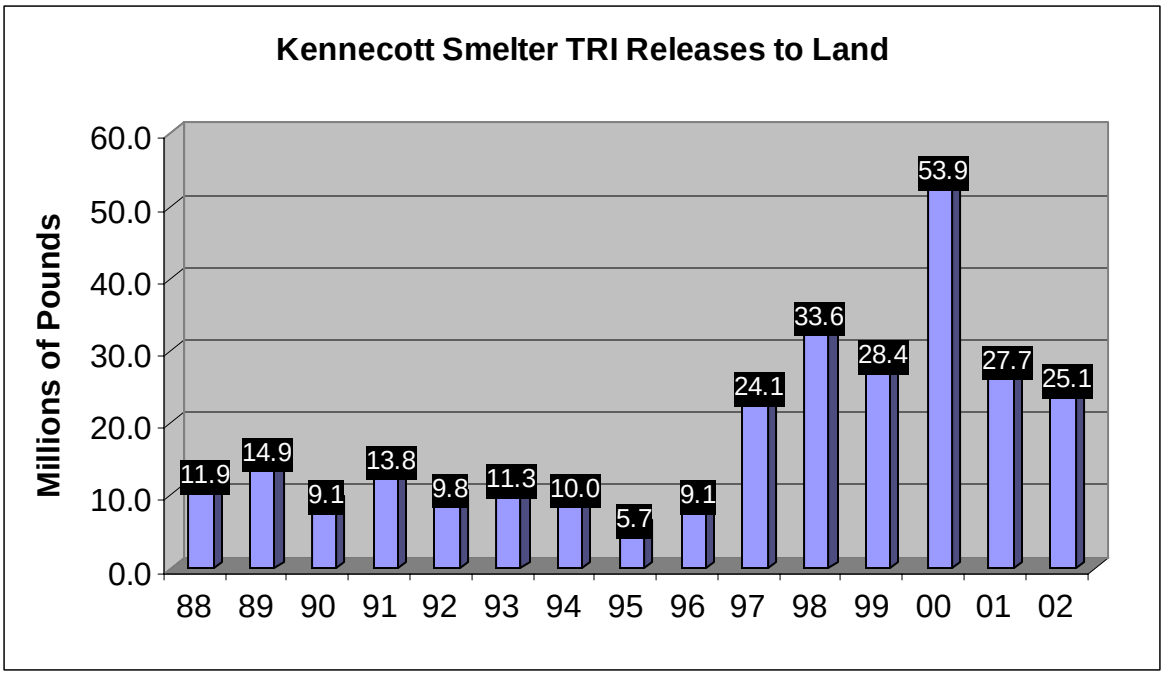


Figure 7

The top compounds in the total combined highest releases (in millions of pounds) to land in 2002 for Kennecott facilities are copper (12.4), zinc (5.3), lead (3.7), and arsenic (2.8).

**Waste Disposal Facilities**

Waste disposal facilities that treat, store, and/or dispose of hazardous waste are another industrial class required to submit TRI reports. Subtitle C of RCRA and the Utah Solid and Hazardous Waste Act regulate these facilities. Facilities in this class reporting in 2002 include:

- Clean Harbors Grassy Mountain, LLC.
- Clean Harbors Aragonite, LLC.

Well over 99% of releases reported by these facilities are releases to land. The EPA TRI definition of release to land includes the placement of TRI chemicals into landfills, even landfills specifically constructed under requirements of RCRA and Utah Law to contain the waste inside the landfill and preclude a release. Clean Harbors (formerly Safety Kleen Lone & Grassy Mountain) reported 5.9 million pounds of waste treated, stored and/or disposed in 2001.

Releases for 2002 are slightly up to 6.3 million pounds. Table 9 shows that Clean Harbors Grassy Mountain is the only facility in 2002 to report a release to land from a waste disposal facility. Releases to land have been comprised of metals compounds, primarily copper, zinc, and lead with a variety of additional metals. Clean Harbors Aragonite reported no releases to land.

Table 10 lists the top 10 TRI chemical totals identified as released to land from waste disposal facilities.

| Table 9<br>Utah 2002 TRI Waste Disposal Facility Releases to Land | |
|---|---|
| **Lbs/Year** | **Facility Name** |
| 6,310,899 | CLEAN HARBORS GRASSY MOUNTAIN, LLC |

| Table 10<br>Utah 2002 TRI Top Chemical Releases to Land from Waste Disposal Facilities | |
|---|---|
| **Lbs/Year** | **Chemical** |
| 1,389,007 | Copper Compounds |
| 1,180,168 | Zinc Compounds |
| 998,474 | Lead Compounds |
| 361,033 | Cadmium Compounds |
| 267,245 | Arsenic Compounds |
| 262,893 | Silver Compounds |
| 261,485 | Barium Compounds |
| 249,078 | Nickel Compounds |
| 237,761 | Selenium Compounds |
| 227,066 | Antimony Compounds |

## Electric Utilities

Electric utilities that burn coal or oil for electric energy production were first required to submit TRI reports in 1998. Table 11 shows facilities that reported in 2002.

| Table 11<br>Utah 2002 TRI Coal-Fired Electric Utility Releases to Land | |
|---|---|
| **Lbs/Year** | **Facility Name** |
| 1,575,229 | BONANZA POWER PLANT |
| 1,198,637 | PACIFICORP HUNTINGTON PLANT |
| 1,073,598 | INTERMOUNTAIN POWER GENERATING STATION |
| 114,255 | PACIFICORP CARBON PLANT |
| 33,180 | SUNNYSIDE COGENERATION ASSOCIATES |

Table 12 below provides the top 10 chemicals released to land by the coal-fired electric utility sector.

**Table 12**
**Utah 2002 TRI Top 10 Chemical Releases to Land from Coal-Fired Electric Utilities**

| Lbs/Year | Chemical |
|---|---|
| 2,943,866 | Barium Compounds |
| 231,448 | Chromium Compounds |
| 194,433 | Manganese Compounds |
| 106,320 | Lead Compounds |
| 105,767 | Vanadium Compounds |
| 100,839 | Copper Compounds |
| 95,084 | Zinc Compounds |
| 71,000 | Arsenic Compounds |
| 67,110 | Nickel Compounds |
| 39,300 | Cobalt Compounds |
| 23,800 | Antimony Compounds |
| 14,900 | Selenium Compounds |
| 776 | Mercury Compounds |
| 250 | Ammonia |
| 6.5092* | Dioxin and Dioxin Like Compounds |
| | |
| * Grams | |

## RELEASES TO SURFACE WATER

TRI-reported releases to surface water in Utah are a small percentage of total releases reported under TRI. Also, as only a small percentage of industries in Utah are required to submit TRI reports, the TRI report totals identify only a portion of total chemical discharges to water bodies. However, in addition to TRI reports, many facilities are also required to submit "discharge monitoring reports" to the Utah Division of Water Quality which provide additional information on chemical concentrations and chemical amounts released to water.

Total TRI chemical releases to surface water in Utah in 2002 amounted to slightly more than 63,000 pounds. This is a significant decrease from 2001 for which the total release to surface water was slightly greater than 1 million pounds. This dramatic decrease is largely attributable to cessation of operations at Geneva Steel, which reported the vast majority of the chemicals released (primarily nitrates to Utah Lake) to surface waters in past years. Table 13 provides the list of the top facilities that released to surface waters in 2002.

| Table 13<br>Utah 2002 TRI Top Facilities Releases to Surface Water | |
|---|---|
| **Lbs/Year** | **Facility Name** |
| 37,092 | CHEVRON PRODUCTS COMPANY- SALT LAKE REFINERY |
| 18,178 | KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT |
| 7,334 | KENNECOTT UTAH COPPER SMELTER & REFINERY |
| 110 | PACIFICORP CARBON PLANT |
| 94 | VALMONT COATINGS - INTERMOUNTAIN GALVANIZING |
| 78 | NUCOR STEEL - A DIV. OF NUCOR CORP |
| 61 | GENEVA STEEL, LLC |
| 52 | CERROWIRE & CABLE CO. |
| 19 | SOUTHWIRE COMPANY |
| 15 | RUBBER ENGINEERING |

Table 14 lists the top chemical releases to water in 2002.

Chevron Products Company released 33,000 pounds of nitrate compounds to the Great Salt Lake in 2002. An additional 25,500 pounds of total TRI chemicals were reported released from Kennecott Copper facilities to Surface Waters in 2002.

| Table 14<br>Utah 2002 TRI Top Chemical Releases to Surface Water | |
|---|---|
| **Lbs/Year** | **Chemical Name** |
| 40,850 | Nitrate Compounds |
| 3,660 | Zinc Compounds |
| 3,450 | Nickel Compounds |
| 2,366 | Copper Compounds |
| 1,700 | Cyanide Compounds |
| 1,450 | Selenium Compounds |
| 1,000 | Xylene (mixed isomers) |
| 1,000 | Arsenic Compounds |
| 750 | Benzene |
| 750 | Toluene |
| 750 | Ethylbenzene |

## TRANSFERS TO POTWS

Publicly Owned Treatment Works (POTWs) are publicly owned wastewater treatment plants designed to treat sanitary sewage. They may also receive industrial wastes. TRI "transfers to POTWs" identify the annual total amount of TRI chemicals discharged to POTW facilities.

Total discharge to POTWs increased in 2002 to 1.2 million pounds, up from 912,000 pounds in 2001.

Table 15 identifies the top 10 facilities transferring chemicals to POTWs during 2002.

**Table 15**
**Utah 2002 TRI Top 10 Facility Transfers to POTWs**

| Lbs/Year | Facility Name |
|---|---|
| 239,154 | JOHNSON MATTHEY |
| 231,503 | EASTON TECHNICAL PRODUCTS |
| 130,220 | TYCO PRINTED CIRCUIT GROUP INC., LOGAN DIVISION |
| 107,307 | DANNON COMPANY, THE |
| 63,434 | FUTURA INDUSTRIES |
| 61,150 | GENEVA NITROGEN LLC |
| 60,857 | COMPEQ INTERNATIONAL |
| 57,547 | FAIRCHILD SEMICONDUCTOR |
| 49,344 | NESTLE USA - PREPARED FOODS DI VISION, INC. |
| 32,076 | MEADOW GOLD DAIRY |

Table 16 below lists top chemical transfers to POTWs for reporting year 2002. Nitrate compounds account for about 79% of all releases to POTWs in 2002.

**Table 16**
**Utah 2002 TRI Top Chemical Transfers to POTWs**

| Lbs/Year | Chemical Name |
|---|---|
| 930,753 | Nitrate Compounds |
| 71,529 | Glycol Ethers |
| 67,815 | Nitric acid |
| 31,291 | Aluminum (fume or dust) |
| 18,720 | Ammonia |
| 14,958 | Toluene |
| 14,546 | Formaldehyde |
| 11,214 | Xylene (mixed isomers) |
| 8,611 | Benzene |
| 4,100 | Diethanolamine |

TRI-reported releases to POTWs do not include information concerning the rate of release or concentration of chemicals in the release. However, State and Federal law requires industrial facilities exceeding federally established chemical concentrations in wastewater to operate industrial pretreatment equipment to reduce such concentrations below harmful levels before discharging to the POTWs.

Transfers of metals to POTWs are considered a release to the environment under the TRI program. Generally, metals pass untreated through conventional treatment plants and are discharged in the plant effluent.

## UTAH FACILITY TRANSFERS TO OTHER OFF-SITE LOCATIONS

Transfers to "other off-site" locations are transfers of TRI chemicals to facilities other than POTWs. Often these facilities include chemical recyclers and waste disposal sites. If the chemical is disposed of at this location, it is considered a release to the environment. The material transferred may or may not be classified a "hazardous waste", but it contains a listed TRI chemical.

Table 17 lists the top 10 facilities that transferred chemicals to off-site locations in 2002. Nucor Steel transferred 7.2 million pounds of chemicals to off-site locations. The amount comprises almost 95% of all chemicals transferred to off-site locations in 2002.

The top 10 facilities responsible for transferring chemicals off-site in reporting year 2002 are shown in Table 17.

**Table 17**
**Utah 2002 TRI Top 10 Facilities Transferring Chemicals Off-Site**

| Lbs/Year | Facility |
|---|---|
| 7,164,035 | NUCOR STEEL - A DIV. OF NUCOR CORP |
| 622,093 | CLEAN HARBORS ARAGONITE, LLC. |
| 556,738 | IBA S & I, INC. |
| 422,187 | TYCO PRINTED CIRCUIT GROUP INC., LOGAN DIVISION |
| 253,037 | PACIFICORP HUNTINGTON PLANT |
| 242,474 | ATK THIOKOL PROPULSION CO. - BACCHUS |
| 236,882 | U.S. DOD, U.S. AIR FORCE, OGDEN AIR LOGISTICS CENTER |
| 200,800 | AMERICAN PACIFIC CORPORATION UTAH OPERATIONS |
| 184,376 | COMPEQ INTERNATIONAL |
| 168,561 | LIFETIME PRODUCTS INC. |

Table 18 lists the top 10 chemicals transferred off-site. Total transfer of TRI chemicals off-site was reduced from 8.6 million pounds in 2001 to 7.6 million pounds in 2002. This represents a 12.5% reduction in chemicals transferred off-site.

Zinc compounds comprise 83.8% of all TRI chemicals transferred off-site in 2002. Copper compounds; lead compounds, PCBs, ethylene glycol, and manganese compounds comprise the bulk of the remaining chemicals transferred to off-site facilities during 2002.

**Table 18**
**Utah 2002 TRI Top 10 Chemicals Transferred to Off-Site Facilities**

| Lbs/Year | Chemical Name |
|---|---|
| 6,335,946 | Zinc Compounds |
| 853,876 | Copper Compounds |
| 732,185 | Lead Compounds |
| 580,365 | Polychlorinated biphenyls |
| 572,034 | Ethylene glycol |
| 564,669 | Manganese Compounds |
| 163,523 | Nitric acid |
| 150,481 | Chromium Compounds |
| 139,266 | Dichloromethane |
| 117,555 | Aluminum (fume or dust) |

Figure 8 displays how chemicals were managed after being transferred from Utah facilities. Seventy-three percent of the total TRI chemicals transferred off-site in 2002 were transferred for disposal, while 22% of the total were transferred for recycling. The remaining 5% of chemicals were transferred for treatment.

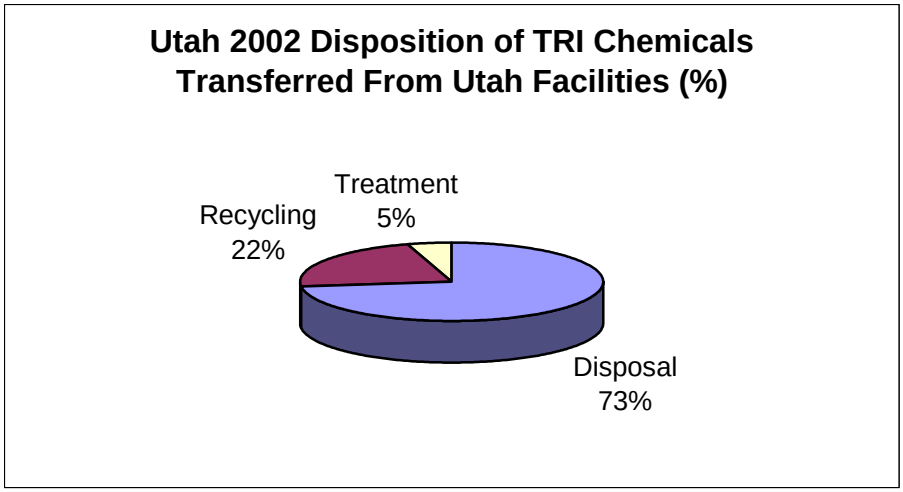


Figure 8

TRI chemicals transferred offsite may have been transferred to facilities inside or outside Utah. Figure 9 depicts the percentage of chemicals transferred to various states. About 49% of the 7.5 million pounds of TRI chemicals transferred off-site in 2002 were transferred to facilities in California. While 37% of TRI chemicals transferred off-site were sent to facilities in Idaho. Eleven percent of all chemicals transferred off-site were transferred to facilities in Utah, and 3% were transferred to locations other than those states listed above.

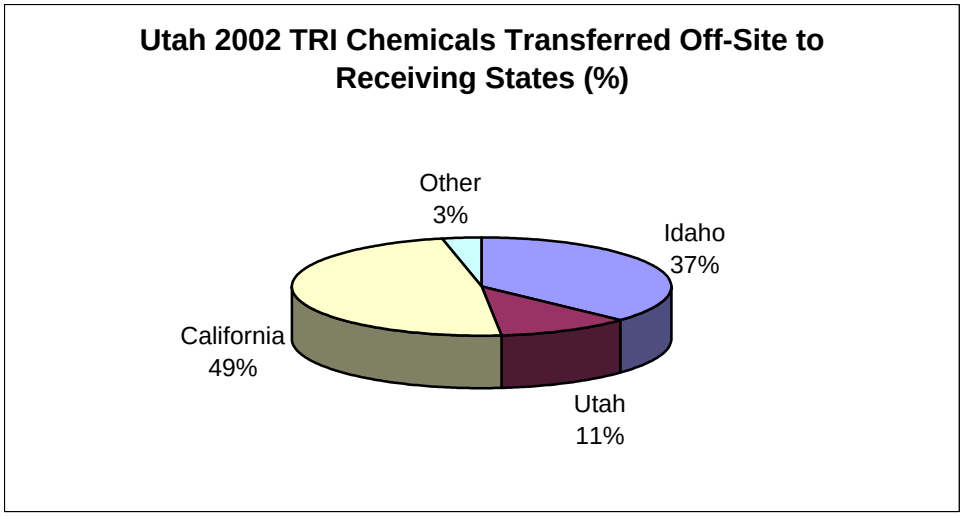


Figure 9

## PERSISTENT BIOACCUMULATIVE TOXIC (PBT) CHEMICALS

In October 1999 EPA published a final rule (64 FR 58666) adding seven chemicals and two chemical compound categories to the list of toxic chemicals subject to reporting under EPCRA section 313 that meet the criteria for persistence and bioaccumulation. Dioxin and dioxin-like compounds, and polycyclic aromatic compounds (PACs) are the two chemical compound categories added. EPA also lowered the reporting threshold on certain other toxic chemicals. These changes became affective with the reporting year beginning January 1, 2000.[4] EPA eliminated the *de minimis* exemption for the PBT chemicals. All PBT and chemicals and chemical categories are excluded from the eligibility for the alternate threshold of one million pounds, thus the Form A cannot be used for PBT chemicals[5]. EPA also excluded PBT chemicals from range reporting for on-site releases and transfers off-site for further waste management. In 2001 EPA classified lead and lead compounds as PBT chemicals and lowered the reporting thresholds for each. Under the 1999 rule, EPA lowered the reporting thresholds for PBT chemicals to either 100 or 10 pounds, or in the case of dioxin and dioxin-like compounds chemical category, to 0.1 gram. Under the PBT classification, dioxin and dioxin-like compounds, lead compounds, mercury compounds, and polycyclic aromatic compounds (PACs) are the four PBT chemical categories with lower reporting thresholds.

EPCRA specifies the reporting threshold for section 313 chemicals in unit pounds, except in the case of the dioxin and dioxin-like compounds category EPA established the 0.1-gram reporting threshold. One pound is equal to 453.59 grams.

Prominent release data for other PBT chemicals commonly found among mining facilities in Utah such as lead and mercury were presented and discussed earlier in this report (see Tables 2, 4, 8, 10, 12 and 18) and are not presented again here. Dioxin and dioxin-like compounds are of particular interest because of the unique reporting threshold of 0.1 gram established by EPA.

[4] Federal Register/Vol. 64, No. 209 October 29, 1999.
[5] Except lead when it is in stainless steel, brass or bronze alloys when the 100 lbs threshold for lead has not been exceeded.

For reporting year 2002, 16 facilities in Utah reported a total release of 2,648.43 grams of dioxin and dioxin-like chemicals. The total amount of those chemicals released in Utah in 2001 was 2,502.43 grams. The increase from 2001 of 146 grams represents a 5.8% increase. U.S. Magnesium released 2,615 grams of dioxin and dioxin-like chemicals, which represents 98.7% of the total amount released. The Clear Harbors Aragonite facility reported the second largest release of 17.77 grams, which is 0.7% of the total amount of dioxin and dioxin-like chemicals released. Fourteen additional facilities comprise the remaining 0.3% of the total amount of dioxin and dioxin-like chemicals released in which amounts released fell into a range of 0.01 grams to 8.4 grams. Table 19 shows the 16 facilities in Utah reporting releases of dioxin and dioxin-like compounds and the amount of these chemicals released by each facility.

**Table 19**
**Utah 2002 TRI - Facilities PBT Dioxin and Dioxin Like Compounds Total Releases**

| Facility | Air | Land | Total Releases |
|---|---|---|---|
| US MAGNESIUM, LLC | 46.0000 | 2,569.0000 | 2,615.0000 |
| CLEAN HARBORS ARAGONITE, LLC. | 17.7700 | 0.0000 | 17.7700 |
| INTERMOUNTAIN POWER GENERATING STATION | 1.8888 | 6.5092 | 8.3980 |
| BONANZA POWER PLANT | 3.5475 | 0.0000 | 3.5475 |
| SUNNYSIDE COGENERATION ASSOCIATES | 0.6850 | 0.0000 | 0.6850 |
| PACIFICORP HUNTER PLANT | 0.6680 | 0.0000 | 0.6680 |
| ALCOA EXTRUSIONS, INC. | 0.6001 | 0.0000 | 0.6001 |
| PACIFICORP HUNTINGTON PLANT | 0.4213 | 0.0000 | 0.4213 |
| KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT | 0.4000 | 0.0000 | 0.4000 |
| WESTERN ZIRCONIUM | 0.0000 | 0.3900 | 0.3900 |
| ASH GROVE CEMENT COMPANY | 0.2310 | 0.0000 | 0.2310 |
| GRAYMONT WESTERN US INC., CRICKET MOUNTAIN | 0.1040 | 0.0000 | 0.1040 |
| PACIFICORP CARBON PLANT | 0.1015 | 0.0000 | 0.1015 |
| CHEVRON PRODUCTS COMPANY- SALT LAKE REFINERY | 0.1000 | 0.0000 | 0.1000 |
| TESORO REFINING AND MARKETING COMPANY | 0.0100 | 0.0000 | 0.0100 |
| KENNECOTT UTAH COPPER SMELTER & REFINERY | 0.0030 | 0.0000 | 0.0030 |
| Totals | 72.5302 | 2,575.8992 | 2,648.4294 |

## SUMMARY

In reporting year 2002 the total releases of hazardous chemicals in Utah decreased from the previous year by 30.1%. The material reduction was 77.7 million pounds. Total releases to air decreased by 4%, a decrease of 768,000 pounds in 2002. The figures for releases to land were impacted by a decision filed in April 2003 by the United States District Court For the District of Columbia. In the case of Barrick vs. U.S. EPA (April 2003) the ruling had a significant impact upon the reporting requirements by the mining industry to report toxic chemicals present in waste rock. In this decision, the court ruled in favor of the plaintiff wherein waste rock, containing toxic chemicals subject to TRI reporting which are present in concentrations considered de minimis (less than or equal to 1%), is eligible for the de minimis exemption and therefore reporting under TRI is not required. As a result, the total releases to land reported in

Utah decreased by 33% (74 million pounds) in 2002. Releases to surface waters decreased by 93.7%, a drop in excess of 1 million pounds. This enormous drop in the total release of chemicals to surface waters is attributable almost entirely to the cessation of operations at Geneva Steel. Transfers to publicly owned treatment works (POTWs; a.k.a. waste water treatment plants) increased by 29.4% in 2002. Transfers to other off-site facilities, which typically include chemical recyclers and waste disposal sites decreased by 12.5%, a decrease by 1 million pounds. The most notable PBT chemical is dioxin and dioxin-like compounds. The federal regulations require that chemicals subject to TRI reporting be reported in pounds. Dioxin and dioxin-like compounds are unique such that it is the only category of chemicals in which the amounts released are reported in grams. There was a 5.6% increase in the amount of dioxins reported released in 2002.