

A Guide to TRI for Alaska

Reporting Year 2012

Introduction

The Toxics Release Inventory (TRI) is a publicly-accessible database compiled by the U.S. Environmental Protection Agency (EPA) that contains information about disposal and other releases of over 650 chemicals from more than 20,000 industrial facilities. TRI was established by Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA), enacted in 1986, and expanded by the Pollution Prevention Act of 1990. The purpose of TRI is to support informed decision-making by industry, government, other organizations, and the public.

This guide provides a brief overview of the TRI program, summarizes the 2012 TRI data for Alaska, and describes some limitations of the data and factors to consider when using information submitted by Alaska facilities.

Overview of TRI Reporting Requirements

Facilities in specified industries that have ten or more employees and exceed thresholds for use of chemicals on the TRI list must report annually to the EPA the amount of each listed chemical it released into the environment or otherwise managed as waste during the previous calendar year. For most TRI chemicals, a facility must report to TRI if it manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of the chemical in a given year. EPA has set much lower thresholds for Persistent Bioaccumulative and Toxic (PBT) chemicals: 100 pounds for persistent and bioaccumulative chemicals; 10 pounds for highly persistent and highly bioaccumulative chemicals; and 0.1 grams for dioxin and dioxin-like compounds.

The term “release” in the TRI program is very broad and includes permitted emissions and discharges, management of wastes in regulated disposal units, as well as accidental spills and releases. “On-site releases” include TRI chemicals that are emitted to the air, disposed of on land, discharged to surface water, injected underground, treated, recycled or consumed for energy at the reporting facility. “Off-site releases” are comprised of wastes shipped off-site for disposal or other management.

Limitations of TRI Information

Chemicals are placed on the TRI list based on their potential to cause adverse effects to human health or the environment; however, the TRI data alone do not reflect actual exposures to these chemicals or risk posed by releases. Key factors to consider when using the data include: toxicity, which varies widely among TRI chemicals; environmental factors that affect the fate of a chemical and potential routes of exposure; regulatory controls and oversight; and other releases into the receiving environment, including releases from non-TRI sources or below TRI thresholds and releases of non-TRI chemicals.

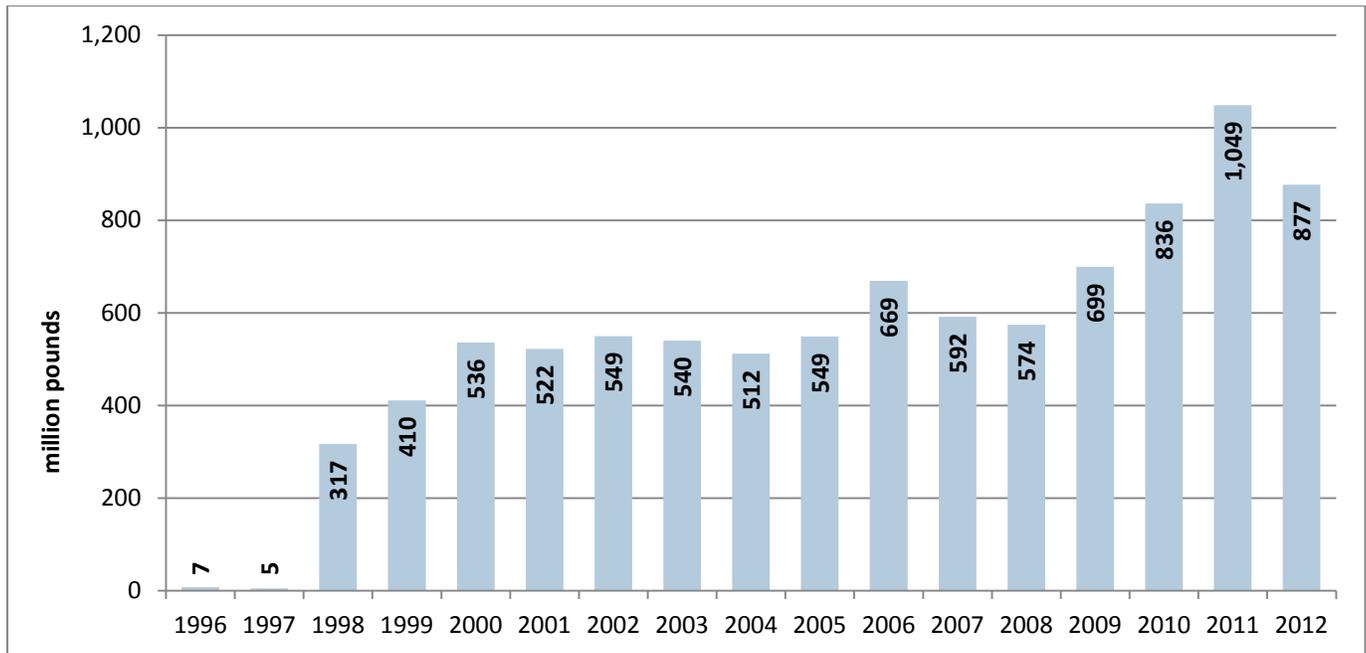
Facilities are not required to conduct monitoring or measurements to determine actual release amounts for TRI, but they must use the best available data. If measured data are not available, facilities may calculate release amounts using a variety of methods. Actual releases may vary from the estimates derived by these computational methods. In addition, while TRI data quantify facilities’ aggregate annual releases, they do not describe the concentration, timing, or duration of releases or the mobility of chemicals in the environment.

TRI in Alaska

Prior to 1998, primary sources of TRI releases in Alaska included chemical production (at the former Agrium fertilizer plant in Kenai), wood pulp manufacturing (at mills in Sitka and Ketchikan) and petroleum refining. Since 1998, when metal mining was added to the industry sectors required to report TRI releases, the vast majority of Alaska’s reported releases – more than 99% – have consisted of chemicals naturally occurring in waste rock and tailings excavated from mine sites. The more than 6,700% increase in

total annual releases in 1998 shown in the graph below is a result of this change in reporting, not the result of changes in environmental management or operating practices at mining facilities.

Total Alaska TRI Releases – 1996-2012 (million pounds)

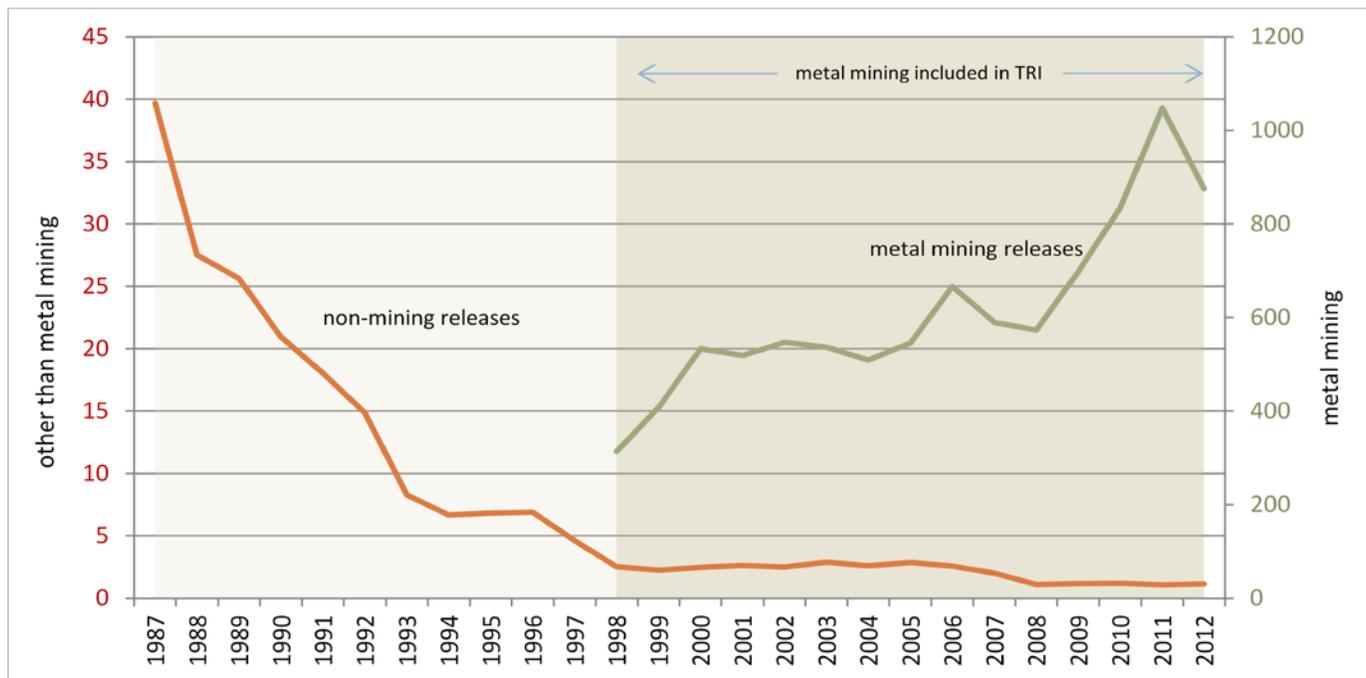


In 1997, the year before metal mining releases were included in TRI reporting, Alaska ranked 43rd among the 50 states in quantity of total on- and off-site TRI discharges. The following year, Alaska went to number five in the ranking, and since 2002, the state has ranked number one.

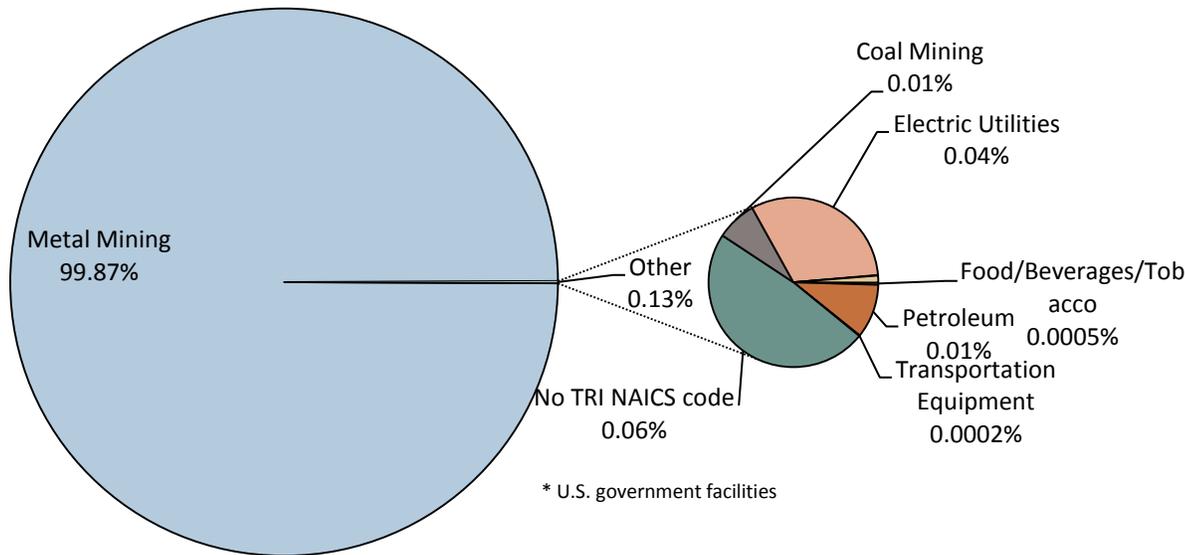
Total TRI releases from non-mining sources have declined by 97% since TRI reporting began, from approximately 39.7 million pounds in 1987, to 1.16 million pounds in 2012, despite the addition of chemicals to the TRI list and expansion of TRI reporting to more industries during that time. Meanwhile, mining-related releases have roughly tripled since 1998 as new mines have opened and existing mines expanded.

Alaska TRI Trends – Total Releases from Metal Mining vs Other Industries

(million pounds)



Total Alaska TRI Releases by Industry – 2012



Mining and TRI

Five Alaska mines were subject to the TRI reporting requirements in 2012. These mines produce gold, silver, zinc and lead from ore extracted from open pits and underground workings. Extracting ore and processing it to concentrate the metals produces several waste streams that contain TRI chemicals: waste rock and tailings disposed of on land and underground, surface water releases, and fugitive and point source air emissions. The federal and state governments review plans to dispose of these wastes and issue permits to ensure that discharges meet environmental quality standards.

Land Releases

Rock removed from a mine that does not contain economically recoverable amounts of targeted metals is called “waste rock”. Rock with recoverable quantities of metals – “ore” – is crushed and processed at an on-site mill to concentrate the metals; the material leftover is disposed of as “tailings”. Waste rock may contain trace concentrations of naturally occurring TRI chemicals, while tailings may contain both traces of naturally occurring chemicals and residual amounts of chemicals used to process the ore, any or all of which may be TRI chemicals. Both waste rock and tailings are disposed of in engineered structures either on the land surface or in underground mine workings. The TRI chemicals contained in those waste streams are reported as “on-site disposal or other releases”.

The majority of mine TRI chemical production is determined by the geochemistry of the ore body and host rock, as is the case with Red Dog Mine. It does not represent the mine’s operational performance or regulatory compliance history. As one of the world’s largest lead and zinc mines, Red Dog Mine’s waste rock is classified as TRI chemicals due to its high levels of naturally occurring mineralization. In contrast, the Fort Knox Mine, the state’s largest gold mine, processes about five times more material per year than the Red Dog Mine, but Fort Knox’s TRI chemical release amounts to only 0.3% of Red Dog’s total. This discrepancy arises from the fact that Fort Knox’s non-mineralized waste rock escapes classification as a TRI chemical where the TRI classifies Red Dog waste rock as released chemicals.

Federal and state agencies require that waste rock, tailings and heap leach pads be placed in engineered structures that will contain contaminants. The engineered structures are regulated through various permits which require structural, operational and environmental monitoring and reporting to ensure that the structures remain stable and uncontrolled releases of contaminants to the environment are prevented. Federal and state land management agencies also require that waste rock and tailings piles and heap leach pads be stabilized and re-vegetated to provide for productive post-mining land use.

Surface Water Releases

TRI chemicals may be present in stormwater runoff and seepage from waste rock and tailings impoundments or other mine components, groundwater drained from open pit or underground workings, process water, or wastewater. Water from all of these sources, treated or untreated, must meet state water quality standards before it enters surface waters, or it must be discharged in compliance with an Alaska Pollutant Discharge Elimination System permit. In either case, TRI chemicals in the released water are reported as “surface water discharges”.

Air Releases

Mines operate under conditions of air permits issued by the state in accordance with provisions of the federal Clean Air Act. For TRI purposes, releases of TRI chemicals to the air are categorized as either “point source” (also “stack”) or “fugitive” air emissions.

Air emissions that come from discrete points at mine facilities, such as stacks, pipes or vents, are reported as point source emissions. These emissions are generally produced by power-generating and other fuel-burning equipment but can also include dust containing metals that is vented from underground mine workings through a shaft or adit (horizontal passage).

Fugitive air emissions are those that are not released through a confined air stream. Dust generated by activities such as construction, blasting, excavating, and ore transfer, as well as dust blown from heap leach pads or stockpiles of waste rock, tailings, or ore, can contain metals or traces of process chemicals that must be reported to TRI. Evaporation of volatile chemicals such as methanol, used to prevent drilling fluids from freezing, may also be reported as fugitive emissions.

Summary of Alaska TRI Releases – 2012

Thirty-three Alaska facilities reported TRI releases for 2012, two fewer than reported for 2011. The total quantity of Alaska releases was down 16.4% from 2011. Metal mining releases, which also decreased 16.4% from 2011, accounted for 99.9% of the state's overall release. Total releases from industries other than metal mining were up 6.9% from 2011.

Releases by Industry (pounds)

Industry	Total Air Releases	Surface Water Discharge	Underground Injection	Total On-site Land Releases	Total Off-site Releases	Total On-site Releases	Total On and Off-Site Releases
Metal Mining	287,366	569,037	89	874,703,196	460	875,560,148	875,560,608
No TRI NAICS code							
*Gov't facilities	48,886	32	-	285,834	141,580	420,551	562,131
Electric Utilities	8,146	-	-	-	359,962	8,146	368,108
Petroleum	79,462	1,256	-	790	37,971	81,615	119,586
Coal Mining	14	-	-	89,084	-	89,098	89,098
Petroleum Bulk Terminals	15,101	150	-	254	25	15,505	15,530
Food/Beverages/Tobacco	4,750	-	-	-	-	4,750	4,750
Transportation Equipment	1,534	-	-	-	-	1,534	1,534
Chemical Wholesalers	1,089	-	-	-	-	1,089	1,089
Stone/Clay/Glass	-	-	-	-	-	-	-
Totals	446,348	570,475	89	875,079,158	539,998	876,182,436	876,722,434

Releases by Borough or Census Area (pounds)

Borough/Census Area	Air Releases	Surface Water Discharges	Underground Injection	On-site Land Releases	Total On-site Releases	Off-site Releases	Total On and Off-Site Releases
Northwest Arctic	256,382	237	-	813,746,692	814,003,311	52	814,003,363
Juneau	22,686	317	89	49,812,671	49,835,763	-	49,835,763
Fairbanks North Star	87,231	568,490	-	11,459,969	12,115,690	354,099	12,469,789
Denali	6,902	-	-	89,282	96,184	147,398	243,582
Kenai Peninsula	47,972	1,268	-	1,015	50,255	37,970	88,225
Anchorage	14,061	131	-	53,133	67,325	25	67,350
Aleutians West	6,222	-	-	-	6,222	451	6,673
Aleutians East	3,350	-	-	-	3,350	-	3,350
Southeast Fairbanks	1	-	-	2,389	2,389	-	2,389
Ketchikan Gateway	1,534	-	-	-	1,534	-	1,534
Skagway-Hoonah-Angoon	-	-	-	275	275	-	275
Kodiak Island	8	32	-	97	137	3	140

Releases by Facility (pounds)

Industry	Facility	Location	On-site Releases	Off-site Releases	Total On and Off-Site Releases
Metal Mining	Red Dog Operations	Kotzebue	814,003,311	52	814,003,362
Metal Mining	Hecla Greens Creek Mining Co	Juneau	48,754,932	0	48,754,932
Metal Mining	Pogo Mine	Delta Junction	9,442,628	408	9,443,036
Metal Mining	Fort Knox Mine	Fairbanks	2,278,446	0	2,278,446
Metal Mining	Coeur Alaska Inc Kensington Gold Project	Juneau	1,080,831	0	1,080,831
Electric Utilities	Aurora Energy LLC	Fairbanks	894	212,599	213,493
No TRI NAICS code	US Army Fort Wainwright Cantonment	Ft. Wainwright	194,321	0	194,321
No TRI NAICS code	Doyon Utilities Ft Wainwright	Ft. Wainwright	41,309	141,091	182,401
Electric Utilities	Golden Valley Electric Assoc Healy Power Plant	Healy	6,885	147,363	154,248
No TRI NAICS code	US DOD USAF Eielson AFB AK	Eielson AFB	124,099	0	124,099
Coal Mining	Usibelli Coal Mine, Inc	Healy	89,098	0	89,098
Petroleum	Tesoro Alaska - Kenai Refinery	Kenai	48,019	37,970	85,989
No TRI NAICS code	US DOD USAF Joint Base Elmendorf-Richardson Training Ranges	Elmendorf AFB	48,611	0	48,611
Petroleum	Flint Hills Resources Alaska LLC - North Pole	North Pole	33,568	1	33,568
Petroleum Bulk Terminals	Flint Hills Resources Alaska LLC Anchorage Terminal	Anchorage	9,711	0	9,711
No TRI NAICS code	US DOD USAF Eareckson Air Station	Shemya Island	4,822	451	5,273
No TRI NAICS code	US DOD USAF Joint Base Elmendorf-Richardson	Elmendorf AFB	4,386	0	4,386
Petroleum Bulk Terminals	Tesoro Alaska Co - Anchorage Terminal	Anchorage	3,528	25	3,553
Food/Beverages/Tobacco	Trident Seafoods Corp Akutan Shore Plant	Akutan	3,350	0	3,350
No TRI NAICS code	Us Army Donnelly Training Area	Delta Junction	2,389	0	2,389
Transportation Equipment	Alaska Ship & Drydock	Ketchikan	1,534	0	1,534
Petroleum Bulk Terminals	Kenai Pipeline Co - KPL Facility	Kenai	1,529	0	1,529
Food/Beverages/Tobacco	Western Star Seafoods, Inc	Adak	1,400	0	1,400
Chemical Wholesalers	Univar Usa Inc	Anchorage	1,089	0	1,089
Petroleum Bulk Terminals	Tesoro Alaska Co - Nikiski Terminal	Kenai	707	0	707
Electric Utilities	Golden Valley Electric Assoc North Pole Power Plant	North Pole	368	0	368
No TRI NAICS code	Glacier Bay National Park & Preserve	Gustavus	275	0	275
No TRI NAICS code	US DOD USAF Clear AFS	Clear	202	35	237
No TRI NAICS code	Us Coast Guard Base Support Unit Kodiak	Kodiak	137	3	140
Petroleum Bulk Terminals	Flint Hills Resources Alaska LLC - Fairbanks Terminal	Fairbanks	30	0	30
Petroleum	Emulsion Products Co - North Pole Facility	North Pole	28	0	28
No TRI NAICS code	Doyon Utilities Ft Greely	Fort Greely	1	0	1
Transportation Equipment	US Coast Guard BSU Ketchikan	Ketchikan	0	0	0

FOR MORE INFORMATION

Public Data Releases

Each year, the EPA releases the prior calendar year's TRI data to the public in the form of a national analysis, state-by-state factsheets and updates to online databases. These resources provide summaries, analyses, raw data, and a variety of tools for exploring patterns and trends in TRI releases by geography, industry sector, facility, chemical, and type of release or other waste management.

The annual TRI National Analysis presents EPA's interpretation of the year's data, providing national-scale information on how toxic chemicals were managed, where they ended up, and how the year compares to previous years. EPA's electronic State Fact Sheets summarize the reporting year's TRI data for each state by type of release, disposal, and waste management. An interactive map links to details about reporting facilities and industry sectors, chemicals released, and census data. Analyses, raw data files, and online tools for viewing and analyzing TRI data, are available at:

<http://tinyurl.com/nfntrrs>

The Region 10 TRI Website:

<http://yosemite.epa.gov/R10/OWCM.NSF/TRI/2012data>

The TRI "Explorer":

http://iaspub.epa.gov/triexplorer/tri_release.chemical

Additional Contacts

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Online Access

The entire Toxics Release Inventory database is published by EPA and is available on the web at:

www.epa.gov/tri/tridata/index.htm

For information concerning environmental regulatory programs administered by the Alaska Department of Environmental Conservation, visit the DEC website at:

www.dec.alaska.gov