



State of Utah
Department of Environmental Quality

Utah Toxic Release Inventory
2001 Data Summary

Division of Environmental Response and Remediation
June 2003

Table of Contents

List of Figures ii

List of Tables ii

Executive Summary iii

 Introduction iii

 Utah 2000 TRI Annual Report iii

 Changes to Reporting Requirements iii

 2001 TRI Summary iii

 Total Releases iii

 Releases to Air iv

 Releases to Land iv

 Releases to Surface Water iv

 Transfers to POTWs iv

 Other Off-Site Transfers iv

Introduction 1

 What is the Toxic Release Inventory? 1

 Who Must Report to TRI? 1

 What Type of Information Must Be Reported? 1

 What Types of Chemicals Are Required To Be Reported? 1

 What Are the Benefits and Uses of TRI Data? 1

 What Are the Limitations of the Data? 2

 What Cautions Should Be Used in Interpreting TRI Data? 2

 How Can the Public Obtain TRI Information? 3

Facility Overview 4

 Number of Reporting Facilities 4

 Facility Location 4

 Type of Industry 5

 Total Releases 6

 Releases to Air 9

 U.S. Magnesium 10

Releases to Land 11

 Mining 12

 Kennecott Facilities 12

 Waste Disposal Facilities 14

 Electric Utilities 15

Releases to Surface Water 16

Transfers to POTWs 17

Utah Facility Transfers to Other Off-Site Locations 19

List of Figures

Figure 1	Quantity of Utah TRI Submissions
Figure 2	Utah 2001 TRI Facility Locations
Figure 3	Utah 2001 TRI Facilities – Quantity In Each Industrial Sector Reporting
Figure 4	Utah TRI Total Releases 1988-2001
Figure 5	Utah TRI Releases To Air
Figure 6	US Magnesium Releases To Air 1988-2001
Figure 7	Kennecott Smelter TRI Releases To Land
Figure 8	2000 Disposition of TRI Chemicals Transferred From Utah Facilities
Figure 9	Utah 2000 TRI Chemicals Transferred Off-Site Receiving State (%)
Figure 10	2001 Disposition of TRI Chemicals Transferred from Utah Facilities
Figure 11	Utah 2001 TRI Chemicals Transferred Off-Site Receiving State (%)

List of Tables

Table 1	Utah 2001 TRI Top Ten Facilities Total On-Site & Off-Site Releases
Table 2	Utah 2001 TRI Top Ten Chemicals Total On-Site & Off-Site Releases
Table 3	Utah 2001 TRI Top Ten Facilities Total On-Site Releases
Table 4	Utah 2001 TRI Top Ten Chemicals Total On-Site Releases
Table 5	Utah 2001 TRI Top Ten Facilities Total Releases to Air
Table 6	Utah 2001 TRI Top Ten Chemicals Released To Air
Table 7	Utah 2001 TRI Top Ten Facilities Total Releases To Land
Table 8	Utah 2001 TRI Top Ten Chemicals Total Releases to Land
Table 9	Utah 2001 TRI Top Ten Chemical Releases to Land From Waste Disposal Facilities
Table 10	Utah 2000 TRI Coal-Fired Electric Utility Releases to Land
Table 11	Utah 2000 TRI Top Chemical Releases to Land from Coal Fired Electric Utilities
Table 12	Utah 2001 TRI Coal-Fired Electric Utility Releases to Land
Table 13	Utah 2001 TRI Top Chemical Releases to Land from Coal Fired Electric Utilities
Table 14	Utah 2000 TRI Chemical Releases (>1000 lbs) to Water
Table 15	Utah 2001 TRI Chemical Releases (>1000 lbs) to Water
Table 16	Utah 2000 TRI Top Facilities Releases (1000+ lbs) to Water
Table 17	Utah 2001 TRI Top Facilities Releases (1000+ lbs) to Water
Table 18	Utah 2000 TRI Top Chemical Transfers to POTWs
Table 19	Utah 2001 TRI Top Chemical Transfers to POTWs
Table 20	Utah 2000 TRI Top 10 Facility Transfers to POTWs
Table 21	Utah 2001 TRI Top 10 Facility Transfers to POTWs
Table 22	Utah 2000 TRI Top 10 Chemicals Transferred to Off-Site Facilities
Table 23	Utah 2001 TRI Top 10 Chemicals Transferred to Off-Site Facilities
Table 24	Utah 2000 TRI Top 10 Facilities Transferring Chemicals Off-Site
Table 25	Utah 2001 TRI Top 10 Facilities Transferring Chemicals Off-Site

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 United States 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 data were compiled. This report is a summary of data submitted to the Utah Department of Environmental Quality (UDEQ) for calendar year 2001.

Utah 2000 TRI Annual Report

While the EPA published a report in 2002, covering reporting year 2000, the State of Utah did not publish a separate report. For this reason, and as a basis for comparison, some data for reporting year 2000 is also included in this report.

Changes to Reporting Requirements

For reporting year 2001 EPA lowered the reporting thresholds for lead and lead compounds to 100 pounds (except for lead contained in stainless steel, brass and bronze alloys). This rule took effect on February 16, 2001. Therefore, the first facility reports reflecting data with these lower thresholds received by EPA and the State Emergency Response Commission (SERC) in each state are those for the 2001 report year.

2001 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 targets, and exposure information to assess a level of human health or environmental risk.

For calendar year 2001, 171 facilities filed a total of 765 TRI reports for 117 different TRI-listed chemicals and chemical categories. One hundred-twelve (65%) TRI facilities 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 958 million pounds in 2000 to 774 million pounds in 2001.

Releases to Air

TRI-reported releases to the air totaled 19.3 million pounds in 2001. This is a reduction of 29.7 million pounds from 49 million pounds in 2000. This reduction represents a decrease of slightly greater than 60% between 2000 and 2001. A significant percentage of this reduction is attributable to a decrease by 29 million pounds of chlorine by U.S. Magnesium, which is down from 42.1 million pounds in 2000, to 13.1 million pounds in 2001. This represents a 68% decrease in releases to air for U.S. Magnesium alone. In the past several years U.S. Magnesium has made substantial capital improvements to their manufacturing and emissions process to achieve these reductions.

Releases to Land

TRI chemical releases to land in Utah totaled about 745 million pounds in 2001. This is a decrease of 157 million pounds from 902 million pounds reported in 2000 and represents a 17.4% decrease. Decreases in the amounts reported by Kennecott facilities account for the majority of the decrease.

Releases to Surface Water

TRI releases to surface water in 2001 remained virtually constant at 1 million pounds. This total consists almost entirely of nitrate compounds with close to 96% released by Geneva Steel. Chevron Products Company released 33,000 pounds of nitrate compounds total TRI chemicals for an estimated 3% of total nitrate compounds released. Approximately 33,000 pounds of various TRI chemicals were released to surface waters from Kennecott facilities. 2001 shows a slight increase of less than 1%, from 999,600 pounds in 2000 up to just over 1 million pounds.

Transfers to POTWs

Publicly Owned Treatment Works (POTWs) are publicly owned wastewater treatment plants. During 2001 reported discharges of TRI chemicals to POTWs in Utah totaled about 912,000 pounds. This represents a 6.6% decrease of the total reported discharges of TRI chemicals to POTWs in Utah for 2000. 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 concentration. 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.

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 2001 8.6 million pounds of TRI chemicals were transferred to these "other off-site" locations. This is an increase of 3.2 million pounds up from the 5.4 million pound total reported for 2000.

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 United States 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) were recorded. This report is a summary of data submitted to the Utah Department of Environmental Quality for calendar year 2001.

Who Must Report to TRI?

A facility must report to TRI if it:

- Conducts operations within a specified Standard Industrial Classification (SIC) Code.
- Has ten 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 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 sectors of industry. 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.

What Types of Chemicals Are Required To Be Reported?

Over 600 chemicals and chemical categories were included in the reporting list for 2001, based upon acute or chronic human health or environmental effects. An additional six chemicals and chemical categories were added for report year 2000 and the reporting threshold for an additional 18 chemicals and chemical categories has been lowered. 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 reduction targets and document 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 required estimating emissions have changed significantly through the 15-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 the chemical in air, water, or material placed on land. A large poundage 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 information or copies of original 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

The first ten copies are provided at no charge. Additional copies are \$0.25 each. Specialized computer summaries are available for a fee charged at an hourly rate. Most reports requiring less than one hour's time to create a specialized summary. Please call DEQ (801-536-4100) for current 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 Community Right-To-Know Act at these websites:

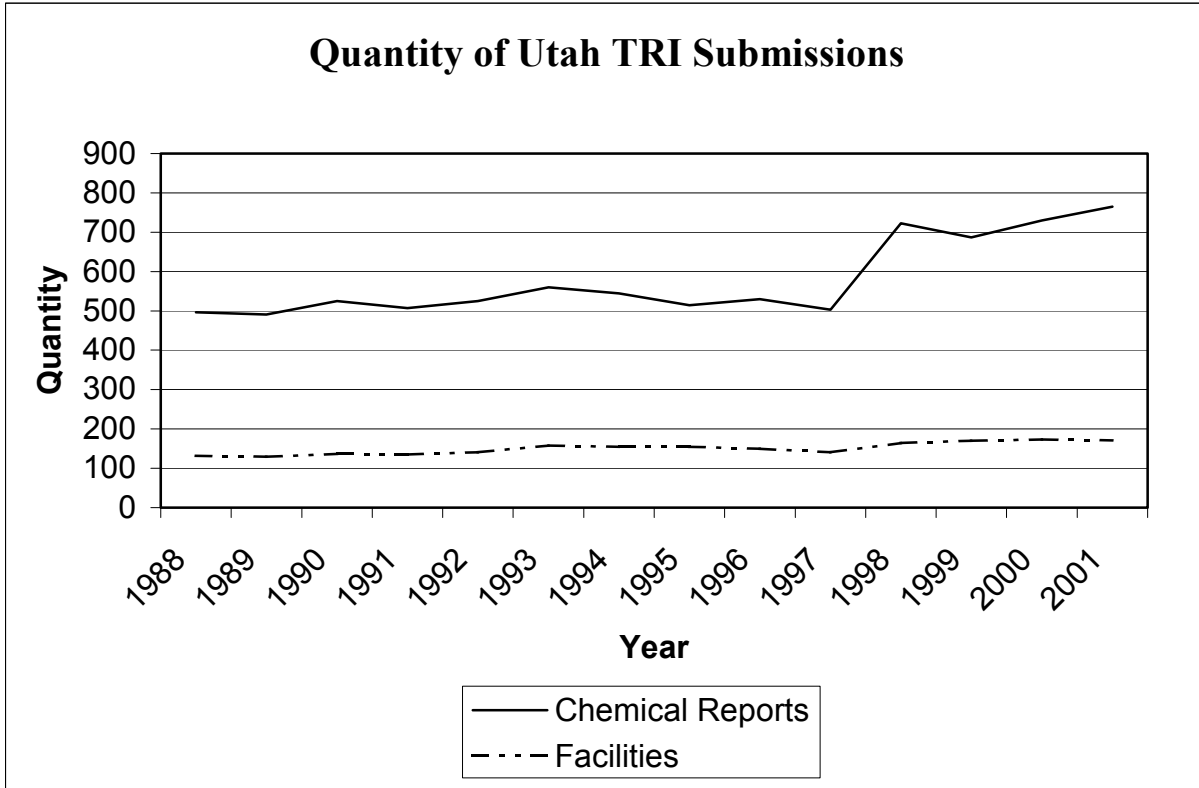
- http://www.epa.gov/Region8/toxics_pesticides/epcra/epcra.html
- <http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/epcraOverview.htm>

FACILITY OVERVIEW

Number of Reporting Facilities

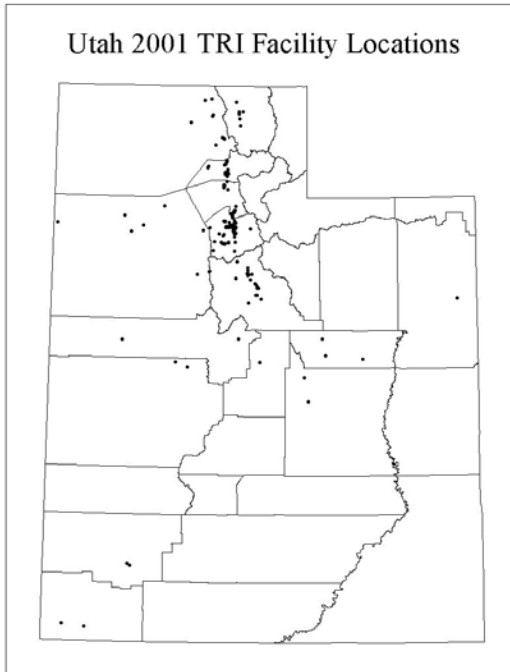
For calendar year 2001, 171 Utah facilities filed a total of 765 TRI reports for 117 different TRI-listed chemicals. As shown in Figure 1, this is a decrease of 2 facilities (1.2%) that reported but an increase of 35 chemical reports (4.8 %) received compared to 2000.

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 (112 out of 171 or 65%) are located along the Wasatch Front.



Type of Industry

Prior to 1998, reporting under the TRI program was required by manufacturing facilities, and facilities operated by the federal government only. In 1998, EPA expanded coverage of the TRI program to include additional sectors of industry. This was done to “significantly enhance the public’s knowledge about releases, transfers, and other waste management of toxic chemicals”¹

Figure 3 below identifies the number of facilities submitting TRI reports in 2001 in the highest represented industrial sectors reporting. The greatest number of facilities reported in equal quantities of 24 from the Chemical and Allied Products sector and Fabricated Metal Products sector. A total of 17 industrial sectors comprise the “other” category from which 89 facilities reported.

Figure 2

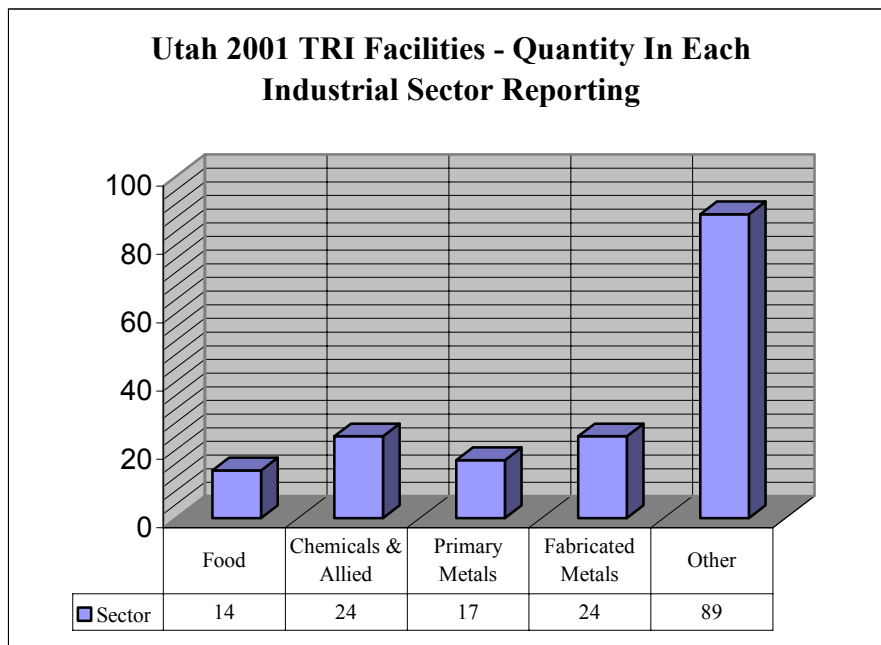


Figure 3

¹ Federal Register, May 1, 1997, pg. 23834

Total Releases

As illustrated in Figure 4, on-site and off-site release totals of TRI-listed chemicals decreased from 958 million pounds in 2000 to 774 million pounds in 2001. This represents a decrease by 19.2%. The peak for 1999 data represents the addition of newly added industrial sectors such as mining. A significant portion of the downward trend is attributable to the decrease by Kennecott Utah Copper facilities. Total releases from Kennecott facilities decreased from 886 million pounds in 2000 down to 730.5 million pounds in 2001, an overall decrease of 17.6%. Releases to air decreased by 60.6 % between 2000 and 2001. More detailed discussion is presented in the section titled *Releases to Air* later in this report.

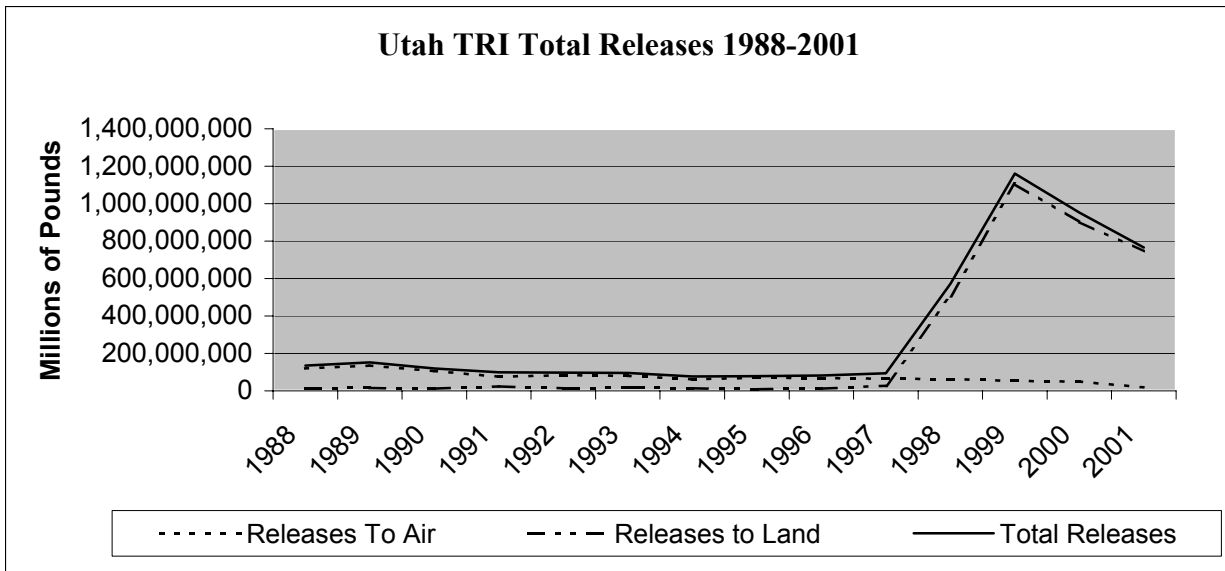


Figure 4

Totals for 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.
- The portion of TRI chemicals transferred to off-site facilities, which are disposed of at the off-site facility and thus released to the environment.

The top 10 facility and chemical totals for on-site and off-site releases are given in Tables 1 and 2 respectively.

Table 1	
Utah 2001 TRI Top 10 Facilities - Total On-Site & Off-Site Releases	
lbs/Year	Facility Name
695,929,704	KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT
27,866,800	KENNECOTT UTAH COPPER SMELTER & REFINERY
14,364,411	MAGNESIUM CORPORATION OF AMERICA
7,929,402	NUCOR STEEL - A DIV. OF NUCOR CORP
6,770,653	KENNECOTT BARNEYS CANYON MINING COMPANY
5,776,330	SAFETY KLEEN (LONE & GRASSY)
1,926,251	PACIFICORP HUNTINGTON PLANT
1,607,321	INTERMOUNTAIN POWER GENERATING STATION
1,584,030	BONANZA POWER PLANT
1,512,702	WESTERN ZIRCONIUM

Table 2	
Utah 2001 TRI Top 10 Chemicals	
Total On-Site & Off-Site Releases	
Lbs/Year	Chemical Name
424,861,966	Copper Compounds
95,435,978	Lead Compounds
81,971,857	Zinc Compounds
47,495,513	Manganese Compounds
44,390,296	Chromium Compounds
31,149,990	Arsenic Compounds
13,178,405	Chlorine
7,574,165	Vanadium Compounds
6,960,807	Nickel Compounds
3,457,686	Barium Compounds

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 facility and chemical totals for on-site releases are given in Tables 3 and 4 respectively. A comparison of the data presented in Table 2 and Table 4 shows little change. In a comparison between total on and off-site releases to total on-site releases the reader will note a minimal difference in the tonnage reported. The differences between on-site and off-site reporting and off-site only reporting is comprised of (1) metals released from POTWs and (2) TRI chemicals transferred off-site for disposal. Thus the differences found in off-site and on-site compared to off-site (only) is indicative that TRI metals released by POTWs and other TRI chemicals transferred off-site for disposal is relatively low. Facilities tend to be similar in both categories.

Table 3	
Utah 2001 TRI Top 10 Facilities - Total On-Site Releases	
Lbs/Year	Facility Name
695,929,449	KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT
27,830,109	KENNECOTT UTAH COPPER SMELTER & REFINERY
14,364,411	MAGNESIUM CORPORATION OF AMERI CA
6,770,653	KENNECOTT BARNEYS CANYON MINING COMPANY
5,768,998	SAFETY KLEEN (LONE & GRASSY)
1,926,224	PACIFICORP HUNTINGTON PLANT
1,607,321	INTERMOUNTAIN POWER GENERATING STATION
1,579,250	BONANZA POWER PLANT
1,512,702	WESTERN ZIRCONIUM
1,358,098	GENEVA STEEL, LLC

Table 4	
Utah 2001 TRI Top 10 Chemicals	
Total On-Site Releases	
Lbs/Year	Chemical Name
424,749,311	Copper Compounds
94,831,665	Lead Compounds
75,465,262	Zinc Compounds
46,926,503	Manganese Compounds
44,253,938	Chromium Compounds
31,131,018	Arsenic Compounds
13,178,405	Chlorine
7,587,470	Vanadium Compounds
6,977,492	Nickel Compounds
3,449,215	Hydrochloric acid (aerosol forms only)

Releases to Air

As illustrated in Figure 5, releases to air dropped from 48.9 million in 2000 to 19.3 million pounds in 2001, a decrease of 29.7 million pounds or 60.6% from the 2000 total. The 19.3 million pound total is the lowest release to air total in the 15-year history of the TRI program.

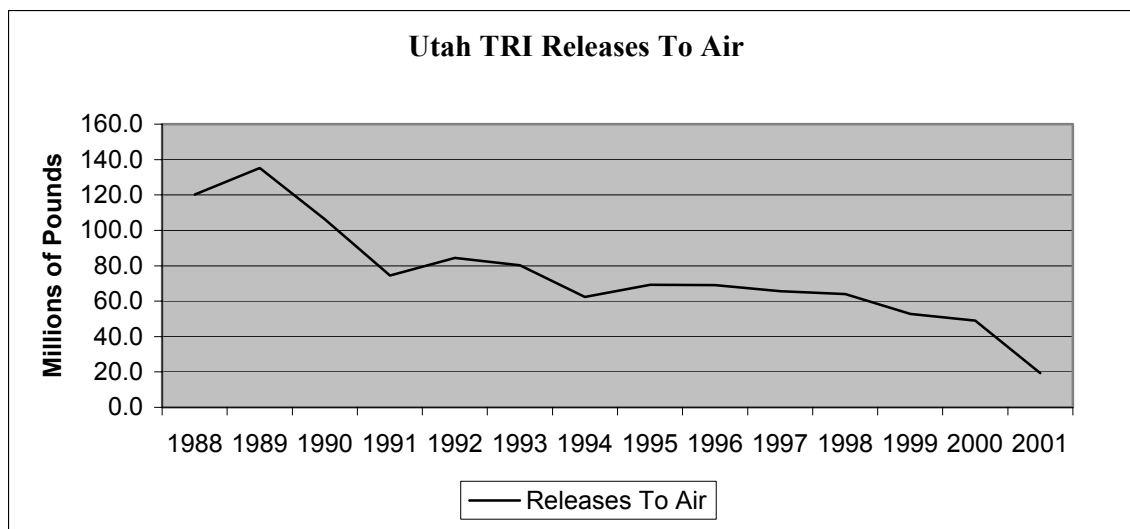


Figure 5

U.S. Magnesium reduced emissions of chlorine by 29 million pounds, and hydrochloric acid by about 0.5 million pounds. More detailed information concerning U.S. Magnesium is given later in this report.

Top 10 facility totals for releases to air are given in Table 5 and the top ten chemical totals for releases to air are given in Table 6. U.S. Magnesium is the primary contributor to the 13 million pounds of chlorine reported released. Primary industry contributors to the 3.4 million pounds of hydrochloric acid aerosols include: coal fired power plants (1.2 million pounds), U.S. Magnesium (1.2 million pounds), and rocket motor manufacturing (0.78 million pounds).

Table 5 Utah 2001 TRI Top 10 Facilities - Total Releases to Air	
Lbs/Year	Facility Name
14,354,180	MAGNESIUM CORPORATION OF AMERICA
858,645	PACIFICORP HUNTINGTON PLANT
813,000	ATK THIOKOL PROPULSION
471,893	PACIFICORP HUNTER PLANT
303,699	PACIFICORP CARBON PLANT
263,251	BRUSH RESOURCES INC., MILL
227,530	TESORO REFINING AND MARKETING COMPANY
177,081	U.S. DOD, U.S. AIR FORCE, OGDEN AIR LOGISTICS CENTER
142,418	BD MEDICAL SYSTEMS
137,140	INTERMOUNTAIN POWER GENERATING STATION

Table 6 Utah 2001 TRI Top 10 Chemicals Released to Air	
Lbs/Year	Chemical Name
13,178,405	Chlorine
3,449,215	Hydrochloric acid (aerosol forms only)
543,778	Hydrogen fluoride
457,947	Ammonia
269,267	Sulfuric acid (aerosol forms only)
192,798	1,1-Dichloro-1-fluoroethane
115,683	Toluene
84,513	Styrene
80,629	Xylene (mixed isomers)
78,179	Dichloromethane

U.S. Magnesium

U.S. Magnesium (USM) 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. USM is located along the west side of the Great Salt Lake in the western desert of Tooele County and produces magnesium metal by extraction from magnesium chloride brines drawn from the lake. Chlorine and hydrochloric acid are produced as by-products of the process.

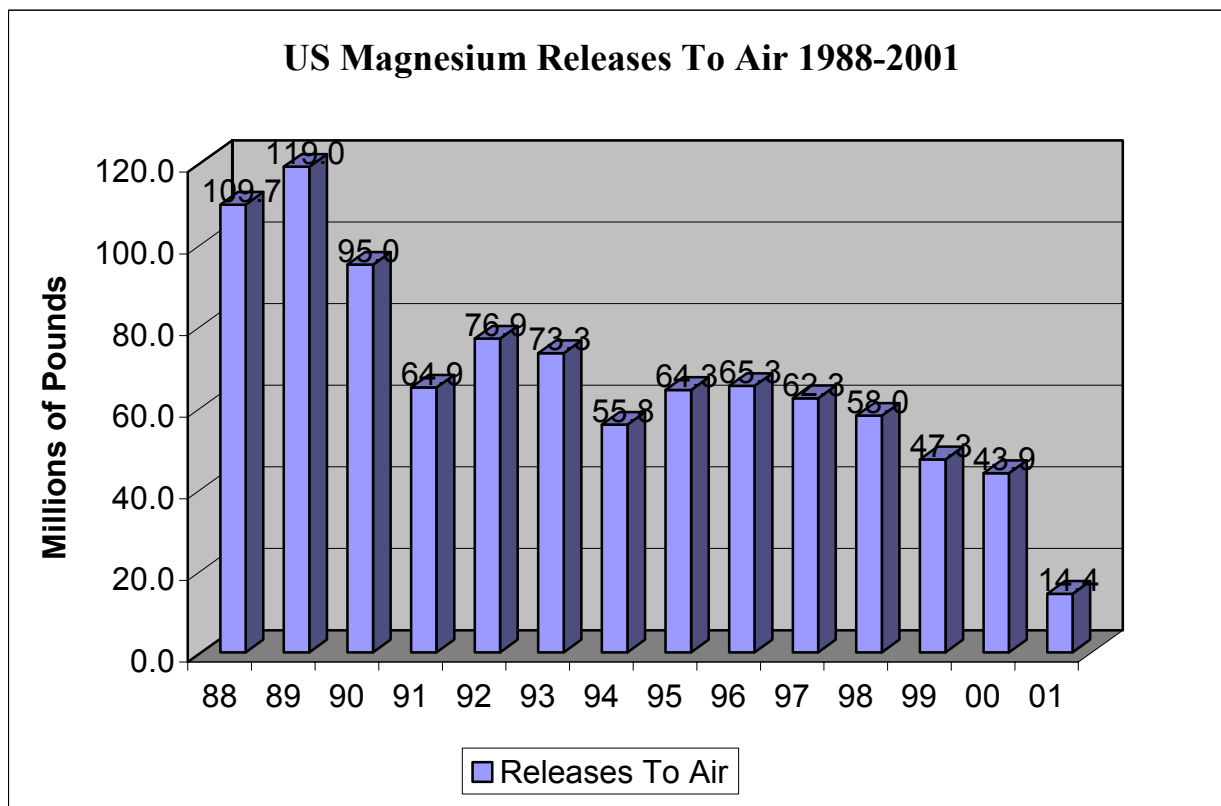


Figure 6

As shown in Figure 6, USM emissions of TRI chemicals decreased from 43.9 million pounds in 2000 to 14.4 million pounds in 2001. Several significant and recent improvements in production technology at the plant beginning in 2001 are responsible for the dramatic reductions in chlorine emissions. In 2001 new electrolytic cell reactors were installed and in 2002 chlorine path by-pass scrubbers were installed. The latter upgrade is expected to lead to a continuing reduction in chlorine emissions that USM anticipates will be reflected in the 2002 TRI report year data.

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 about 745 million pounds in 2001. This represents a decrease of 157 million pounds (17%) down from 902 million pounds reported in 2000.

As shown in Table 7, the top three facility release-to-land totals are Kennecott facilities. Kennecott facilities contributed 98% of the total mass of TRI chemicals released as copper, lead, zinc, manganese, chromium, arsenic and other metals.

Table 7	
Utah 2001 TRI Top 10 Facilities - Total Releases To Land	
Lbs/Year	Facility Name
695,881,360	KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT
27,722,175	KENNECOTT UTAH COPPER SMELTER & REFINERY
6,760,150	KENNECOTT BARNEYS CANYON MINING COMPANY
5,768,763	SAFETY KLEEN (LONE & GRASSY)
1,500,992	BONANZA POWER PLANT
1,470,181	INTERMOUNTAIN POWER GENERATING STATION
1,461,020	WESTERN ZIRCONIUM
1,192,871	PACIFIC STATES CAST IRON PIPE COMPANY
1,067,579	PACIFICORP HUNTINGTON PLANT
615,283	BRUSH RESOURCES INC., MILL

Table 8 identifies the top ten chemicals released to land. The largest release consists of the 424 million pounds of copper compounds contained in waste rock and tailings processed at Kennecott Utah Copper concentrator, mine and smelter facilities.

Table 8	
Utah 2001 TRI Top 10 Chemicals	
Total Releases To Land	
Lbs/Year	Chemical Name
424,651,491	Copper Compounds
94,803,784	Lead Compounds
75,401,019	Zinc Compounds
46,845,461	Manganese Compounds
44,250,998	Chromium Compounds
31,126,947	Arsenic Compounds
7,562,604	Vanadium Compounds
6,942,888	Nickel Compounds
3,414,194	Barium Compounds
1,917,330	Nitrate Compounds

Mining

Four mining facilities reported under the TRI program for reporting year 2001:

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

Greater than 96% of releases reported from mines are releases to land. According to the mining industry, major sources of TRI release to land totals are:

- metals contained in unprocessed mined materials such as waste rock;
- metals in materials no longer undergoing heap leaching; and
- processed materials such as tailings placed on-site, often near the mine or mill.

The EPA TRI program defines placement of “waste rock²” and tailings on the land, or materials no longer undergoing heap leaching, as a release to land although the metals of concern in the rock or tailings may not have migrated to the surrounding environment.

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 98% 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 are largely lower concentrations of metals in many tons of waste rock and mill tailings, Reductions in reporting amounts resulted with cessation of leaching procedures. In 1999 and 2000, KUC reported the "release" of metals in the volume of waste rock they stopped leaching in those years. Because all active leaching ended in 2000, no such "release" occurred in 2001, and none will occur thereafter. Dumps that are being leached are considered to be materials in process, as long as metal (copper) is being recovered. When leaching of an area stops, the entire volume of rock under the area is considered to be discarded and to become a waste at that time. The metals contained in that rock are considered released for TRI purposes at the time the rock becomes waste, even though they have been in place for years or decades. Kennecott contends that the concentration of many of these metals approaches background, a factor not included as part of TRI. Based on the recent decision handed down in “Barrick vs. EPA” the court indicates that an exemption for low concentration wastes is valid. Because of their status as Persistent, Bioaccumulative Toxic chemicals, lead and mercury do not qualify under this exemption.

² Waste rock is that portion of the ore body that is barren or submarginal rock, or ore which has been mined but is not of sufficient value to warrant treatment, and is removed ahead of the milling process (62 FR 23859; May 1, 1997).

Kennecott Utah Copper Mine, Concentrators & Power Plant, as well as Kennecott Barneys Canyon Mining Company submitted TRI reports for the first time in 1998 as part of expansion of the TRI program to include mining.

The Kennecott Utah Copper Smelter and Refinery has submitted TRI reports separate from Kennecott’s mining facilities since 1987. As shown in Figure 7 below, releases to land that originated from smelter operations increased from 28.4 million pounds in 1999 to 53.9 million pounds in 2000 and then decreased to 27.7 million pounds in 2001. The increased tonnage reported in 2000 are the result of work performed under an on-going site cleanup effort in which contaminated soils and sludge were moved from an existing on-site repository into a newer waste management on-site repository. The reader is advised to note that contaminants that were deposited into the existing repository after January 1, 1987, and therefore subject to the TRI program, were reported when placed into the existing repository. As a result of removal and re-deposition of these materials under the current remedial project, which has spanned the time period between 1997 through 2002, these materials fell under the reporting requirements of TRI for a second time.

The new facility, known as the Arthur Stepback Respository, was constructed to comply with the Federal Resource Conservation and Recovery Act (RCRA) Subtitle C standards. Construction of the repository consists of a triple lining, a leak detection system and collection system. The new repository is designed to greatly reduce the possibility of releases to the environment. However, TRI guidance requires the placement of materials in landfills to be reported as a release to land. The increased volumes reported in 2000 reflect these waste management activities.

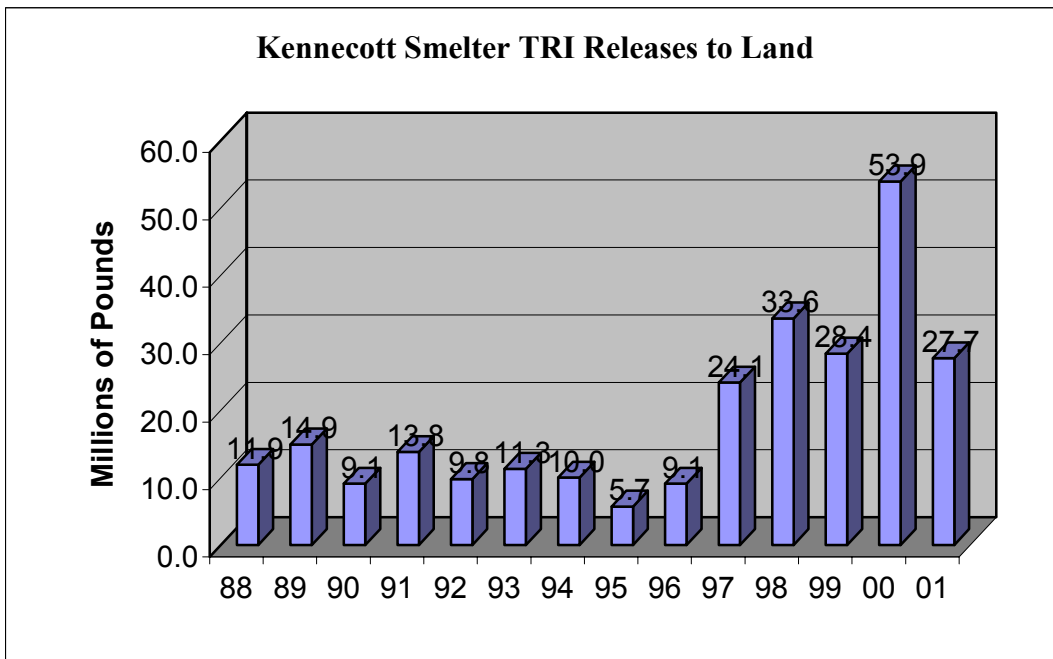


Figure 7

The top compounds showing the total combined highest releases (in millions of pounds) to land in 2001 for Kennecott facilities are copper (423.4), lead (94.6), zinc (74.2), manganese (46.3), chromium (43.7), arsenic (30.6), and nickel (6.5).

Waste Disposal Facilities

Waste disposal facilities that treat, store, 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 2001 include:

- Safety-Kleen (Lone & Grassy), Inc.
- Safety-Kleen (Aragonite), Inc.

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 those specifically constructed under requirements of RCRA and Utah Law to contain the waste inside the landfill and preclude an actual release to the environment. Safety Kleen (Lone & Grassy) reported slightly less than 8.9 millions pounds of TRI releases to land in 2000 and 5.9 million pounds in 2001. For both years, releases to land have been comprised of metals compounds, primarily copper, zinc, and lead with a variety of additional metals and several non-metallic chemicals such as asbestos and polychlorinated biphenyls (PCB). Safety Kleen (Aragonite) reported no releases to land. Table 9 lists the top ten TRI chemical totals identified as released to land from waste disposal facilities. For 2001, the Safety Kleen (Lone and Grassy) Inc., was the only facility in the category of waste disposal facilities in Utah to report releases to land.

Lbs/Year	Chemical
1,155,344	Copper Compounds
921,839	Zinc Compounds
627,942	Lead Compounds
319,786	Barium Compounds
311,757	Asbestos (friable)
265,997	Silver Compounds
261,527	Nickel Compounds
256,794	Cadmium Compounds
239,947	Arsenic Compounds
232,679	Selenium Compounds

Electric Utilities

Electric utilities that burn coal or oil for electric energy production were first required to submit TRI reports in 1998. Table 10 shows facilities that reported in 2000.

Table 10 Utah 2000 TRI Coal-Fired Electric Utility Releases to Land	
Lbs/year	Facility
1,448,211	INTERMOUNTAIN POWER GENERATING STATION
1,353,820	PACIFICORP, HUNTINGTON PLANT
1,136,665	BONANZA POWER PLANT
232,022	PACIFICORP CARBON PLANT
121,251	SUNNYSIDE COGENERATION ASSOCIATES

Table 11 below provides the top 10 chemicals released to land by the coal-fired electric utility sector.

Table 11 Utah 2000 TRI Top Chemical Releases to Land from Coal Fired Electric Utilities	
Lbs/Year	Chemical
2,833,693	Barium Compounds
382,445	Vanadium Compounds
284,106	Chromium Compounds
215,444	Manganese Compounds
157,268	Zinc Compounds
101,671	Lead Compounds
86,000	Copper Compounds
85,400	Nickel Compounds
79,000	Arsenic Compounds
22,900	Antimony Compounds

Table 12 lists electric utility facilities and associated releases to land reported by each facility for 2001.

Table 12 Utah 2001 TRI Coal-Fired Electric Utility Releases to Land	
Lbs/Year	Facility Name
1,500,992	BONANZA POWER PLANT
1,470,181	INTERMOUNTAIN POWER GENERATING STATION
1,067,579	PACIFICORP HUNTINGTON PLANT
133,793	PACIFICORP CARBON PLANT
28,021	SUNNYSIDE COGENERATION ASSOCIATES

Table 13 lists the top 10 chemicals released to land for coal-fired electric generation facilities in 2001.

Table 13 Utah 2001 TRI Top 10 Chemical Releases to Land from Coal Fired Electric Utilities	
Lbs/Year	Chemical
3,094,199	Barium Compounds
256,324	Chromium Compounds
219,603	Manganese Compounds
115,235	Lead Compounds
109,004	Vanadium Compounds
103,075	Zinc Compounds
89,000	Copper Compounds
87,000	Arsenic Compounds
61,687	Nickel Compounds
25,000	Antimony Compounds

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 water in Utah amounted to slightly less than 1 million pounds for report year 2000. Total releases to water in report year 2001 were virtually identical at an amount slightly greater than 1 million pounds. For both years, this total consists almost entirely of nitrate compounds released from Geneva Steel to Utah Lake. Tables 14 and 15 show the top chemical releases above 1,000 pounds to water for report years 2000 and 2001 respectively.

Table 14 Utah 2000 TRI Top Chemical Releases to Surface Water	
Lbs/Year	Chemical Name
971,505	Nitrate Compounds
8,700	Ammonia
4,350	Cyanide Compounds
3,340	Zinc Compounds
2,450	Nickel Compounds
1,010	Copper Compounds
1,000	Selenium Compounds

Table 15 Utah 2001 TRI Chemical Releases (> 1000 lbs) to Surface Water	
Lbs/Year	Chemical
960,255	Nitrate Compounds
8,800	Ammonia
8,672	Zinc Compounds
6,300	Nickel Compounds
5,600	Cyanide Compounds
2,860	Copper Compounds
1,000	Arsenic Compounds
1,000	Selenium Compounds

Geneva reported 970,000 pounds of nitrate compounds released to surface water, which comprised 97% of the total volume of all TRI chemicals released to surface water in 2000. For 2001 Geneva reported 920,000 pounds of nitrate compounds released to surface waters, which comprised 91.7% of the total volume of all TRI chemicals released to surface water. The facility’s biological treatment plant produces nitrate compounds when oxidizing ammonia generated by the coke ovens. Tables 16 and 17 show the top facilities releases at or greater than 1000 pounds to water for 2000 and 2001 respectively.

Table 16	
Utah 2000 TRI Top Facilities Releases (1000+ lbs) to Surface Water	
Lbs/Year	Facility Name
982,888	GENEVA STEEL, LLC
8,534	KENNECOTT UTAH COPPER MINE, CO NCENTRATORS & POWER PLANT
5,754	KENNECOTT UTAH COPPER SMELTER & REFINERY
1,764	CHEVRON USA PRODUCTS COMPANY

Table 17	
Utah 2001 TRI Top Facilities Releases (1000+ lbs) to Water	
Lbs/Year	Facility Name
933,451	GENEVA STEEL, LLC
36,842	CHEVRON PRODUCTS COMPANY
22,894	KENNECOTT UTAH COPPER MINE, CONCENTRATORS & POWER PLANT
8,833	KENNECOTT UTAH COPPER SMELTER & REFINERY

For both years 2000, and 2001 just over 94% of the ammonia released in each year was from Geneva Steel. The volume of nitrate compounds released by Geneva decreased by about 50,000 pounds in 2001. Chevron Products Company released 33,000 pounds of nitrate compounds to the Great Salt Lake in 2001. An additional 32,000 pounds of total TRI chemicals were reported released from Kennecott Copper facilities to the Great Salt Lake.

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 discharges to POTWs in 2000 were 976,000 pounds while total discharges to POTWs decreased slightly in 2001 to 912,000 pounds. Tables 18 and 19 below identify the top 10 chemical transfers to POTWs for reporting years 2000 and 2001 respectively. Nitrate compounds account for about 78% of all releases to POTWs in 2000 and 75% of all releases to POTWs in 2001.

Table 18 Utah TRI 2000 Top Chemical Transfers to POTWs	
Lbs/Year	Chemical Name
761,858	Nitrate Compounds
81,861	Glycol Ethers
29,063	Ammonia
22,000	Chlorine
17,814	Toluene
15,278	Formaldehyde
15,023	Xylene (mixed isomers)
9,949	Benzene
8,575	Lead
5,390	N-Methyl-2-pyrrolidone

Table 19 Utah 2001 TRI Top Chemical Transfers to POTWs	
Lbs/Year	Chemical Name
685,811	Nitrate Compounds
65,371	Glycol Ethers
42,442	Ammonia
25,077	Nitric acid
22,005	Chlorine
19,100	Diethanolamine
15,553	Formaldehyde
15,092	Toluene
9,780	Benzene
6,878	Xylene (mixed isomers)

TRI-reported releases to POTWs do not include information concerning the rate of release or concentration. 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. Syro, Inc. reported just over 8,500 pounds of lead released to a POTW in 2000.

The top 10 facility dischargers to POTWs for reporting year 2000 are shown in Table 20. The top 10 facility dischargers to POTWs for report year 2001 are shown in Table 21.

Table 20 Utah 2000 TRI Top 10 Facility Transfers to POTWs	
Lbs/Year	Facility Name
282,000	EASTON TECHNICAL PRODUCTS
143,096	DAIRY FARMERS OF AMERICA, INC
107,619	COMPEQ INTERNATIONAL
90,129	FUTURA INDUSTRIES
64,004	TYCO PRINTED CIRCUIT GROUP INC. LOGAN DIV.
51,208	PHILLIPS 66 CO.
41,400	BP AMOCO
37,829	FAIRCHILD SEMICONDUCTOR
29,290	GENEVA NITROGEN LLC
27,489	MEADOW GOLD DAIRIES

Table 21	
Utah 2001 TRI Top 10 Facility Transfers to POTWs	
Lbs/Year	Facility Name
274,782	EASTON TECHNICAL PRODUCTS
112,823	COMPEQ INTERNATIONAL
110,657	TYCO PRINTED CIRCUIT GROUP INC., LOGAN DIVISION
73,099	FUTURA INDUSTRIES
62,971	DANNON COMPANY, THE
62,005	PHILLIPS 66 CO.
42,936	GENEVA NITROGEN LLC
42,850	TESORO REFINING AND MARKETING COMPANY
35,590	MEADOW GOLD DAIRY
34,204	FAIRCHILD SEMICONDUCTOR

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 22 lists the top 10 chemicals transferred to off-site facilities in 2000 and Table 23 lists the top 10 chemicals transferred to off-site facilities in 2001. In 2000 5.4 million pounds of TRI chemicals were transferred to other off-site facilities, and in 2001 the amount increased to 8.6 million pounds of TRI chemicals transferred to off-site facilities. Zinc compounds comprise 61% of all TRI chemicals transferred off-site in 2000 and 78% of all TRI chemicals transferred off-site in 2001. Additional metals compounds comprise the bulk of chemicals transferred to off-site facilities for 2000 and 2001.

Table 22	
Utah TRI 2000 Top 10 Chemicals Transferred to Off-Site Facilities	
Lbs/Year	Chemical Name
3,291,826	Zinc Compounds
706,320	Manganese Compounds
658,773	Copper Compounds
598,549	Lead
532,666	Lead Compounds
244,180	Copper
243,424	Nitric acid
195,278	Methanol
186,693	Dichloromethane
183,404	Ethylene glycol

Table 23	
Utah TRI 2001 Top 10 Chemicals Transferred to Off-Site Facilities	
Lbs/Year	Chemical Name
6,721,201	Zinc Compounds
777,948	Copper Compounds
746,255	Lead Compounds
642,293	Manganese Compounds
634,073	Copper
514,360	Ethylene glycol
215,468	Nickel
184,442	Lead
161,764	Aluminum (fume or dust)
150,998	Chromium Compounds

Table 24 and Table 25 below provide the top 10 facilities that transferred TRI chemicals to off-site facilities in 2000 and 2001 respectively.

In 2000, Nucor Steel transferred 4.2 million pounds of TRI chemicals off-site, which accounts for 78% of the total tonnage of TRI chemicals transferred to an off-site facility.

Table 24	
Utah 2000 TRI Top 10 Facilities Transferring Chemicals Off-Site	
Lbs/Year	Facility
4,202,103	NUCOR STEEL - A DIV. OF NUCOR CORP
614,424	COMPEQ INTERNATIONAL
489,022	EDO CORP. - WESTERN DIV.
467,777	VALMONT COATINGS-INTERMOUNTAIN GALVANIZING
220,338	U.S. DOD, U.S. AIR FORCE, OGDEN AIR LOGISTICS CENTER
205,453	ALLIANT AEROSPACE PROPULSION COMPANY, BACCHUS WORKS
190,194	SAFETY-KLEEN (ARAGONITE) INC.
182,000	U.S. DOD, U.S. ARMY, DESERET CHEMICAL DEPOT
170,506	GRIFFITH MICRO SCIENCE, INC.
164,106	PARISH CHEMICAL COMPANY

As shown in Table 25, in 2001 Nucor Steel transferred 7.9 million pounds of chemicals off-site, which accounts for 91% of all total tonnage of TRI chemicals transferred to an off-site facility.

Table 25	
Utah 2001 TRI Top 10 Facilities Transferring Chemicals Off-Site	
Lbs/Year	Facility
7,863,890	NUCOR STEEL - A DIV. OF NUCOR CORP
505,224	GRIFFITH MICRO SCIENCE, INC.
481,272	ALCOA EXTRUSIONS, INC.
420,281	COMPEQ INTERNATIONAL
416,721	U.S. DOD, U.S. ARMY, DESERET CHEMICAL DEPOT
220,517	TYCO PRINTED CIRCUIT GROUP INC., LOGAN DIVISION
187,312	AMERICAN PACIFIC CORPORATION UTAH OPERATIONS
170,617	ATK THIOKOL PROPULSION CO. – BACCHUS
149,588	VALMONT COATINGS - INTERMOUNTAIN GALVANIZING
124,053	U.S. DOD, U.S. AIR FORCE, OGDEN AIR LOGISTICS CENTER

As shown in Figure 8, 65% of the total tonnage of TRI Chemicals transferred off-site in 2000 was transferred for disposal, while 26% of the total tonnage was transferred for recycling. The remaining portions were transferred for treatment (7%) and energy recovery (2%).

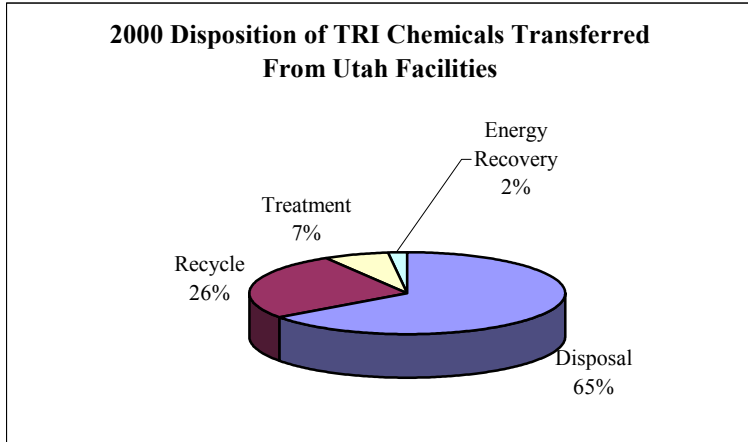


Figure 8

As shown in Figure 9, about 47% of the 9 million pounds of TRI chemicals transferred off-site in 2000 were transferred to facilities within the State of Utah. Twenty-seven percent of Utah TRI chemicals transferred off-site were sent to facilities in Idaho, followed by lesser amounts sent to facilities in other states (14%), California (7%), and Texas (5%).

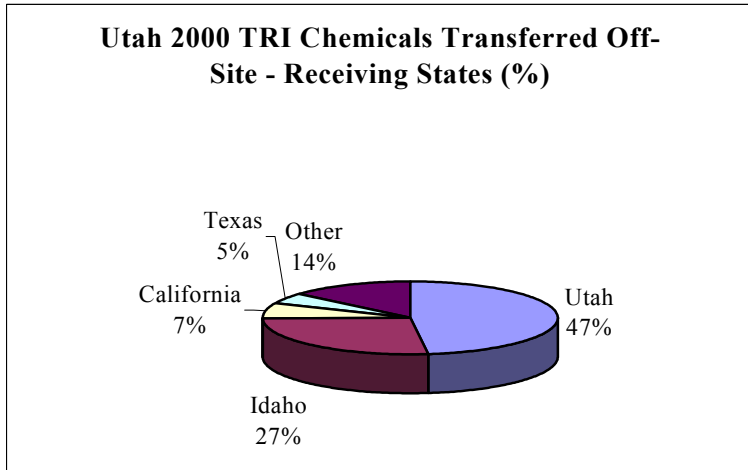


Figure 9

As shown in Figure 10, about 72% of the total tonnage of TRI chemicals transferred off-site in 2001 was reported as being disposed at off-site facilities. Another 25% of TRI chemicals transferred off-site were reported as being recycled at the facility receiving the material, and 3% were treated at the facility receiving the material. Less than 1% was used for energy recovery purposes.

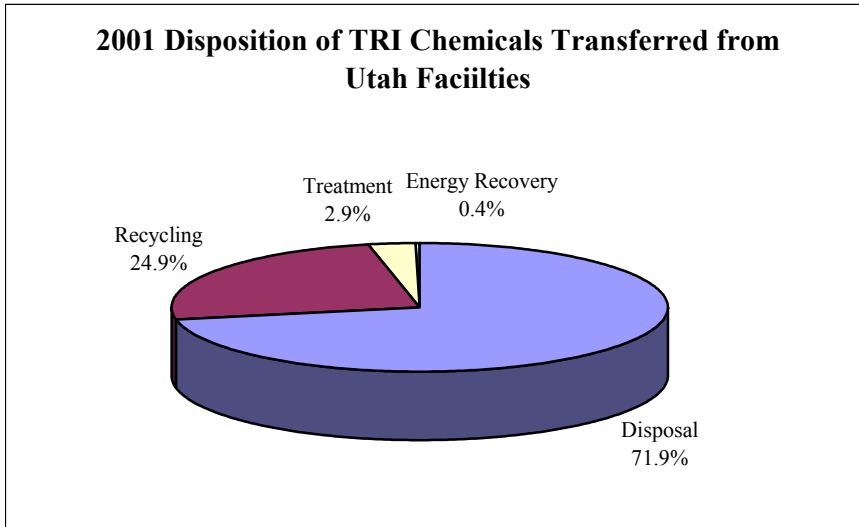


Figure 10

As shown in Figure 11, about 67% of the 12.1 million pounds of TRI chemicals transferred off-site in 2001 were transferred to facilities in Idaho. Slightly over 18% of Utah TRI chemicals transferred off-site were transferred within the State of Utah followed by 6% to California and the remaining to other out-of-state facilities.

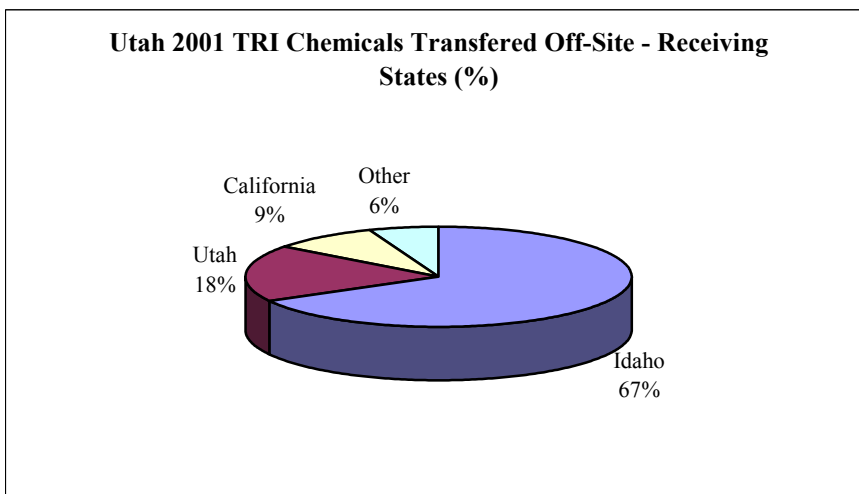


Figure 11